



## Full wwPDB EM Validation Report ⓘ

Mar 16, 2024 – 09:20 am GMT

PDB ID : 8OJ5  
EMDB ID : EMD-16905  
Title : 60S ribosomal subunit bound to the E3-UFM1 complex - state 3 (in-vitro reconstitution)  
Authors : Penchev, I.; DaRosa, P.A.; Peter, J.J.; Kulathu, Y.; Becker, T.; Beckmann, R.; Kopito, R.  
Deposited on : 2023-03-23  
Resolution : 2.90 Å(reported)

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

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

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

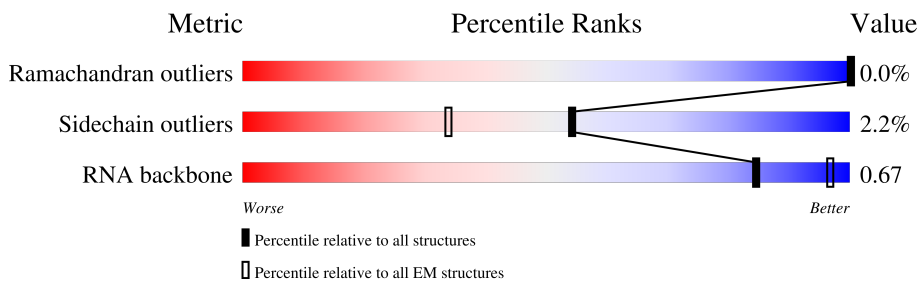
EMDB validation analysis : 0.0.1.dev70  
MolProbity : 4.02b-467  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP)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

# 1 Overall quality at a glance i

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

The reported resolution of this entry is 2.90 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.



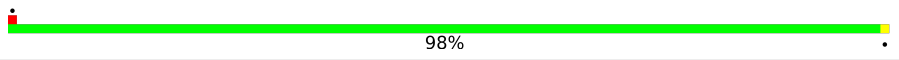
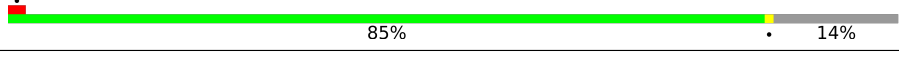
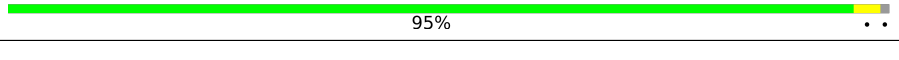

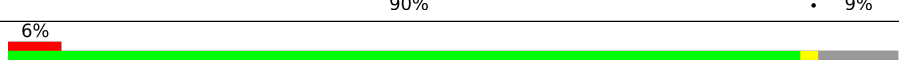
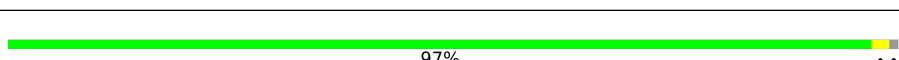
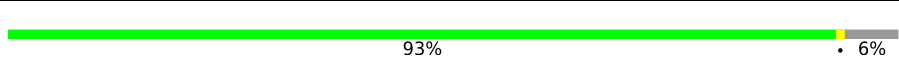
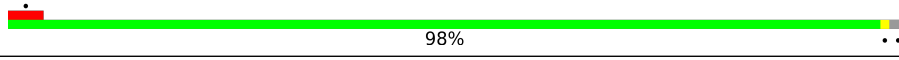
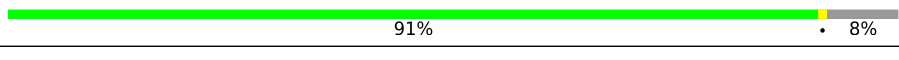

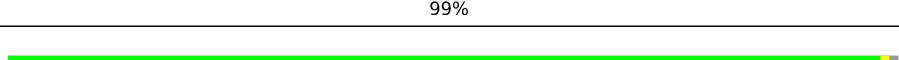
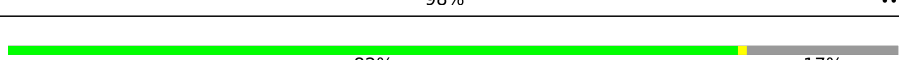
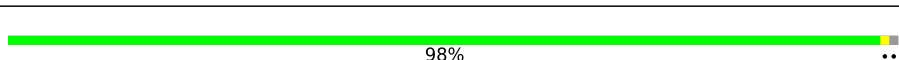

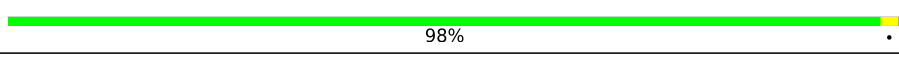
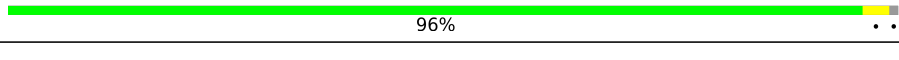

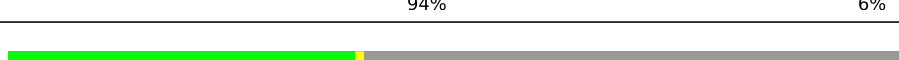
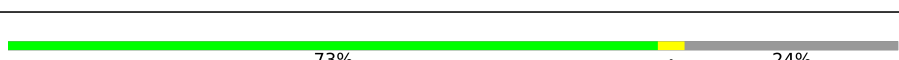
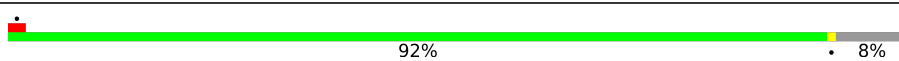
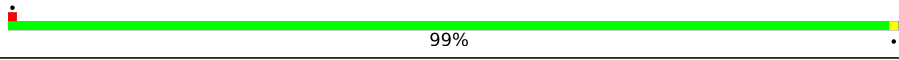
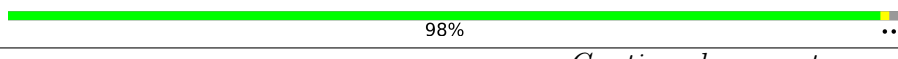



Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

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  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion  $< 40\%$ ). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	5	5070	61% 7% 31%
2	7	121	94% 5%
3	8	157	85% 10% 6%
4	A	794	12% 85% 13%
5	B	506	23% 76% 20%
6	C	314	31% 57% 40%
7	D	85	84% 86% 6% 8%
8	LA	257	95%

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Mol	Chain	Length	Quality of chain
9	LB	403	 98%
10	LC	427	 85% 14%
11	LD	297	 95%
12	LE	288	 76% 24%
13	LF	248	 90% 9%
14	LG	266	 6% 89% 9%
15	LH	192	 97%
16	LI	214	 93% 6%
17	LJ	178	 98%
18	LL	211	 91% 8%
19	LM	215	 63% 37%
20	LN	204	 99%
21	LO	203	 98%
22	LP	184	 82% 17%
23	LQ	188	 98%
24	LR	196	 76% 21%
25	LS	176	 98%
26	LT	160	 96%
27	LU	128	 76% 21%
28	LV	140	 94% 6%
29	LW	157	 39% 61%
30	LX	156	 73% 24%
31	LY	145	 92% 8%
32	LZ	136	 99%
33	La	148	 98%

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Mol	Chain	Length	Quality of chain
34	Lb	159	 5% 68% 31%
35	Lc	115	 83% 15%
36	Ld	125	 85% 14%
37	Le	135	 93% 5%
38	Lf	110	 98%
39	Lg	117	 96%
40	Lh	123	 98%
41	Li	105	 95%
42	Lj	97	 89% 11%
43	Lk	70	 97%
44	Ll	51	 98%
45	Lm	128	 41% 59%
46	Lo	106	 98%
47	Lp	92	 96%
48	Lr	137	 90% 9%
49	Lz	217	 96%

## 2 Entry composition

There are 51 unique types of molecules in this entry. The entry contains 145041 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 28S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	5	3474	74502	33181	13653	24195	3473	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	7	120	2561	1141	456	844	120	0	0

- Molecule 3 is a RNA chain called 5.8S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
3	8	148	3152	1407	563	1035	147	0	0

- Molecule 4 is a protein called E3 UFM1-protein ligase 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	A	692	5479	3453	957	1050	19	0	0

- Molecule 5 is a protein called CDK5 regulatory subunit-associated protein 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	B	403	3234	2049	545	624	16	0	0

- Molecule 6 is a protein called DDRGK domain-containing protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	C	188	1547	954	279	313	1	0	0

- Molecule 7 is a protein called Ubiquitin-fold modifier 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	D	78	588	382	96	109	1	0	0

- Molecule 8 is a protein called 60S ribosomal protein L8.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	LA	248	1898	1189	389	314	6	0	0

- Molecule 9 is a protein called 60S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	LB	402	3239	2060	608	557	14	0	0

- Molecule 10 is a protein called 60S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	LC	368	2927	1840	583	489	15	0	0

- Molecule 11 is a protein called 60S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	LD	293	2382	1507	434	427	14	0	0

- Molecule 12 is a protein called 60S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	LE	220	1765	1136	334	291	4	0	0

- Molecule 13 is a protein called 60S ribosomal protein L7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	LF	225	1870	1202	358	301	9	0	0

- Molecule 14 is a protein called 60S ribosomal protein L7a.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	LG	241	Total	C	N	O	S	0	0
			1927	1228	371	324	4		

- Molecule 15 is a protein called 60S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	LH	190	Total	C	N	O	S	0	0
			1518	956	284	272	6		

- Molecule 16 is a protein called Ribosomal protein uL16-like.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	LI	202	Total	C	N	O	S	0	0
			1634	1038	314	269	13		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
LI	87	ILE	MET	conflict	UNP Q96L21

- Molecule 17 is a protein called 60S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	LJ	175	Total	C	N	O	S	0	0
			1401	882	261	252	6		

- Molecule 18 is a protein called 60S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	LL	194	Total	C	N	O	S	0	0
			1573	987	327	255	4		

- Molecule 19 is a protein called 60S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	LM	136	Total	C	N	O	S	0	0
			1120	719	215	179	7		

- Molecule 20 is a protein called 60S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
20	LN	203	1701	1072	359	266	4	0	0

- Molecule 21 is a protein called 60S ribosomal protein L13a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
21	LO	201	1650	1063	321	261	5	0	0

- Molecule 22 is a protein called 60S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
22	LP	153	1242	776	241	216	9	0	0

- Molecule 23 is a protein called 60S ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
23	LQ	187	1513	944	314	250	5	0	0

- Molecule 24 is a protein called 60S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
24	LR	155	1294	808	278	199	9	0	0

- Molecule 25 is a protein called 60S ribosomal protein L18a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
25	LS	175	1453	925	283	235	10	0	0

- Molecule 26 is a protein called 60S ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
26	LT	159	1298	823	252	217	6	0	0

- Molecule 27 is a protein called 60S ribosomal protein L22.



Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
27	LU	101	825	529	144	150	2	0	0

- Molecule 28 is a protein called 60S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
28	LV	131	979	618	184	172	5	0	0

- Molecule 29 is a protein called 60S ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
29	LW	62	519	332	101	83	3	0	0

- Molecule 30 is a protein called 60S ribosomal protein L23a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
30	LX	118	967	618	181	167	1	0	0

- Molecule 31 is a protein called 60S ribosomal protein L26.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
31	LY	134	1115	700	226	186	3	0	0

- Molecule 32 is a protein called 60S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
32	LZ	135	1107	714	208	182	3	0	0

- Molecule 33 is a protein called 60S ribosomal protein L27a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
33	La	147	1162	736	237	186	3	0	0

- Molecule 34 is a protein called 60S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
34	Lb	109	876	546	189	137	4	0	0

- Molecule 35 is a protein called 60S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
35	Lc	98	764	485	135	138	6	0	0

- Molecule 36 is a protein called 60S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
36	Ld	107	888	560	171	155	2	0	0

- Molecule 37 is a protein called 60S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
37	Le	128	1053	667	216	165	5	0	0

- Molecule 38 is a protein called 60S ribosomal protein L35a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
38	Lf	109	876	555	174	144	3	0	0

- Molecule 39 is a protein called 60S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
39	Lg	114	906	566	187	147	6	0	0

- Molecule 40 is a protein called 60S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
40	Lh	122	1015	641	205	168	1	0	0

- Molecule 41 is a protein called 60S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	Li	102	Total	C	N	O	S	0	0
			832	521	177	129	5		

- Molecule 42 is a protein called 60S ribosomal protein L37.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	Lj	86	Total	C	N	O	S	0	0
			705	434	155	111	5		

- Molecule 43 is a protein called 60S ribosomal protein L38.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	Lk	69	Total	C	N	O	S	0	0
			569	366	103	99	1		

- Molecule 44 is a protein called 60S ribosomal protein L39.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	Ll	50	Total	C	N	O	S	0	0
			444	281	98	64	1		

- Molecule 45 is a protein called Ubiquitin-60S ribosomal protein L40.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	Lm	52	Total	C	N	O	S	0	0
			429	266	90	67	6		

- Molecule 46 is a protein called 60S ribosomal protein L36a.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	Lo	105	Total	C	N	O	S	0	0
			863	542	175	140	6		

- Molecule 47 is a protein called 60S ribosomal protein L37a.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	Lp	91	Total	C	N	O	S	0	0
			708	445	136	120	7		

- Molecule 48 is a protein called 60S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
48	Lr	125	1002	622	207	168	5	0	0

- Molecule 49 is a protein called 60S ribosomal protein L10a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
49	Lz	217	1744	1114	314	307	9	0	0

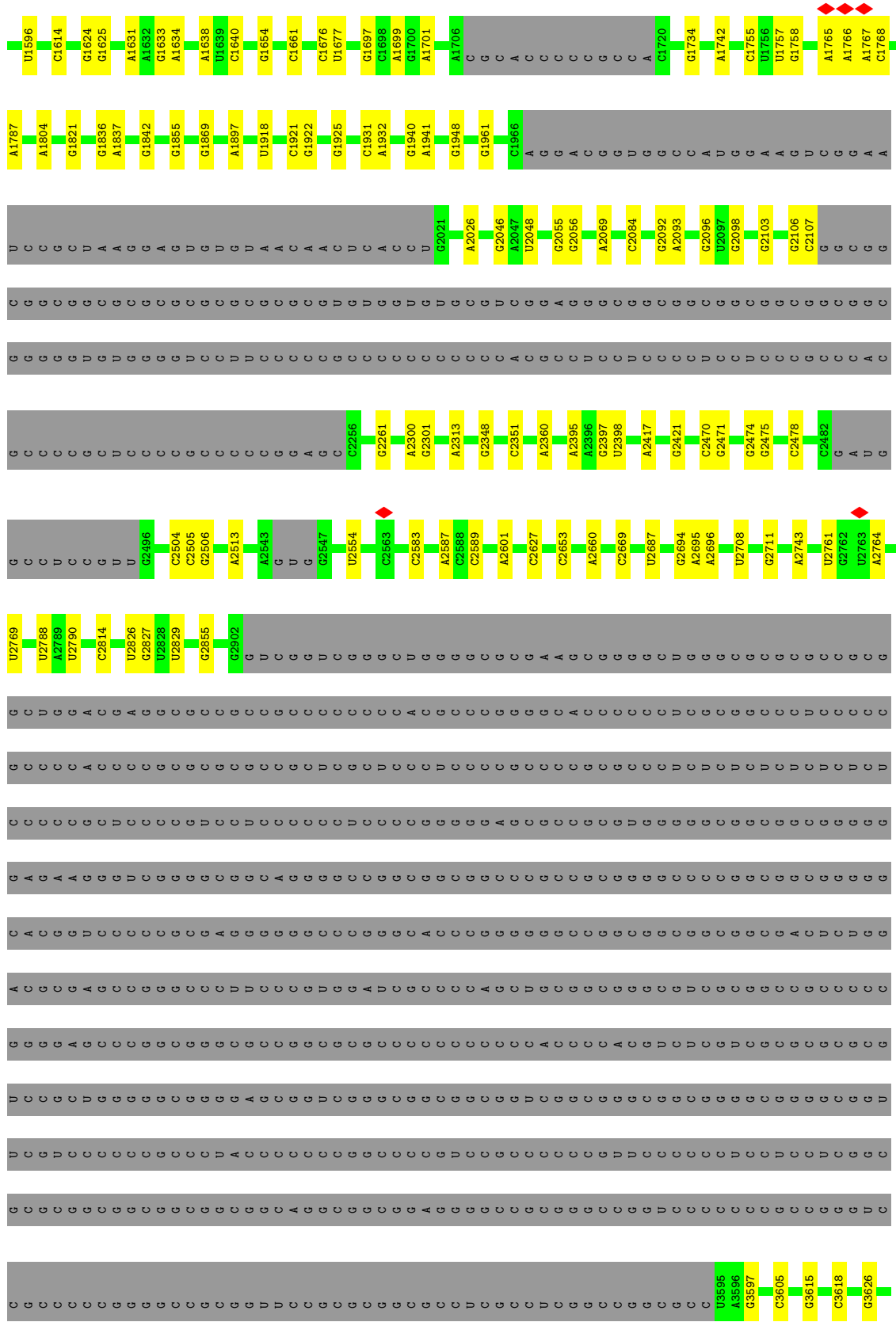
- Molecule 50 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
50	5	207	Total 207	Mg 207	0
50	7	2	Total 2	Mg 2	0
50	8	5	Total 5	Mg 5	0
50	LP	1	Total 1	Mg 1	0
50	LV	1	Total 1	Mg 1	0
50	Le	2	Total 2	Mg 2	0
50	Lf	1	Total 1	Mg 1	0
50	Lj	1	Total 1	Mg 1	0

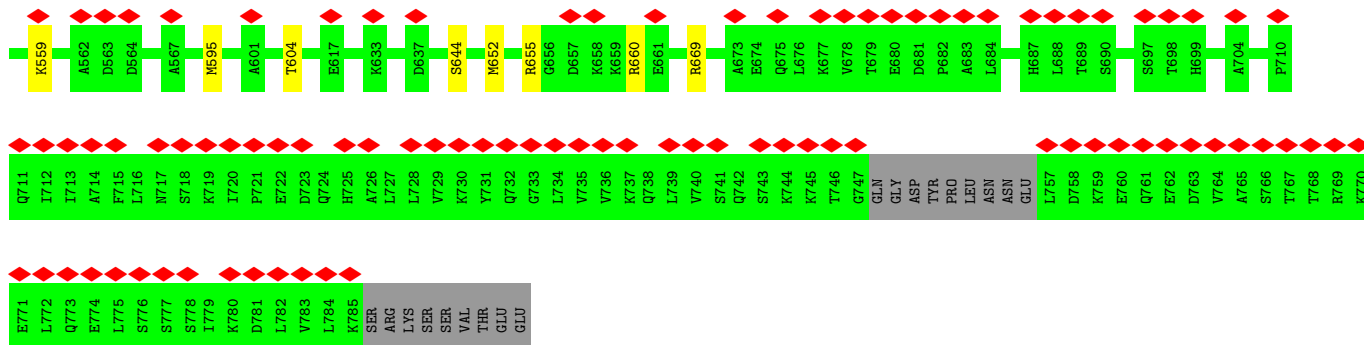
- Molecule 51 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
51	Lg	1	Total 1	Zn 1	0
51	Lj	1	Total 1	Zn 1	0
51	Lm	1	Total 1	Zn 1	0
51	Lo	1	Total 1	Zn 1	0
51	Lp	1	Total 1	Zn 1	0

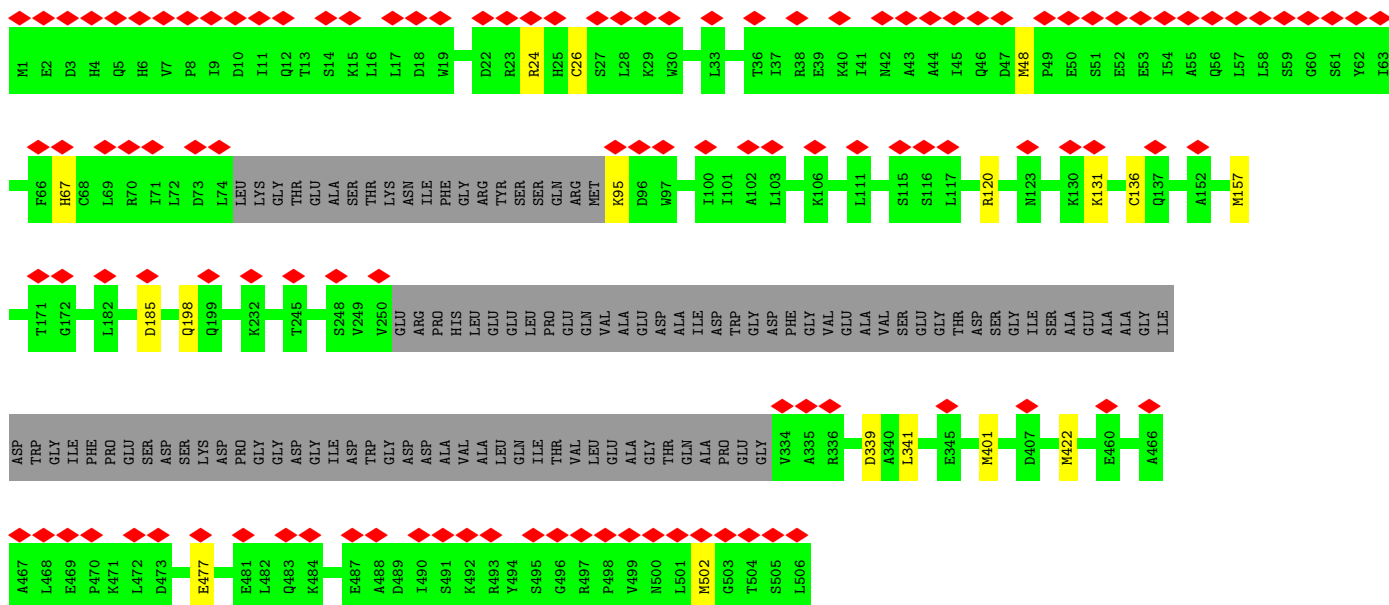
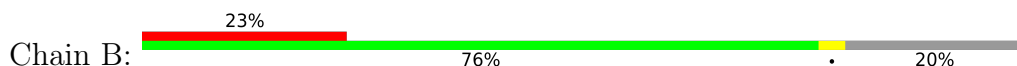




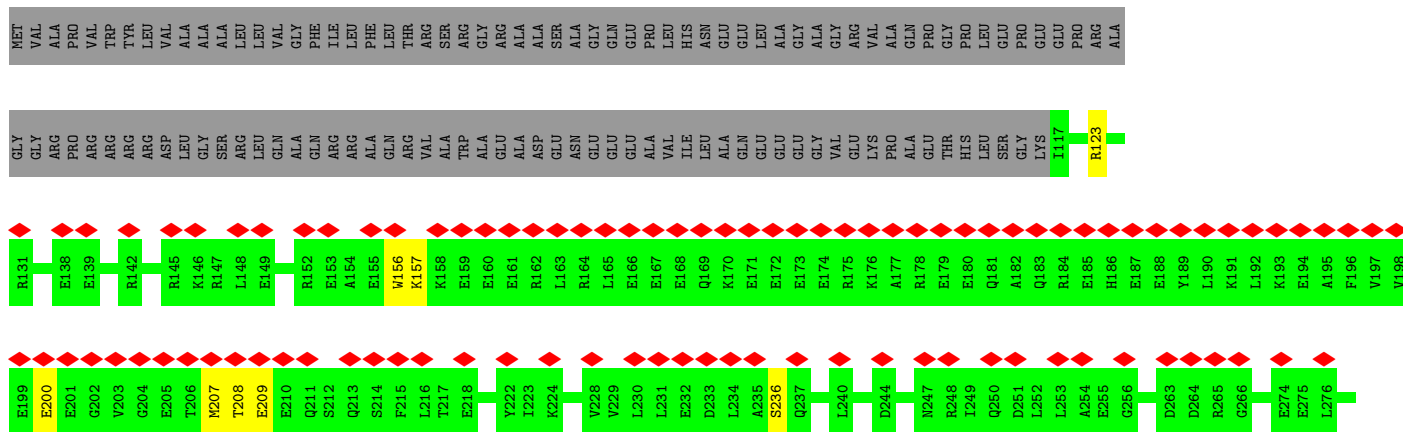




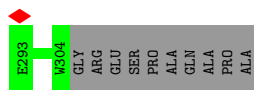
• Molecule 5: CDK5 regulatory subunit-associated protein 3



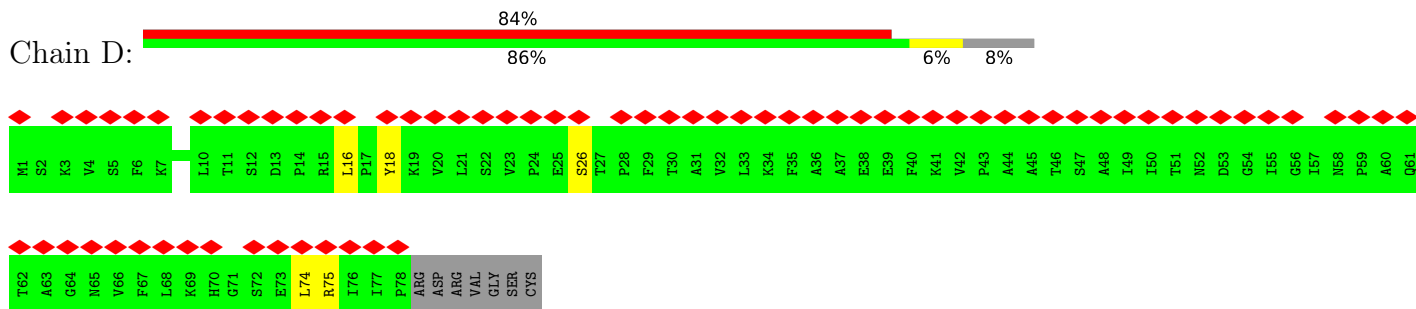
• Molecule 6: DDRGK domain-containing protein 1



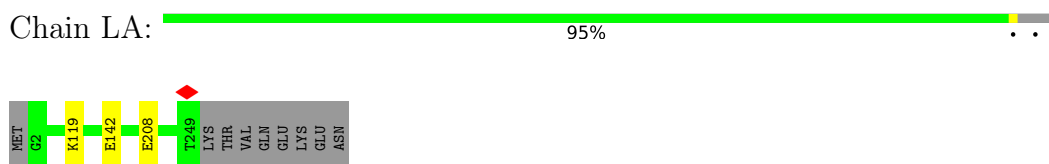




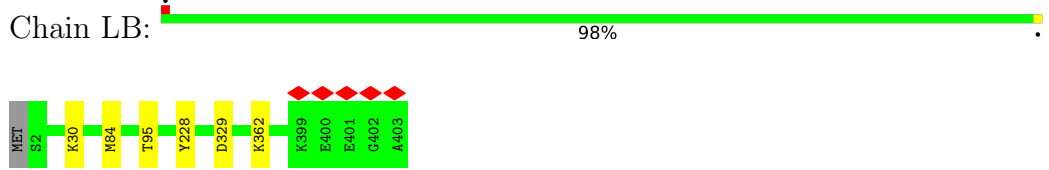
• Molecule 7: Ubiquitin-fold modifier 1



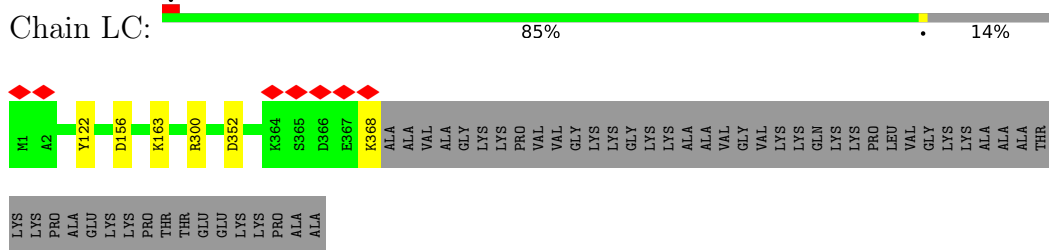
• Molecule 8: 60S ribosomal protein L8



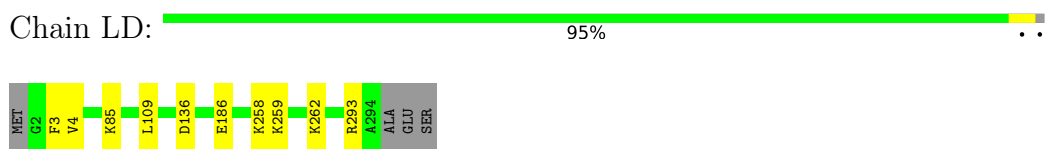
• Molecule 9: 60S ribosomal protein L3



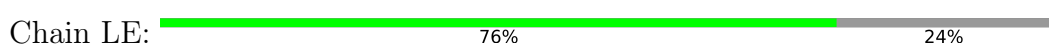
• Molecule 10: 60S ribosomal protein L4

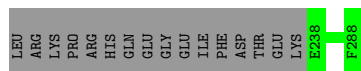
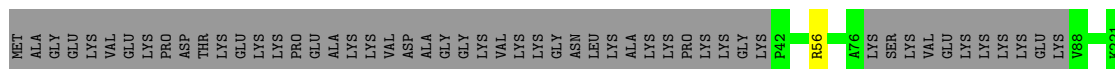


• Molecule 11: 60S ribosomal protein L5

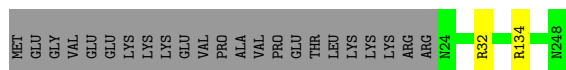


• Molecule 12: 60S ribosomal protein L6

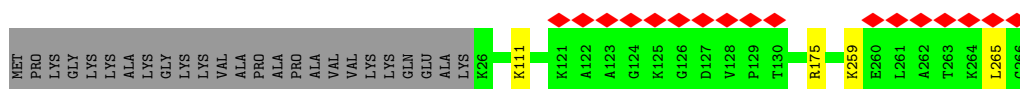




• Molecule 13: 60S ribosomal protein L7



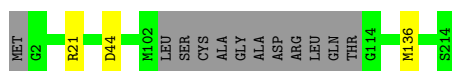
• Molecule 14: 60S ribosomal protein L7a



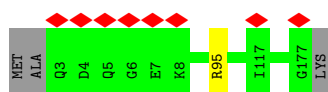
• Molecule 15: 60S ribosomal protein L9



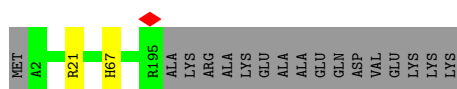
• Molecule 16: Ribosomal protein uL16-like



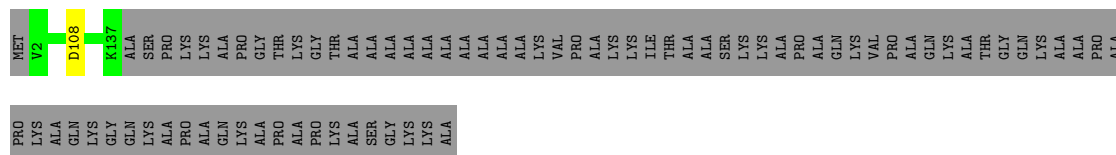
• Molecule 17: 60S ribosomal protein L11



• Molecule 18: 60S ribosomal protein L13



- Molecule 19: 60S ribosomal protein L14



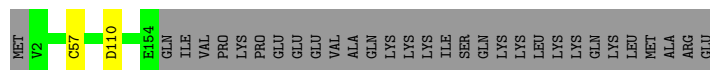
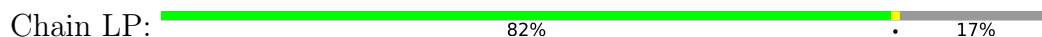
- Molecule 20: 60S ribosomal protein L15



- Molecule 21: 60S ribosomal protein L13a



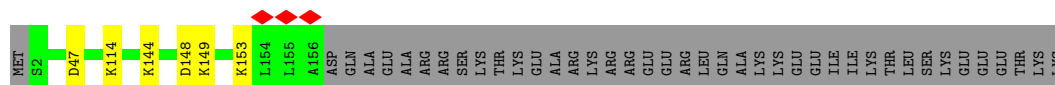
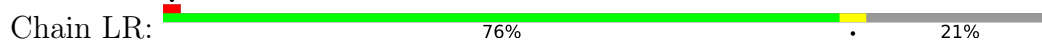
- Molecule 22: 60S ribosomal protein L17



- Molecule 23: 60S ribosomal protein L18



- Molecule 24: 60S ribosomal protein L19



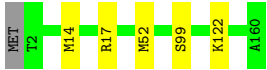
- Molecule 25: 60S ribosomal protein L18a





- Molecule 26: 60S ribosomal protein L21

Chain LT: 96%



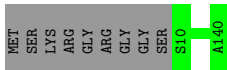
- Molecule 27: 60S ribosomal protein L22

Chain LU: 76%



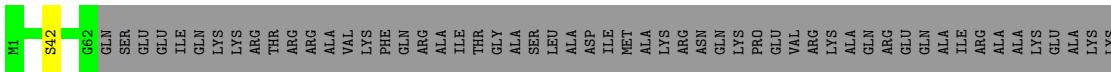
- Molecule 28: 60S ribosomal protein L23

Chain LV: 94%



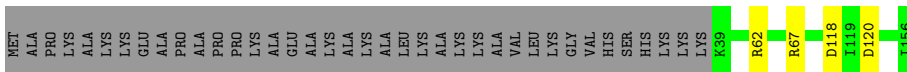
- Molecule 29: 60S ribosomal protein L24

Chain LW: 39%



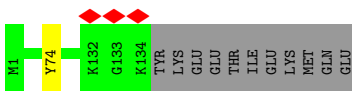
- Molecule 30: 60S ribosomal protein L23a

Chain LX: 73%

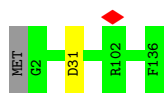


- Molecule 31: 60S ribosomal protein L26

Chain LY: 92%



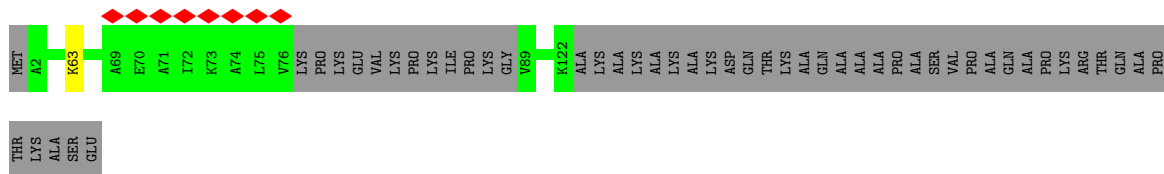
- Molecule 32: 60S ribosomal protein L27



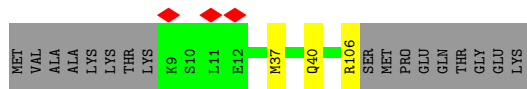
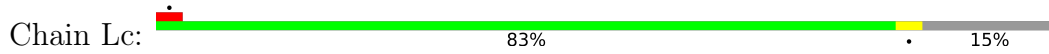
- Molecule 33: 60S ribosomal protein L27a



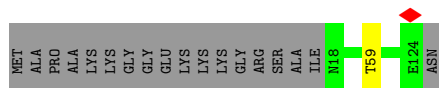
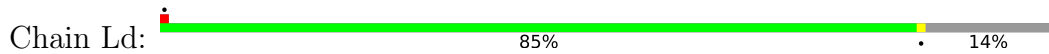
- Molecule 34: 60S ribosomal protein L29



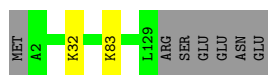
- Molecule 35: 60S ribosomal protein L30



- Molecule 36: 60S ribosomal protein L31



- Molecule 37: 60S ribosomal protein L32

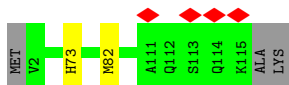


- Molecule 38: 60S ribosomal protein L35a





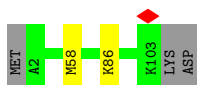
- Molecule 39: 60S ribosomal protein L34



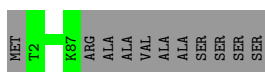
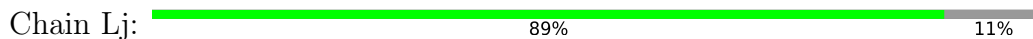
- Molecule 40: 60S ribosomal protein L35



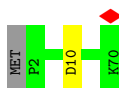
- Molecule 41: 60S ribosomal protein L36



- Molecule 42: 60S ribosomal protein L37



- Molecule 43: 60S ribosomal protein L38



- Molecule 44: 60S ribosomal protein L39



- Molecule 45: Ubiquitin-60S ribosomal protein L40





## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	35935	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	50	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.100	Depositor
Minimum map value	-0.024	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.005	Depositor
Recommended contour level	0.01	Depositor
Map size (Å)	377.1, 377.1, 377.1	wwPDB
Map dimensions	450, 450, 450	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.838, 0.838, 0.838	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	5	0.15	0/83342	0.66	0/129985
2	7	0.15	0/2861	0.65	0/4459
3	8	0.15	0/3520	0.66	0/5481
4	A	0.24	0/5549	0.46	0/7469
5	B	0.24	0/3280	0.42	0/4426
6	C	0.24	0/1560	0.48	0/2085
7	D	0.25	0/601	0.45	0/818
8	LA	0.24	0/1936	0.56	0/2596
9	LB	0.24	0/3307	0.51	0/4424
10	LC	0.23	0/2981	0.53	0/4002
11	LD	0.25	0/2428	0.50	0/3252
12	LE	0.24	0/1799	0.52	0/2414
13	LF	0.24	0/1905	0.52	0/2539
14	LG	0.24	0/1960	0.51	0/2637
15	LH	0.24	0/1537	0.52	0/2066
16	LI	0.24	0/1673	0.53	0/2234
17	LJ	0.24	0/1424	0.52	0/1904
18	LL	0.23	0/1604	0.56	0/2149
19	LM	0.24	0/1142	0.49	0/1527
20	LN	0.24	0/1746	0.58	0/2338
21	LO	0.24	0/1682	0.51	0/2250
22	LP	0.23	0/1268	0.50	0/1701
23	LQ	0.24	0/1537	0.59	0/2052
24	LR	0.23	0/1310	0.56	0/1734
25	LS	0.24	0/1493	0.54	0/2003
26	LT	0.24	0/1326	0.51	0/1770
27	LU	0.25	0/839	0.47	0/1126
28	LV	0.25	0/993	0.52	0/1332
29	LW	0.25	0/532	0.50	0/708
30	LX	0.24	0/984	0.52	0/1323
31	LY	0.24	0/1132	0.53	0/1504
32	LZ	0.26	0/1130	0.52	0/1507

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
33	La	0.23	0/1191	0.51	0/1591
34	Lb	0.24	0/889	0.53	0/1175
35	Lc	0.25	0/774	0.48	0/1038
36	Ld	0.24	0/903	0.55	0/1216
37	Le	0.23	0/1071	0.53	0/1429
38	Lf	0.24	0/895	0.56	0/1198
39	Lg	0.24	0/916	0.57	0/1220
40	Lh	0.23	0/1023	0.52	0/1351
41	Li	0.23	0/843	0.56	0/1115
42	Lj	0.24	0/720	0.59	0/952
43	Lk	0.24	0/575	0.48	0/761
44	Ll	0.24	0/454	0.57	0/599
45	Lm	0.24	0/435	0.53	0/575
46	Lo	0.25	0/877	0.53	0/1156
47	Lp	0.24	0/718	0.53	0/953
48	Lr	0.23	0/1017	0.55	0/1364
49	Lz	0.24	0/1772	0.48	0/2375
All	All	0.19	0/155454	0.61	0/227883

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

## 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 [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	
4	A	684/794 (86%)	673 (98%)	11 (2%)	0	100	100
5	B	397/506 (78%)	390 (98%)	7 (2%)	0	100	100
6	C	186/314 (59%)	186 (100%)	0	0	100	100
7	D	76/85 (89%)	76 (100%)	0	0	100	100
8	LA	246/257 (96%)	241 (98%)	5 (2%)	0	100	100
9	LB	400/403 (99%)	397 (99%)	3 (1%)	0	100	100
10	LC	366/427 (86%)	359 (98%)	7 (2%)	0	100	100
11	LD	291/297 (98%)	287 (99%)	3 (1%)	1 (0%)	41	71
12	LE	214/288 (74%)	208 (97%)	6 (3%)	0	100	100
13	LF	223/248 (90%)	218 (98%)	5 (2%)	0	100	100
14	LG	239/266 (90%)	234 (98%)	5 (2%)	0	100	100
15	LH	188/192 (98%)	187 (100%)	1 (0%)	0	100	100
16	LI	198/214 (92%)	196 (99%)	2 (1%)	0	100	100
17	LJ	173/178 (97%)	172 (99%)	1 (1%)	0	100	100
18	LL	192/211 (91%)	188 (98%)	4 (2%)	0	100	100
19	LM	134/215 (62%)	132 (98%)	2 (2%)	0	100	100
20	LN	201/204 (98%)	199 (99%)	2 (1%)	0	100	100
21	LO	199/203 (98%)	199 (100%)	0	0	100	100
22	LP	151/184 (82%)	149 (99%)	2 (1%)	0	100	100
23	LQ	185/188 (98%)	182 (98%)	3 (2%)	0	100	100
24	LR	153/196 (78%)	153 (100%)	0	0	100	100
25	LS	173/176 (98%)	168 (97%)	5 (3%)	0	100	100
26	LT	157/160 (98%)	154 (98%)	3 (2%)	0	100	100
27	LU	99/128 (77%)	95 (96%)	4 (4%)	0	100	100
28	LV	129/140 (92%)	127 (98%)	2 (2%)	0	100	100
29	LW	60/157 (38%)	59 (98%)	1 (2%)	0	100	100
30	LX	116/156 (74%)	116 (100%)	0	0	100	100
31	LY	132/145 (91%)	131 (99%)	1 (1%)	0	100	100
32	LZ	133/136 (98%)	133 (100%)	0	0	100	100
33	La	145/148 (98%)	139 (96%)	6 (4%)	0	100	100
34	Lb	105/159 (66%)	105 (100%)	0	0	100	100
35	Lc	96/115 (84%)	95 (99%)	1 (1%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
36	Ld	105/125 (84%)	103 (98%)	2 (2%)	0	100	100
37	Le	126/135 (93%)	125 (99%)	1 (1%)	0	100	100
38	Lf	107/110 (97%)	107 (100%)	0	0	100	100
39	Lg	112/117 (96%)	112 (100%)	0	0	100	100
40	Lh	120/123 (98%)	117 (98%)	3 (2%)	0	100	100
41	Li	100/105 (95%)	98 (98%)	2 (2%)	0	100	100
42	Lj	84/97 (87%)	83 (99%)	1 (1%)	0	100	100
43	Lk	67/70 (96%)	67 (100%)	0	0	100	100
44	Ll	48/51 (94%)	48 (100%)	0	0	100	100
45	Lm	50/128 (39%)	49 (98%)	1 (2%)	0	100	100
46	Lo	103/106 (97%)	101 (98%)	2 (2%)	0	100	100
47	Lp	89/92 (97%)	85 (96%)	4 (4%)	0	100	100
48	Lr	123/137 (90%)	123 (100%)	0	0	100	100
49	Lz	215/217 (99%)	210 (98%)	5 (2%)	0	100	100
All	All	7890/9103 (87%)	7776 (99%)	113 (1%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
11	LD	4	VAL

### 5.3.2 Protein sidechains [i](#)

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

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
4	A	612/704 (87%)	594 (97%)	18 (3%)	42	76
5	B	360/438 (82%)	343 (95%)	17 (5%)	26	59
6	C	162/254 (64%)	154 (95%)	8 (5%)	25	57
7	D	66/72 (92%)	61 (92%)	5 (8%)	13	36

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
8	LA	190/199 (96%)	187 (98%)	3 (2%)	62	86
9	LB	348/349 (100%)	342 (98%)	6 (2%)	60	86
10	LC	306/348 (88%)	300 (98%)	6 (2%)	55	82
11	LD	246/250 (98%)	237 (96%)	9 (4%)	34	68
12	LE	194/252 (77%)	193 (100%)	1 (0%)	88	96
13	LF	194/215 (90%)	192 (99%)	2 (1%)	76	92
14	LG	203/223 (91%)	199 (98%)	4 (2%)	55	82
15	LH	169/171 (99%)	165 (98%)	4 (2%)	49	79
16	LI	172/181 (95%)	169 (98%)	3 (2%)	60	86
17	LJ	147/149 (99%)	146 (99%)	1 (1%)	84	95
18	LL	164/177 (93%)	162 (99%)	2 (1%)	71	91
19	LM	116/161 (72%)	115 (99%)	1 (1%)	78	93
20	LN	171/172 (99%)	170 (99%)	1 (1%)	86	96
21	LO	173/174 (99%)	170 (98%)	3 (2%)	60	86
22	LP	134/163 (82%)	132 (98%)	2 (2%)	65	87
23	LQ	164/165 (99%)	162 (99%)	2 (1%)	71	91
24	LR	138/175 (79%)	132 (96%)	6 (4%)	29	62
25	LS	156/157 (99%)	153 (98%)	3 (2%)	57	84
26	LT	139/140 (99%)	134 (96%)	5 (4%)	35	69
27	LU	91/115 (79%)	87 (96%)	4 (4%)	28	61
28	LV	101/107 (94%)	101 (100%)	0	100	100
29	LW	54/126 (43%)	53 (98%)	1 (2%)	57	84
30	LX	106/133 (80%)	102 (96%)	4 (4%)	33	67
31	LY	124/135 (92%)	123 (99%)	1 (1%)	81	94
32	LZ	117/118 (99%)	116 (99%)	1 (1%)	78	93
33	La	120/121 (99%)	118 (98%)	2 (2%)	60	86
34	Lb	88/126 (70%)	87 (99%)	1 (1%)	73	92
35	Lc	83/97 (86%)	80 (96%)	3 (4%)	35	69
36	Ld	98/110 (89%)	97 (99%)	1 (1%)	76	92
37	Le	114/121 (94%)	112 (98%)	2 (2%)	59	85
38	Lf	88/89 (99%)	87 (99%)	1 (1%)	73	92

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
39	Lg	98/100 (98%)	96 (98%)	2 (2%)	55	82
40	Lh	109/110 (99%)	107 (98%)	2 (2%)	59	85
41	Li	86/89 (97%)	84 (98%)	2 (2%)	50	80
42	Lj	73/80 (91%)	73 (100%)	0	100	100
43	Lk	64/65 (98%)	63 (98%)	1 (2%)	62	86
44	Ll	47/48 (98%)	47 (100%)	0	100	100
45	Lm	48/116 (41%)	48 (100%)	0	100	100
46	Lo	93/94 (99%)	92 (99%)	1 (1%)	73	92
47	Lp	74/75 (99%)	71 (96%)	3 (4%)	30	64
48	Lr	109/121 (90%)	107 (98%)	2 (2%)	59	85
49	Lz	196/196 (100%)	188 (96%)	8 (4%)	30	64
All	All	6905/7781 (89%)	6751 (98%)	154 (2%)	54	81

All (154) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
4	A	42	GLN
4	A	199	ARG
4	A	240	ASP
4	A	254	SER
4	A	268	GLU
4	A	289	LYS
4	A	380	MET
4	A	386	LYS
4	A	388	MET
4	A	484	ASP
4	A	559	LYS
4	A	595	MET
4	A	604	THR
4	A	644	SER
4	A	652	MET
4	A	655	ARG
4	A	660	ARG
4	A	669	ARG
5	B	24	ARG
5	B	26	CYS
5	B	48	MET
5	B	67	HIS

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
5	B	95	LYS
5	B	120	ARG
5	B	131	LYS
5	B	136	CYS
5	B	157	MET
5	B	185	ASP
5	B	198	GLN
5	B	339	ASP
5	B	341	LEU
5	B	401	MET
5	B	422	MET
5	B	477	GLU
5	B	502	MET
6	C	123	ARG
6	C	156	TRP
6	C	157	LYS
6	C	200	GLU
6	C	207	MET
6	C	208	THR
6	C	209	GLU
6	C	236	SER
7	D	16	LEU
7	D	18	TYR
7	D	26	SER
7	D	74	LEU
7	D	75	ARG
8	LA	119	LYS
8	LA	142	GLU
8	LA	208	GLU
9	LB	30	LYS
9	LB	84	MET
9	LB	95	THR
9	LB	228	TYR
9	LB	329	ASP
9	LB	362	LYS
10	LC	122	TYR
10	LC	156	ASP
10	LC	163	LYS
10	LC	300	ARG
10	LC	352	ASP
10	LC	368	LYS
11	LD	3	PHE

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
11	LD	85	LYS
11	LD	109	LEU
11	LD	136	ASP
11	LD	186	GLU
11	LD	258	LYS
11	LD	259	LYS
11	LD	262	LYS
11	LD	293	ARG
12	LE	56	ARG
13	LF	32	ARG
13	LF	134	ARG
14	LG	111	LYS
14	LG	175	ARG
14	LG	259	LYS
14	LG	265	LEU
15	LH	11	ASP
15	LH	17	ASP
15	LH	50	LYS
15	LH	58	ASP
16	LI	21	ARG
16	LI	44	ASP
16	LI	136	MET
17	LJ	95	ARG
18	LL	21	ARG
18	LL	67	HIS
19	LM	108	ASP
20	LN	188	ARG
21	LO	53	LYS
21	LO	117	ARG
21	LO	169	ARG
22	LP	57	CYS
22	LP	110	ASP
23	LQ	14	ARG
23	LQ	187	LYS
24	LR	47	ASP
24	LR	114	LYS
24	LR	144	LYS
24	LR	148	ASP
24	LR	149	LYS
24	LR	153	LYS
25	LS	21	LYS
25	LS	31	ARG

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
25	LS	48	VAL
26	LT	14	MET
26	LT	17	ARG
26	LT	52	MET
26	LT	99	SER
26	LT	122	LYS
27	LU	30	GLU
27	LU	80	LYS
27	LU	97	ARG
27	LU	98	ASP
29	LW	42	SER
30	LX	62	ARG
30	LX	67	ARG
30	LX	118	ASP
30	LX	120	ASP
31	LY	74	TYR
32	LZ	31	ASP
33	La	92	LYS
33	La	102	ASP
34	Lb	63	LYS
35	Lc	37	MET
35	Lc	40	GLN
35	Lc	106	ARG
36	Ld	59	THR
37	Le	32	LYS
37	Le	83	LYS
38	Lf	104	MET
39	Lg	73	HIS
39	Lg	82	MET
40	Lh	87	LYS
40	Lh	112	ARG
41	Li	58	MET
41	Li	86	LYS
43	Lk	10	ASP
46	Lo	7	THR
47	Lp	25	MET
47	Lp	32	SER
47	Lp	50	ARG
48	Lr	113	ARG
48	Lr	122	LYS
49	Lz	7	ARG
49	Lz	11	TYR

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Mol	Chain	Res	Type
49	Lz	24	LYS
49	Lz	28	PHE
49	Lz	101	LYS
49	Lz	144	MET
49	Lz	159	MET
49	Lz	182	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
4	A	668	HIS
18	LL	67	HIS

### 5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	5	3451/5070 (68%)	365 (10%)	5 (0%)
2	7	119/121 (98%)	6 (5%)	0
3	8	145/157 (92%)	15 (10%)	0
All	All	3715/5348 (69%)	386 (10%)	5 (0%)

All (386) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	5	2	G
1	5	39	A
1	5	42	A
1	5	48	G
1	5	59	A
1	5	64	A
1	5	65	A
1	5	73	A
1	5	91	G
1	5	98	A
1	5	110	C
1	5	119	G
1	5	120	A
1	5	133	C
1	5	134	G
1	5	135	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	5	136	C
1	5	141	C
1	5	142	G
1	5	143	C
1	5	159	C
1	5	169	G
1	5	178	C
1	5	179	G
1	5	200	U
1	5	209	U
1	5	218	A
1	5	219	G
1	5	233	U
1	5	234	G
1	5	253	G
1	5	256	G
1	5	259	C
1	5	266	C
1	5	280	G
1	5	297	U
1	5	316	U
1	5	340	C
1	5	387	G
1	5	409	G
1	5	410	A
1	5	412	G
1	5	449	C
1	5	450	G
1	5	452	A
1	5	453	G
1	5	454	U
1	5	467	U
1	5	662	C
1	5	666	G
1	5	667	A
1	5	669	C
1	5	686	A
1	5	687	U
1	5	697	G
1	5	704	C
1	5	731	G
1	5	738	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	5	739	G
1	5	740	G
1	5	759	G
1	5	914	U
1	5	915	A
1	5	917	A
1	5	925	C
1	5	926	G
1	5	932	A
1	5	933	G
1	5	936	C
1	5	943	A
1	5	944	A
1	5	945	U
1	5	956	A
1	5	959	G
1	5	960	A
1	5	961	G
1	5	962	C
1	5	965	G
1	5	967	C
1	5	968	C
1	5	969	C
1	5	982	U
1	5	1070	G
1	5	1072	C
1	5	1078	A
1	5	1101	C
1	5	1170	G
1	5	1182	C
1	5	1183	C
1	5	1199	G
1	5	1211	G
1	5	1215	C
1	5	1241	C
1	5	1266	G
1	5	1269	G
1	5	1270	A
1	5	1272	C
1	5	1273	G
1	5	1284	G
1	5	1287	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	5	1326	A
1	5	1354	A
1	5	1359	G
1	5	1366	G
1	5	1387	A
1	5	1394	G
1	5	1397	A
1	5	1415	G
1	5	1438	U
1	5	1439	C
1	5	1443	A
1	5	1444	G
1	5	1498	G
1	5	1502	G
1	5	1534	A
1	5	1547	A
1	5	1578	U
1	5	1591	U
1	5	1596	U
1	5	1614	C
1	5	1624	G
1	5	1625	G
1	5	1631	A
1	5	1633	G
1	5	1634	A
1	5	1638	A
1	5	1640	C
1	5	1654	G
1	5	1661	C
1	5	1676	C
1	5	1677	U
1	5	1697	G
1	5	1699	A
1	5	1701	A
1	5	1734	G
1	5	1742	A
1	5	1755	C
1	5	1758	G
1	5	1765	A
1	5	1766	A
1	5	1767	A
1	5	1768	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	5	1787	A
1	5	1804	A
1	5	1821	G
1	5	1836	G
1	5	1837	A
1	5	1842	G
1	5	1855	G
1	5	1869	G
1	5	1897	A
1	5	1918	U
1	5	1921	C
1	5	1922	G
1	5	1925	G
1	5	1931	C
1	5	1932	A
1	5	1940	G
1	5	1941	A
1	5	1948	G
1	5	1961	G
1	5	2026	A
1	5	2046	G
1	5	2048	U
1	5	2055	G
1	5	2056	G
1	5	2069	A
1	5	2084	C
1	5	2092	G
1	5	2093	A
1	5	2096	G
1	5	2098	G
1	5	2103	G
1	5	2106	G
1	5	2107	C
1	5	2261	G
1	5	2300	A
1	5	2301	G
1	5	2313	A
1	5	2348	G
1	5	2351	C
1	5	2360	A
1	5	2395	A
1	5	2397	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	5	2398	U
1	5	2417	A
1	5	2421	G
1	5	2470	C
1	5	2471	G
1	5	2474	G
1	5	2475	G
1	5	2478	C
1	5	2504	C
1	5	2505	C
1	5	2506	G
1	5	2513	A
1	5	2554	U
1	5	2583	C
1	5	2587	A
1	5	2589	C
1	5	2601	A
1	5	2627	C
1	5	2653	C
1	5	2660	A
1	5	2669	C
1	5	2687	U
1	5	2694	G
1	5	2695	A
1	5	2696	A
1	5	2708	U
1	5	2711	G
1	5	2743	A
1	5	2761	U
1	5	2764	A
1	5	2769	U
1	5	2788	U
1	5	2790	U
1	5	2814	C
1	5	2826	U
1	5	2827	G
1	5	2829	U
1	5	2855	G
1	5	3597	G
1	5	3605	C
1	5	3615	G
1	5	3618	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	5	3626	G
1	5	3635	A
1	5	3653	A
1	5	3662	A
1	5	3673	C
1	5	3709	U
1	5	3710	G
1	5	3753	G
1	5	3774	A
1	5	3776	G
1	5	3777	G
1	5	3783	A
1	5	3784	A
1	5	3811	G
1	5	3814	U
1	5	3817	A
1	5	3819	G
1	5	3838	U
1	5	3840	U
1	5	3877	A
1	5	3878	C
1	5	3879	G
1	5	3897	G
1	5	3901	A
1	5	3906	A
1	5	3907	G
1	5	3908	A
1	5	3915	U
1	5	3939	G
1	5	3951	G
1	5	3956	G
1	5	3957	U
1	5	3958	G
1	5	3961	G
1	5	3965	A
1	5	3966	A
1	5	3967	G
1	5	3968	U
1	5	3973	G
1	5	3974	G
1	5	3975	C
1	5	4040	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	5	4045	G
1	5	4046	A
1	5	4047	A
1	5	4048	A
1	5	4049	U
1	5	4050	A
1	5	4051	C
1	5	4061	G
1	5	4076	G
1	5	4084	G
1	5	4096	C
1	5	4098	A
1	5	4119	C
1	5	4122	G
1	5	4163	U
1	5	4170	A
1	5	4183	G
1	5	4184	G
1	5	4191	G
1	5	4203	A
1	5	4229	U
1	5	4233	A
1	5	4251	A
1	5	4254	G
1	5	4266	G
1	5	4268	A
1	5	4273	A
1	5	4281	A
1	5	4291	G
1	5	4305	G
1	5	4330	G
1	5	4339	A
1	5	4373	G
1	5	4377	G
1	5	4378	A
1	5	4387	C
1	5	4394	A
1	5	4422	A
1	5	4448	G
1	5	4452	U
1	5	4464	A
1	5	4465	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	5	4512	U
1	5	4513	A
1	5	4524	G
1	5	4548	A
1	5	4549	G
1	5	4560	C
1	5	4567	G
1	5	4584	A
1	5	4590	A
1	5	4636	U
1	5	4637	G
1	5	4670	C
1	5	4672	A
1	5	4700	A
1	5	4708	A
1	5	4709	U
1	5	4730	C
1	5	4732	G
1	5	4734	A
1	5	4741	C
1	5	4742	G
1	5	4743	G
1	5	4745	G
1	5	4750	G
1	5	4754	G
1	5	4757	C
1	5	4759	C
1	5	4761	G
1	5	4765	G
1	5	4771	C
1	5	4772	C
1	5	4870	G
1	5	4871	C
1	5	4882	U
1	5	4883	C
1	5	4895	C
1	5	4900	C
1	5	4901	G
1	5	4910	A
1	5	4912	G
1	5	4913	G
1	5	4914	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	5	4938	A
1	5	4943	A
1	5	4976	U
1	5	4988	U
1	5	4990	C
1	5	4991	U
1	5	4994	G
1	5	5017	G
1	5	5034	A
1	5	5041	G
1	5	5050	C
1	5	5062	G
1	5	5069	U
2	7	7	G
2	7	53	U
2	7	54	A
2	7	64	G
2	7	110	G
2	7	120	U
3	8	23	C
3	8	34	U
3	8	35	C
3	8	51	U
3	8	59	A
3	8	62	A
3	8	63	U
3	8	80	A
3	8	87	G
3	8	94	G
3	8	103	A
3	8	105	C
3	8	109	C
3	8	110	U
3	8	114	G

All (5) RNA pucker outliers are listed below:

<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	5	1590	C
1	5	1633	G
1	5	1757	U
1	5	4095	G

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Mol	Chain	Res	Type
1	5	4699	U

#### 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 225 ligands modelled in this entry, 225 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.

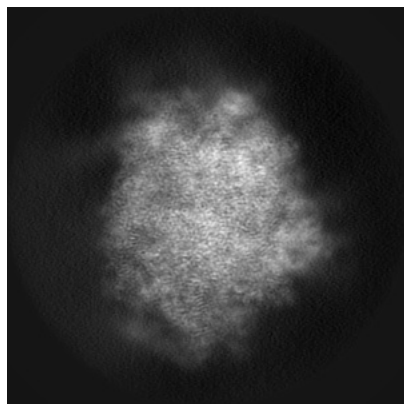
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-16905. These allow visual inspection of the internal detail of the map and identification of artifacts.

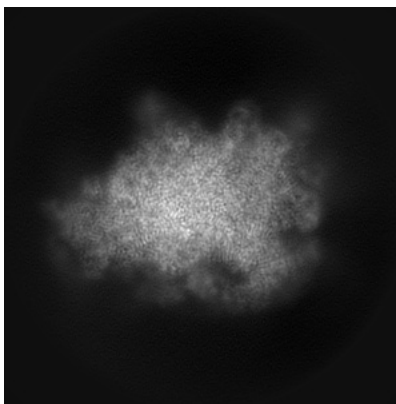
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

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

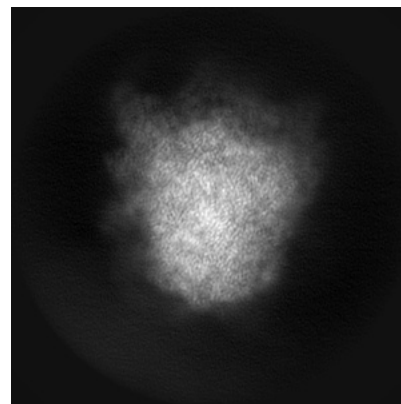
#### 6.1.1 Primary map



X

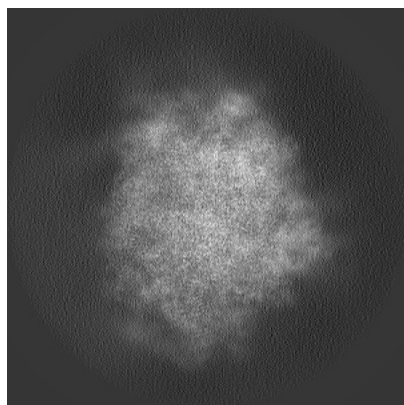


Y

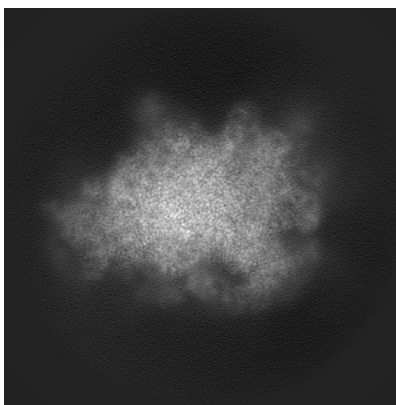


Z

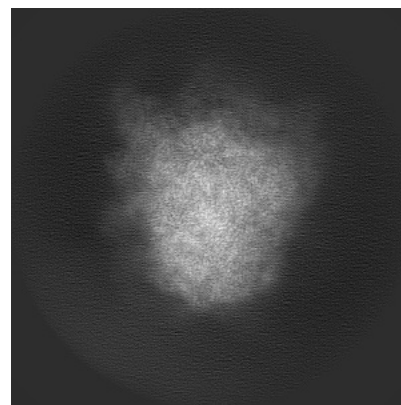
#### 6.1.2 Raw map



X



Y

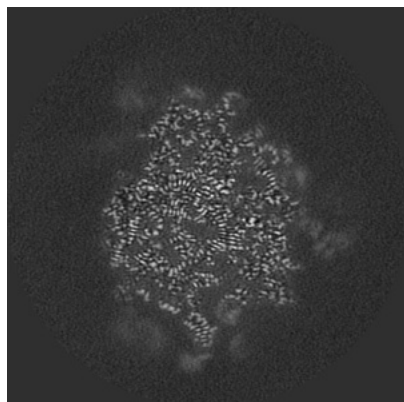


Z

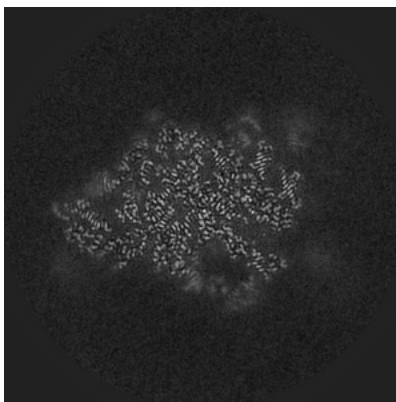
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

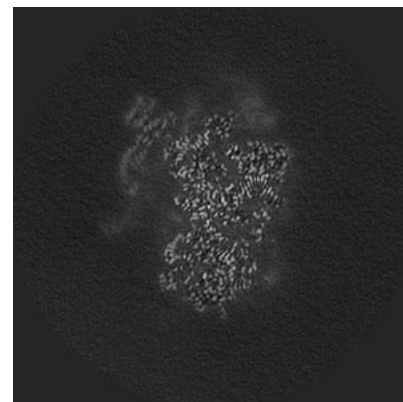
### 6.2.1 Primary map



X Index: 225

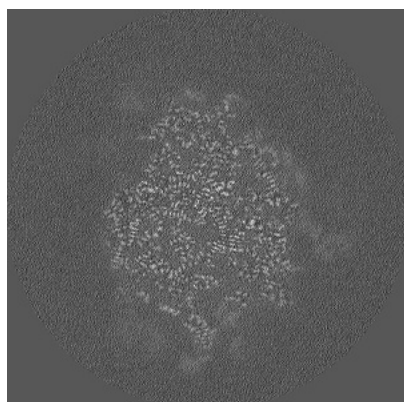


Y Index: 225

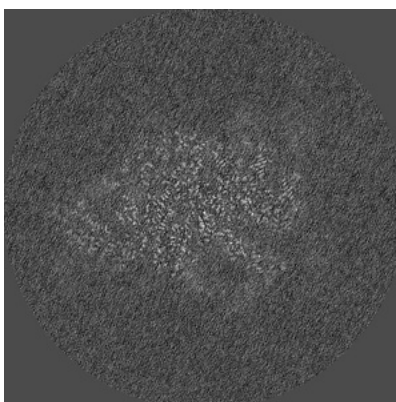


Z Index: 225

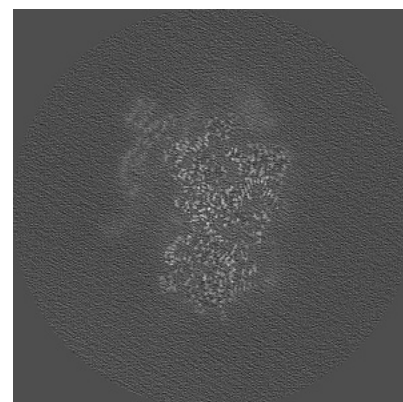
### 6.2.2 Raw map



X Index: 225



Y Index: 225

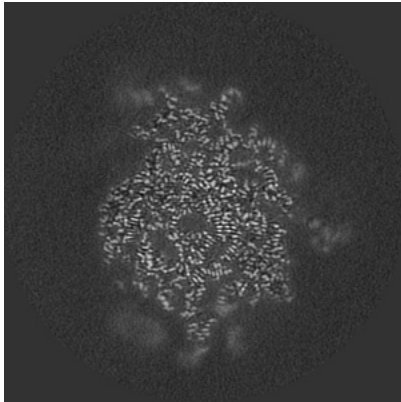


Z Index: 225

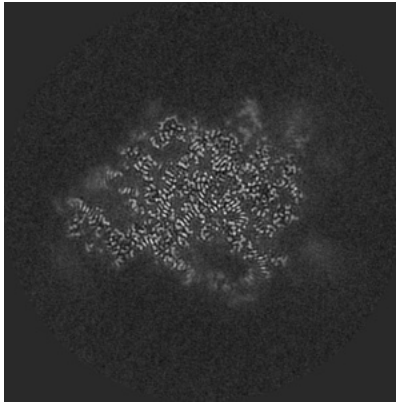
The images above show central slices of the map in three orthogonal directions.

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

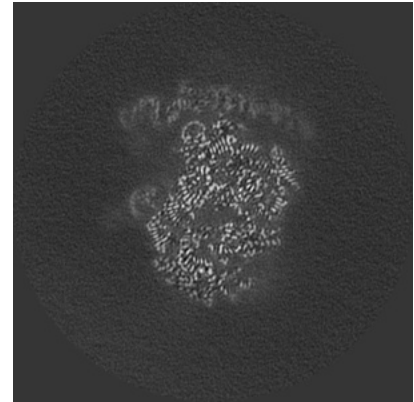
### 6.3.1 Primary map



X Index: 221

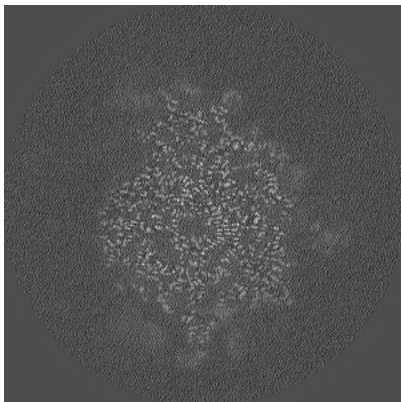


Y Index: 230

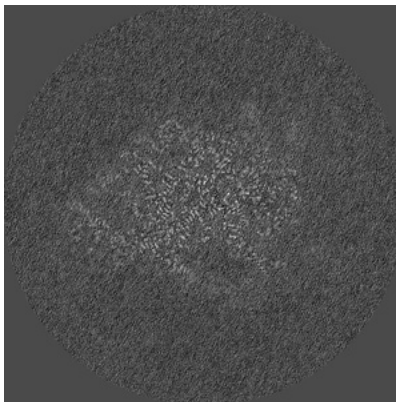


Z Index: 205

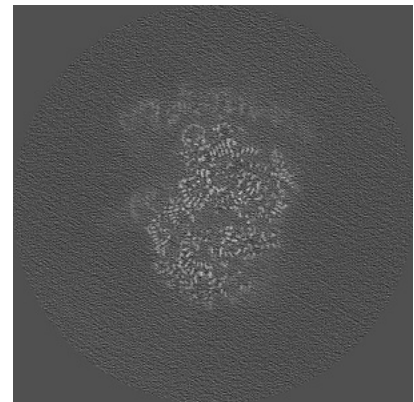
### 6.3.2 Raw map



X Index: 222



Y Index: 229

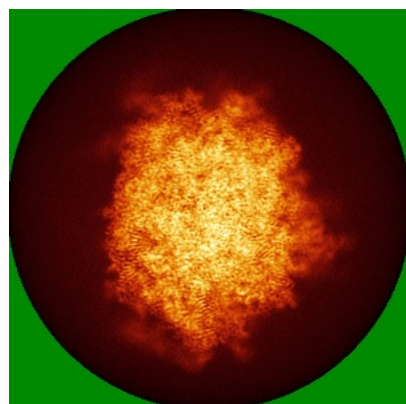


Z Index: 205

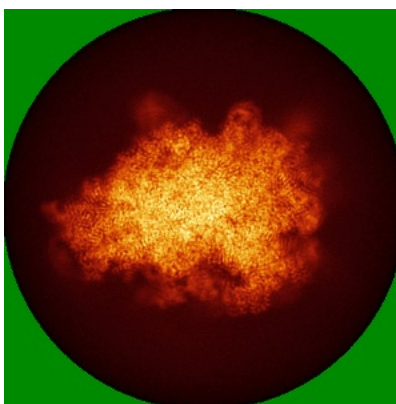
The images above show the largest variance slices of the map in three orthogonal directions.

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

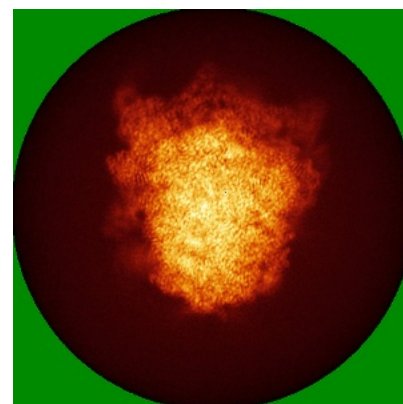
### 6.4.1 Primary map



X

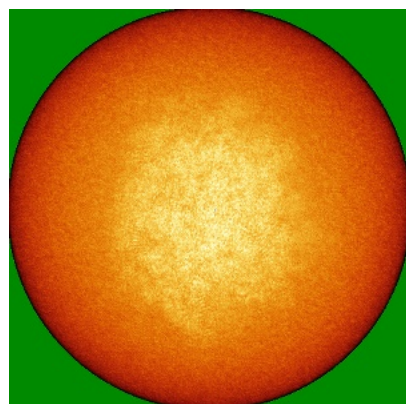


Y

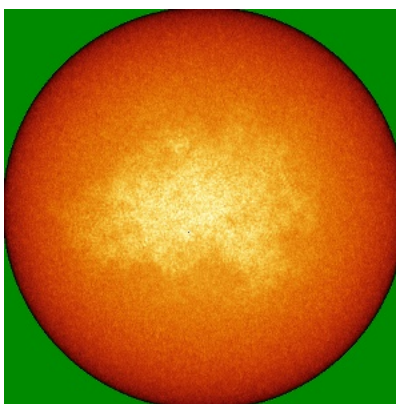


Z

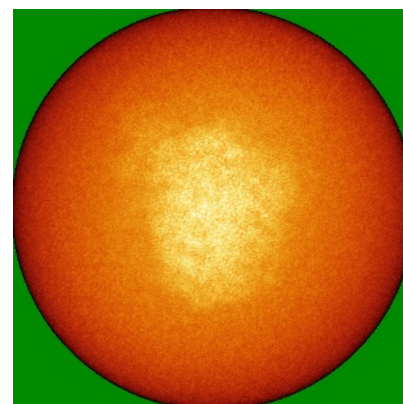
### 6.4.2 Raw map



X



Y



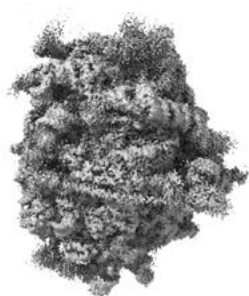
Z

The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

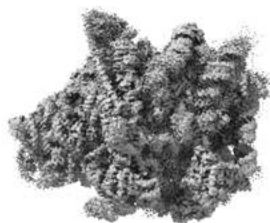


## 6.5 Orthogonal surface views [i](#)

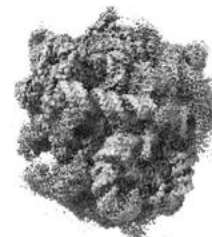
### 6.5.1 Primary map



X



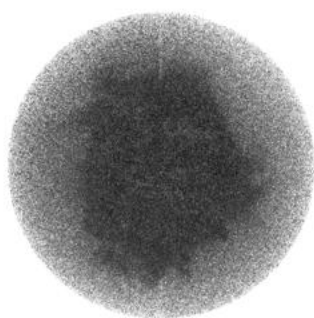
Y



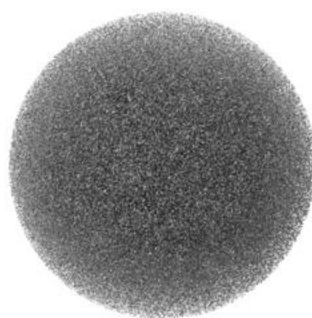
Z

The images above show the 3D surface view of the map at the recommended contour level 0.01. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

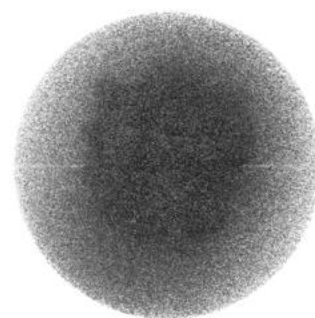
### 6.5.2 Raw map



X



Y



Z

These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

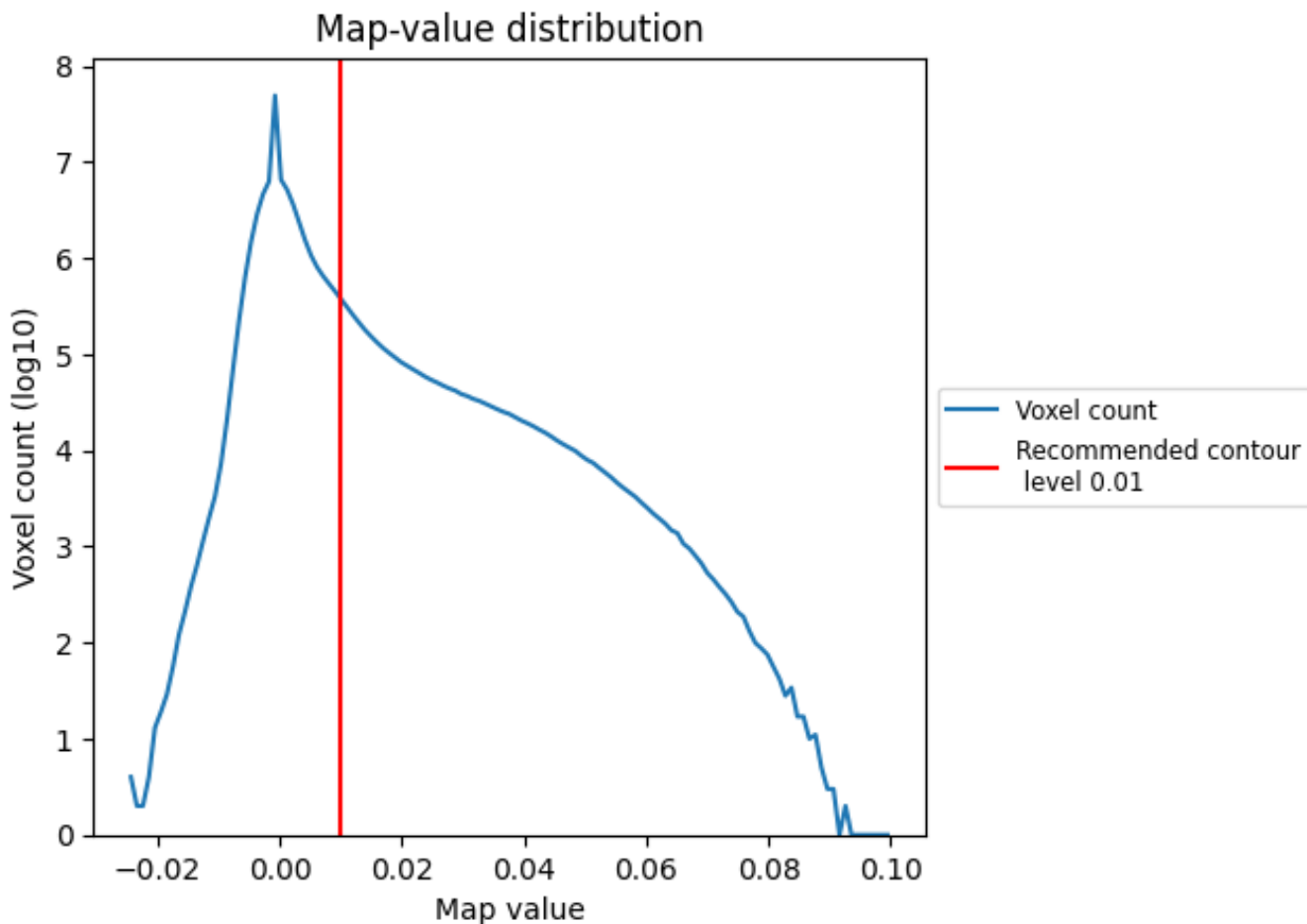
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

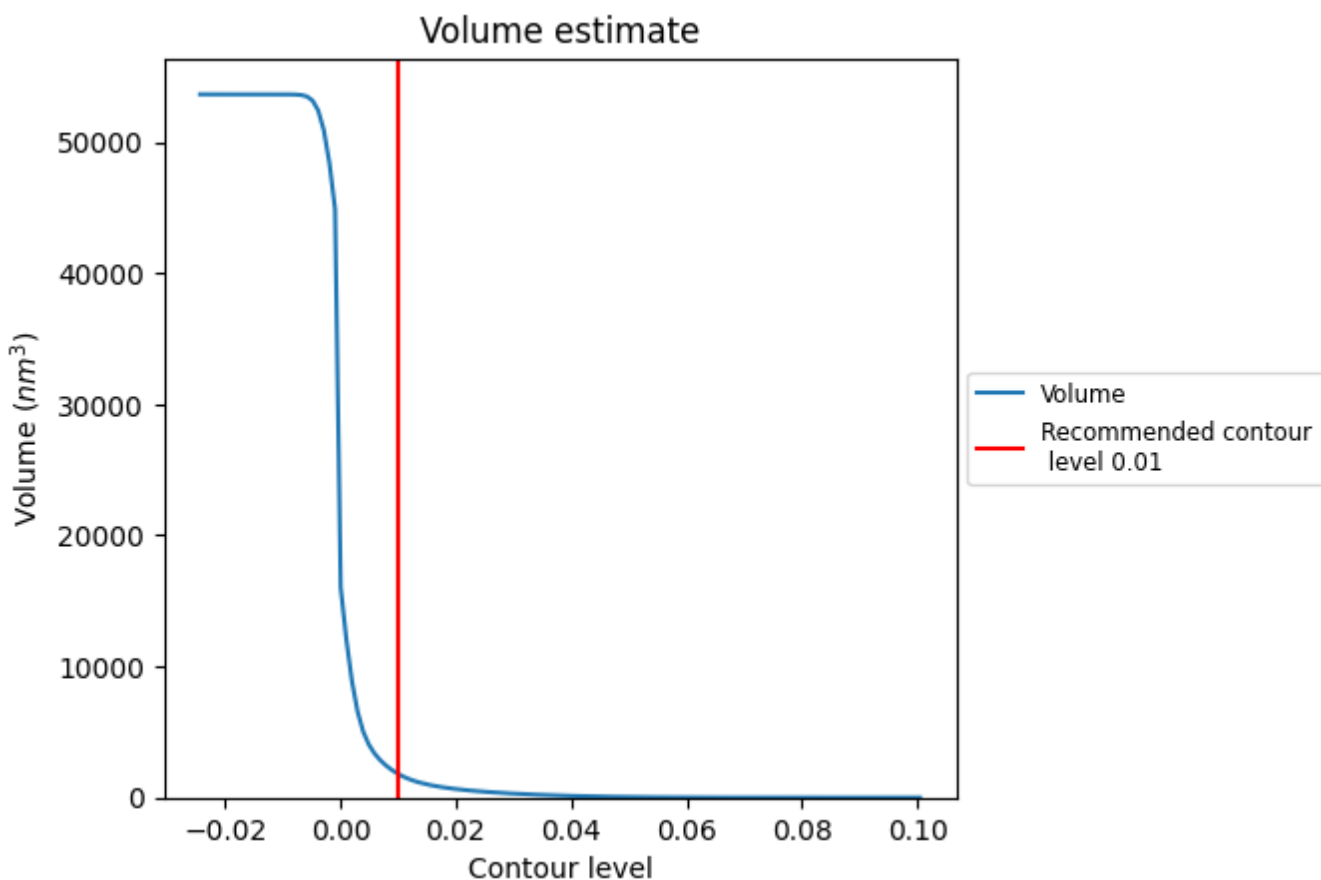
This section contains the results of statistical analysis of the map.

### 7.1 Map-value distribution [i](#)



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

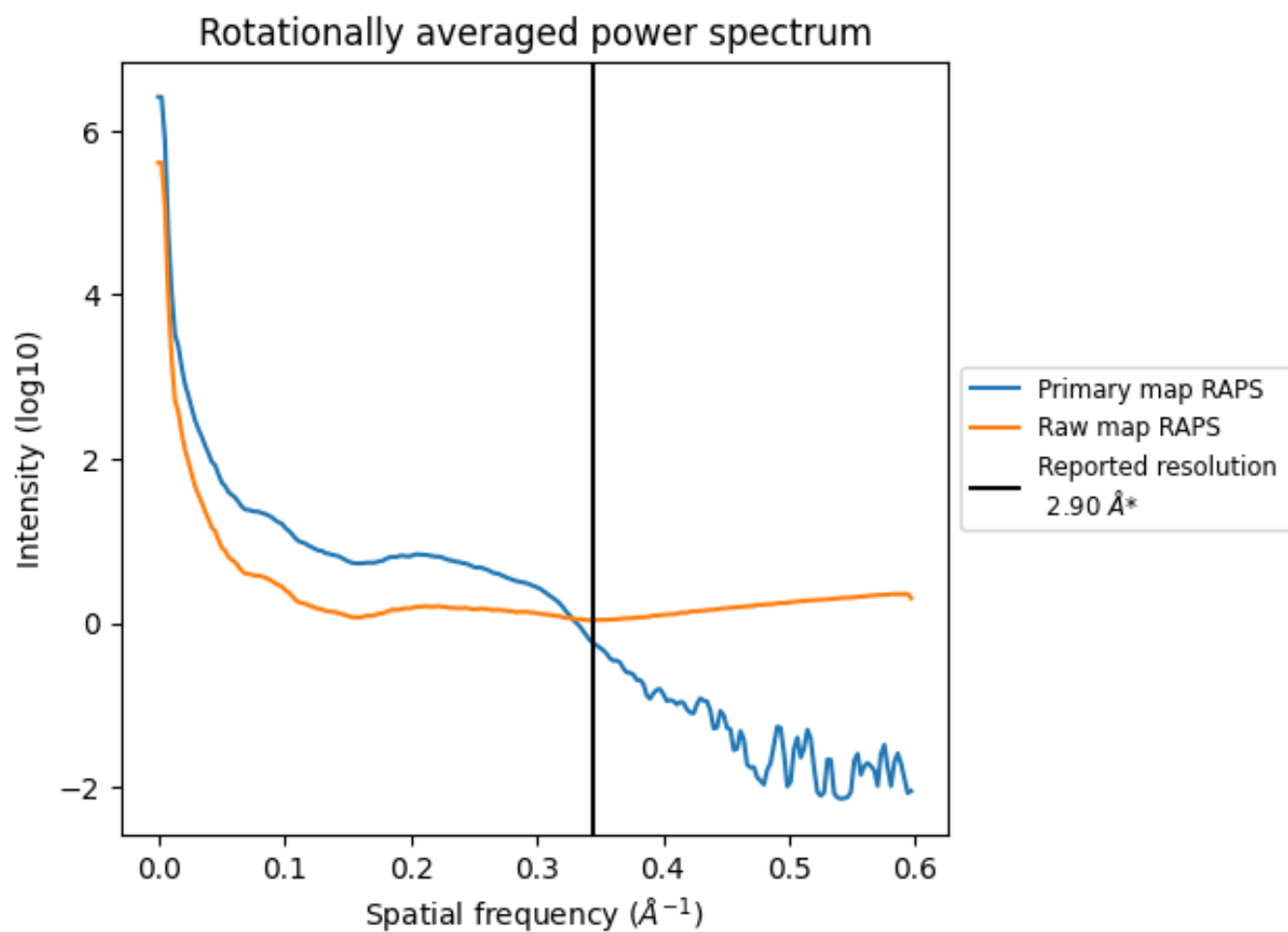
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1811 nm<sup>3</sup>; this corresponds to an approximate mass of 1636 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

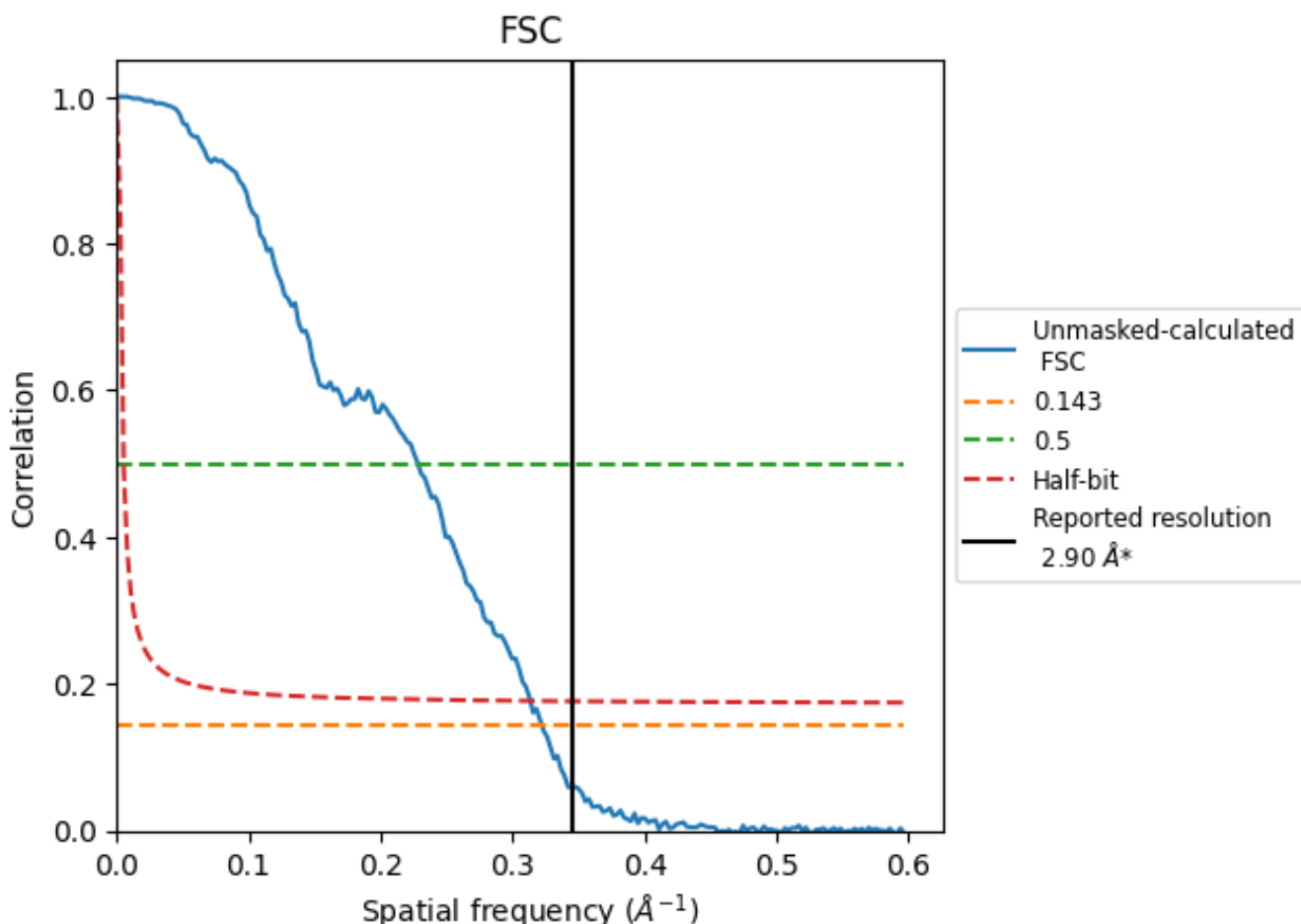


\*Reported resolution corresponds to spatial frequency of  $0.345 \text{ \AA}^{-1}$

## 8 Fourier-Shell correlation [i](#)

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

### 8.1 FSC [i](#)



\*Reported resolution corresponds to spatial frequency of 0.345 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

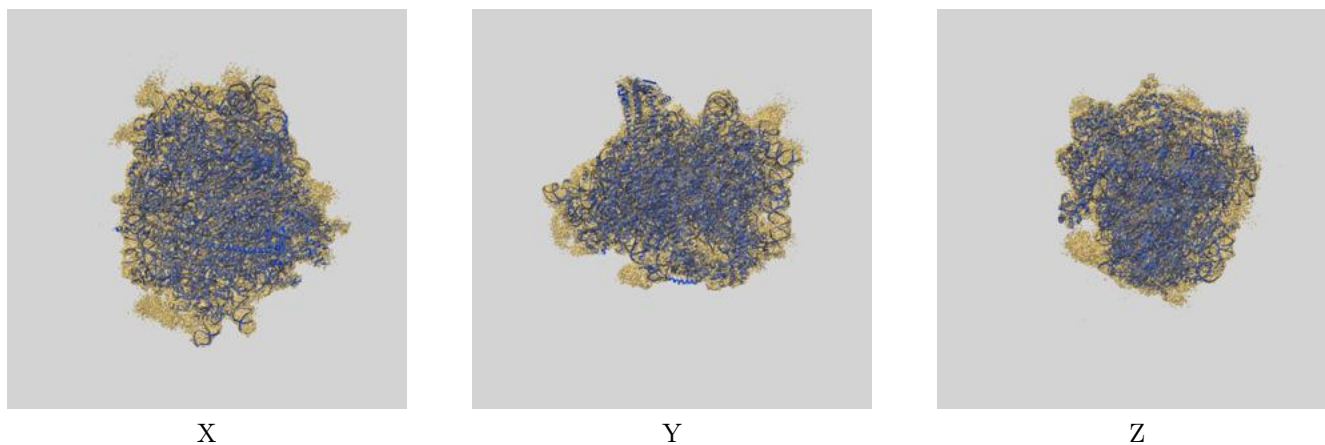
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.90	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	3.10	4.38	3.19

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

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

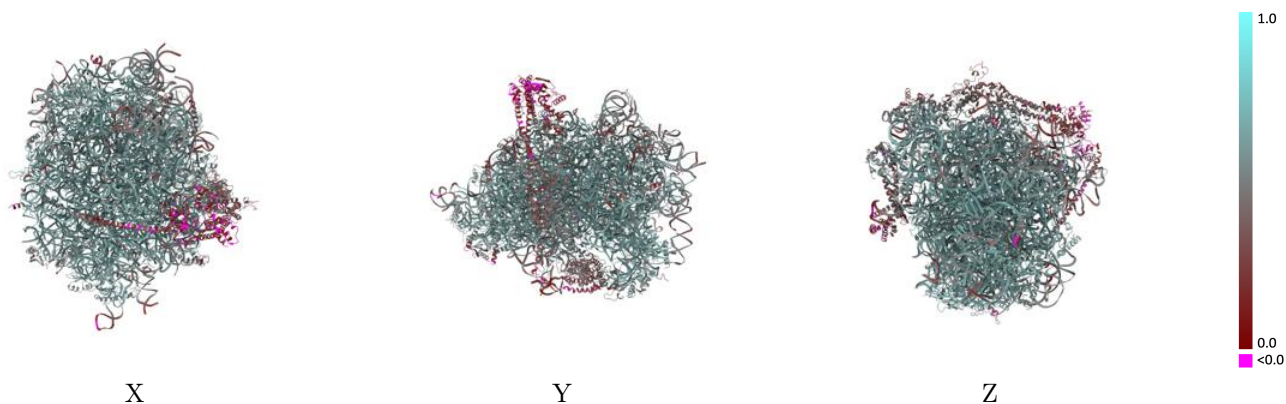
This section contains information regarding the fit between EMDB map EMD-16905 and PDB model 8OJ5. Per-residue inclusion information can be found in section 3 on page 13.

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



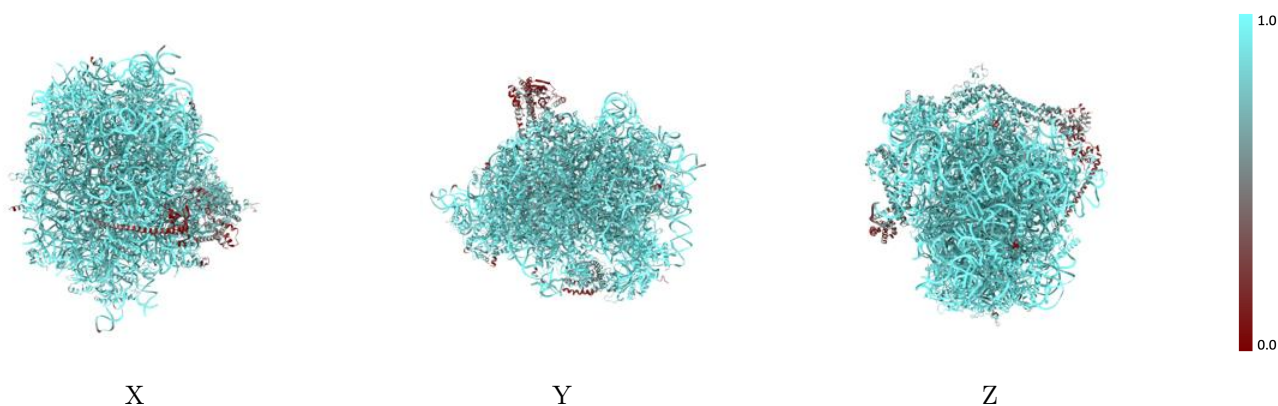
The images above show the 3D surface view of the map at the recommended contour level 0.01 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

## 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.

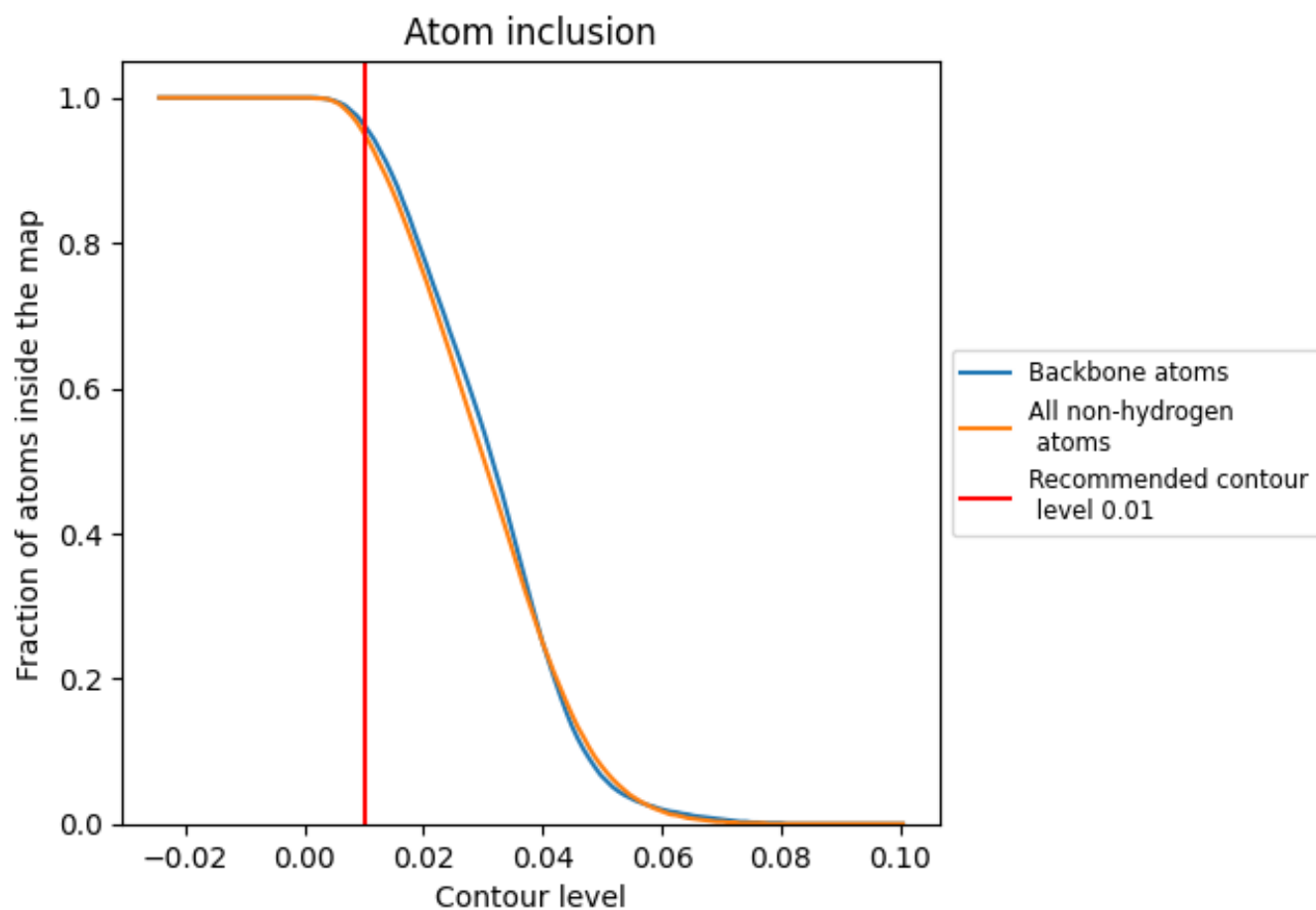
## 9.3 Atom inclusion mapped to coordinate model [i](#)



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 (0.01).









































































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 96% of all backbone atoms, 95% 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 (0.01) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9510	 0.5700
5	 0.9870	 0.5890
7	 0.9950	 0.6310
8	 0.9970	 0.6240
A	 0.7360	 0.3690
B	 0.5800	 0.2310
C	 0.4020	 0.2010
D	 0.1360	 0.0880
LA	 0.9910	 0.6390
LB	 0.9580	 0.6120
LC	 0.9690	 0.6030
LD	 0.9620	 0.5810
LE	 0.9730	 0.5660
LF	 0.9910	 0.6230
LG	 0.8990	 0.5490
LH	 0.9680	 0.6000
LI	 0.9870	 0.6210
LJ	 0.9050	 0.5320
LL	 0.9660	 0.5840
LM	 0.9830	 0.6100
LN	 0.9980	 0.6460
LO	 0.9810	 0.6220
LP	 0.9900	 0.6290
LQ	 0.9930	 0.6280
LR	 0.9560	 0.5870
LS	 0.9910	 0.6320
LT	 0.9910	 0.6100
LU	 0.8870	 0.5050
LV	 0.9770	 0.6040
LW	 0.9800	 0.6040
LX	 0.9810	 0.6130
LY	 0.9640	 0.6030
LZ	 0.9640	 0.5830
La	 0.9900	 0.6300
Lb	 0.9090	 0.5250



*Continued on next page...*

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Chain	Atom inclusion	Q-score
Lc	 0.9290	 0.5590
Ld	 0.9700	 0.5880
Le	 0.9940	 0.6350
Lf	 0.9950	 0.6440
Lg	 0.9430	 0.5890
Lh	 0.9690	 0.5970
Li	 0.9640	 0.5790
Lj	 0.9970	 0.6500
Lk	 0.8830	 0.5560
Ll	 0.9950	 0.6000
Lm	 0.9660	 0.6070
Lo	 0.9760	 0.6120
Lp	 0.9740	 0.6070
Lr	 0.9830	 0.6070
Lz	 0.8450	 0.4080