



## Full wwPDB EM Validation Report ⓘ

Jan 18, 2024 – 05:04 pm GMT

PDB ID : 8RJC  
EMDB ID : EMD-19197  
Title : Structure of the rabbit 80S ribosome stalled on a 2-TMD rhodopsin intermediate in complex with Sec61-TRAP, open conformation 1  
Authors : Lewis, A.J.O.; Hegde, R.S.  
Deposited on : 2023-12-20  
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

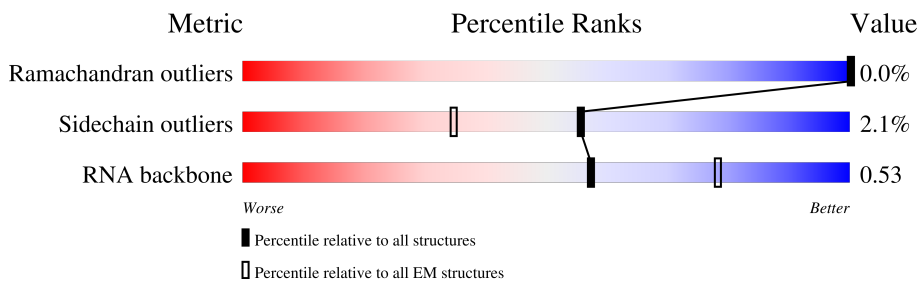
# 1 Overall quality at a glance i

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.



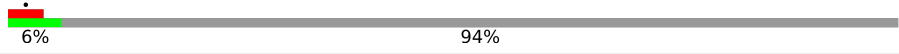
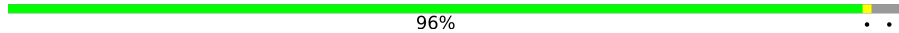


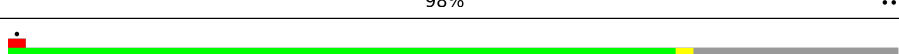
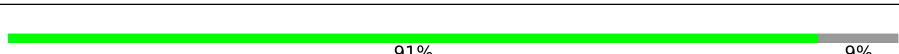

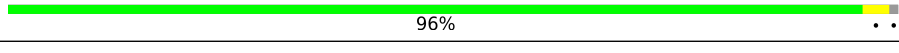
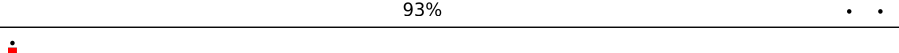
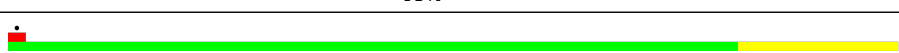
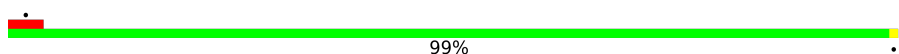
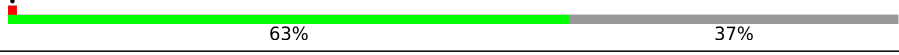
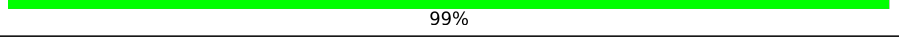
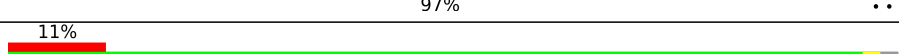
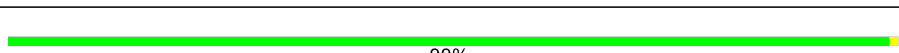

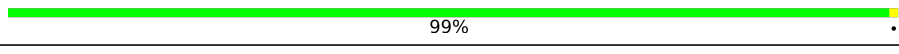
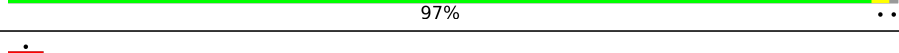






Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

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	1	476	
2	2	96	
3	3	68	
4	4	66	
5	5	286	
6	6	183	
7	7	185	
8	8	173	

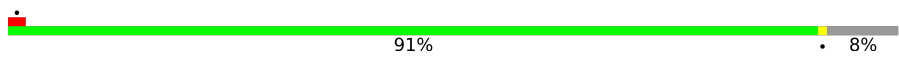
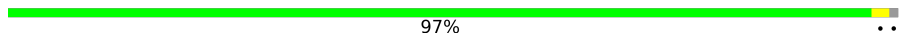
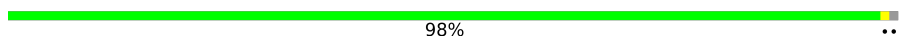







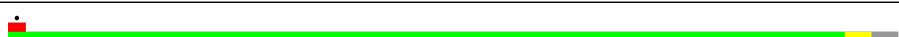


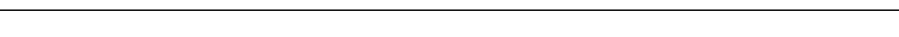
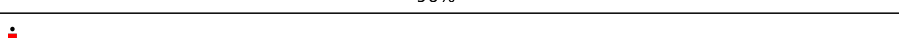
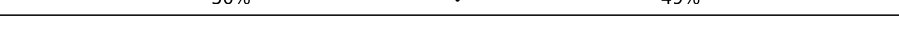
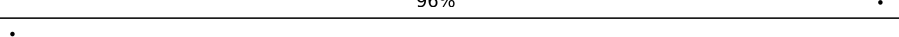
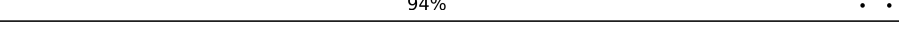
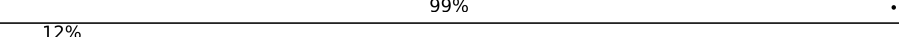
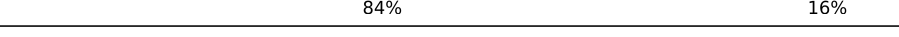

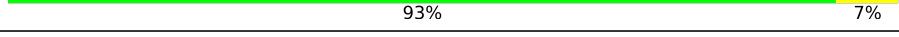

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Mol	Chain	Length	Quality of chain
9	9	593	 6% 94%
10	A	257	 96%
11	B	229	 8% 24% 74%
12	C	425	 84% 15%
13	D	297	 98%
14	E	291	 75% 23%
15	F	247	 91% 9%
16	G	319	 71% 27%
17	H	192	 96%
18	I	214	 93%
19	J	178	 93%
20	K	3543	 82% 18%
21	L	211	 99%
22	M	218	 63% 37%
23	N	204	 99%
24	O	203	 97%
25	P	184	 11% 96%
26	Q	187	 99%
27	R	196	 77% 21%
28	S	176	 99%
29	T	160	 97%
30	U	128	 75% 5% 20%
31	V	140	 93% 6%
32	W	157	 40% 60%
33	X	156	74% 24%

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Mol	Chain	Length	Quality of chain
34	Y	145	 91% 8%
35	Z	136	 97%
36	a	148	 98%
37	b	226	 46% 54%
38	c	115	 83% 15%
39	d	125	 83% 14%
40	e	135	 94% 5%
41	f	110	 95%
42	g	116	 97%
43	h	123	 98%
44	i	105	 94%
45	j	97	 89% 11%
46	k	70	 94%
47	l	51	 96%
48	m	102	 50% 49%
49	n	25	 96%
50	o	106	 94%
51	p	92	 99%
52	q	76	 12% 84% 16%
53	r	137	 88% 9%
54	u	120	 93% 7%
55	v	156	 85% 14%
56	w	403	 97%

## 2 Entry composition [i](#)

There are 58 unique types of molecules in this entry. The entry contains 255550 atoms, of which 108756 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 Protein transport protein Sec61 subunit alpha isoform 1.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
1	1	461	7275	2347	3700	576	629	23	0	0

- Molecule 2 is a protein called Protein transport protein Sec61 subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
2	2	32	524	171	273	40	38	2	0	0

- Molecule 3 is a protein called Protein transport protein Sec61 subunit gamma.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
3	3	66	1105	351	571	92	86	5	0	0

- Molecule 4 is a protein called Stress-associated endoplasmic reticulum protein.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
4	4	31	504	145	260	55	43	1	0	0

- Molecule 5 is a protein called Translocon-associated protein subunit alpha.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
5	5	178	2813	919	1390	231	269	4	0	0

- Molecule 6 is a protein called Translocon-associated protein subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
6	6	162	2507	813	1244	212	236	2	0	0

- Molecule 7 is a protein called Translocon-associated protein subunit gamma.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
7	7	179	2942	947	1490	239	263	3	0	0

- Molecule 8 is a protein called Translocon-associated protein subunit delta.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
8	8	150	2335	755	1149	199	229	3	0	0

- Molecule 9 is a protein called Calnexin.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
9	9	38	610	206	309	43	50	2	0	0

- Molecule 10 is a protein called Ribosomal protein L8.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
10	A	248	3892	1189	1994	389	314	6	0	0

- Molecule 11 is a protein called Nascent chain.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
11	B	59	856	283	424	67	80	2	0	0

- Molecule 12 is a protein called Large ribosomal subunit protein uL4.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
12	C	362	5937	1812	3054	577	480	14	0	0

- Molecule 13 is a protein called Ribosomal\_L18\_c domain-containing protein.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
13	D	293	4816	1512	2425	438	427	14	0	0

- Molecule 14 is a protein called 60S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
14	E	223	3754	1154	1963	341	293	3	0	0

- Molecule 15 is a protein called Ribosomal Protein uL30.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
15	F	225	3872	1205	1997	358	303	9	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F	61	ARG	GLY	conflict	UNP G1TUB1
F	93	ARG	GLY	conflict	UNP G1TUB1
F	131	MET	VAL	conflict	UNP G1TUB1
F	153	ILE	VAL	conflict	UNP G1TUB1

- Molecule 16 is a protein called 60S ribosomal protein L7a.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
16	G	233	3908	1199	2029	361	315	4	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
G	244	GLY	CYS	conflict	UNP G1STW0

- Molecule 17 is a protein called 60S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
17	H	190	3114	954	1598	284	272	6	0	0

- Molecule 18 is a protein called 60S ribosomal protein L10.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
18	I	205	3380	1056	1716	321	274	13	0	0

- Molecule 19 is a protein called 60S ribosomal protein L11.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
19	J	170	2763	861	1401	254	241	6	0	0

- Molecule 20 is a RNA chain called 28S rRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	P		
20	K	3543	114335	33833	38363	13910	24686	3543	0	0

- Molecule 21 is a protein called 60S ribosomal protein L13.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
21	L	210	3525	1065	1823	354	279	4	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
L	74	ARG	HIS	conflict	UNP G1TKB3
L	190	ARG	HIS	conflict	UNP G1TKB3

- Molecule 22 is a protein called 60S ribosomal protein L14.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
22	M	138	2349	727	1212	221	182	7	0	0

- Molecule 23 is a protein called Ribosomal protein L15.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
23	N	203	3454	1072	1753	359	266	4	0	0

- Molecule 24 is a protein called 60S ribosomal protein L13.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
24	O	199	3410	1051	1780	319	255	5	0	0

- Molecule 25 is a protein called uL22.



Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
25	P	181	3012	924	1542	282	254	10	0	0

- Molecule 26 is a protein called Ribosomal protein L18.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
26	Q	187	3153	946	1638	315	250	4	0	0

There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
Q	4	ASP	ASN	conflict	UNP G1TFE0
Q	14	ARG	TRP	conflict	UNP G1TFE0
Q	53	MET	LEU	conflict	UNP G1TFE0
Q	58	ARG	TRP	conflict	UNP G1TFE0
Q	75	ARG	GLN	conflict	UNP G1TFE0
Q	80	ALA	PRO	conflict	UNP G1TFE0
Q	86	VAL	ILE	conflict	UNP G1TFE0
Q	104	ARG	HIS	conflict	UNP G1TFE0
Q	110	ARG	CYS	conflict	UNP G1TFE0
Q	137	VAL	GLY	conflict	UNP G1TFE0
Q	157	GLY	ARG	conflict	UNP G1TFE0
Q	181	ARG	TRP	conflict	UNP G1TFE0

- Molecule 27 is a protein called Ribosomal protein L19.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
27	R	155	2730	808	1436	278	199	9	0	0

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
R	38	ARG	CYS	conflict	UNP G1TJR3
R	64	ARG	GLN	conflict	UNP G1TJR3
R	94	THR	LYS	conflict	UNP G1TJR3

- Molecule 28 is a protein called 60S ribosomal protein L18a.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
28	S	176	2972	930	1510	285	236	11	0	0

- Molecule 29 is a protein called 60S ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
29	T	159	2667	823	1369	252	217	6	0	0

- Molecule 30 is a protein called Ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
30	U	102	1693	534	859	146	152	2	0	0

There are 11 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
U	18	LEU	VAL	conflict	UNP G1TSG1
U	32	GLY	ARG	conflict	UNP G1TSG1
U	36	ALA	GLU	conflict	UNP G1TSG1
U	39	PHE	SER	conflict	UNP G1TSG1
U	54	GLY	ARG	conflict	UNP G1TSG1
U	60	VAL	ALA	conflict	UNP G1TSG1
U	62	SER	THR	conflict	UNP G1TSG1
U	63	LEU	ILE	conflict	UNP G1TSG1
U	97	ARG	HIS	conflict	UNP G1TSG1
U	106	THR	SER	conflict	UNP G1TSG1
U	126	GLU	ASP	conflict	UNP G1TSG1

- Molecule 31 is a protein called Ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
31	V	131	2019	618	1040	184	172	5	0	0

- Molecule 32 is a protein called Ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
32	W	63	1070	337	542	103	85	3	0	0

- Molecule 33 is a protein called Ribosomal\_L23eN domain-containing protein.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
33	X	118	2008	618	1041	181	167	1	0	0

- Molecule 34 is a protein called Ribosomal protein L26.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
34	Y	134	2320	700	1205	226	186	3	0	0

- Molecule 35 is a protein called 60S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
35	Z	135	2292	714	1185	208	182	3	0	0

- Molecule 36 is a protein called 60S ribosomal protein L27a.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
36	a	147	2372	734	1210	239	185	4	0	0

- Molecule 37 is a protein called 60S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
37	b	104	1771	527	923	189	129	3	0	0

- Molecule 38 is a protein called 60S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
38	c	98	1557	481	796	134	140	6	0	0

- Molecule 39 is a protein called 60S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
39	d	107	1820	560	932	171	155	2	0	0

- Molecule 40 is a protein called Ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace	
40	e	128	Total	C	H	N	O	S	0	0
			2203	667	1150	216	165	5		

- Molecule 41 is a protein called 60S ribosomal protein L35a.

Mol	Chain	Residues	Atoms					AltConf	Trace	
41	f	109	Total	C	H	N	O	S	0	0
			1789	555	913	174	143	4		

- Molecule 42 is a protein called 60S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace	
42	g	114	Total	C	H	N	O	S	0	0
			1910	566	1004	187	147	6		

- Molecule 43 is a protein called 60S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace	
43	h	122	Total	C	H	N	O	S	0	0
			2161	640	1148	204	168	1		

- Molecule 44 is a protein called 60S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace	
44	i	102	Total	C	H	N	O	S	0	0
			1747	520	917	176	129	5		

- Molecule 45 is a protein called Ribosomal protein L37.

Mol	Chain	Residues	Atoms					AltConf	Trace	
45	j	86	Total	C	H	N	O	S	0	0
			1448	434	743	155	111	5		

- Molecule 46 is a protein called 60S ribosomal protein L38.

Mol	Chain	Residues	Atoms					AltConf	Trace	
46	k	69	Total	C	H	N	O	S	0	0
			1206	366	637	103	99	1		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
k	24	LYS	ASN	conflict	UNP G1U001

- Molecule 47 is a protein called 60S ribosomal protein L39-like.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
47	l	50	928	286	481	96	64	1	0	0

- Molecule 48 is a protein called eL40.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
48	m	52	899	266	470	90	67	6	0	0

- Molecule 49 is a protein called 60S ribosomal protein L41.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
49	n	25	529	145	289	64	28	3	0	0

- Molecule 50 is a protein called 60S ribosomal protein L36a-like.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
50	o	104	1778	533	927	174	138	6	0	0

- Molecule 51 is a protein called 60S ribosomal protein L37a.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
51	p	91	1470	445	762	136	120	7	0	0

- Molecule 52 is a RNA chain called P-site tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			P
52	q	76	2439	723	823	291	527	75	0	0

- Molecule 53 is a protein called 60S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace	
53	r	124	Total	C	H	N	O	S	0	0
			2046	616	1052	205	167	6		

- Molecule 54 is a RNA chain called 5S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace	
54	u	120	Total	C	H	N	O	P	0	0
			3854	1141	1296	456	842	119		

- Molecule 55 is a RNA chain called 5.8S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace	
55	v	156	Total	C	H	N	O	P	0	0
			4997	1480	1683	585	1094	155		

- Molecule 56 is a protein called Ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace	
56	w	394	Total	C	H	N	O	S	0	0
			6487	2020	3315	597	542	13		

- Molecule 57 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
57	I	1	Total	Mg	0
			1	1	
57	K	201	Total	Mg	0
			201	201	
57	V	1	Total	Mg	0
			1	1	
57	a	1	Total	Mg	0
			1	1	
57	g	1	Total	Mg	0
			1	1	
57	j	1	Total	Mg	0
			1	1	
57	u	7	Total	Mg	0
			7	7	
57	v	4	Total	Mg	0
			4	4	
57	w	1	Total	Mg	0
			1	1	

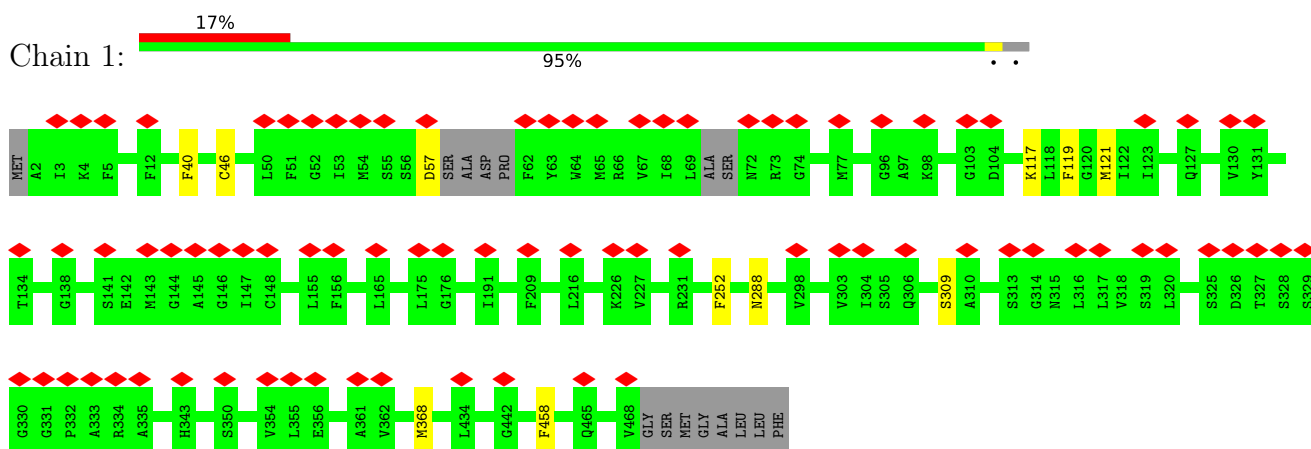
- Molecule 58 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
58	g	1	Total 1	Zn 1	0
58	j	1	Total 1	Zn 1	0
58	m	1	Total 1	Zn 1	0
58	o	1	Total 1	Zn 1	0
58	p	1	Total 1	Zn 1	0

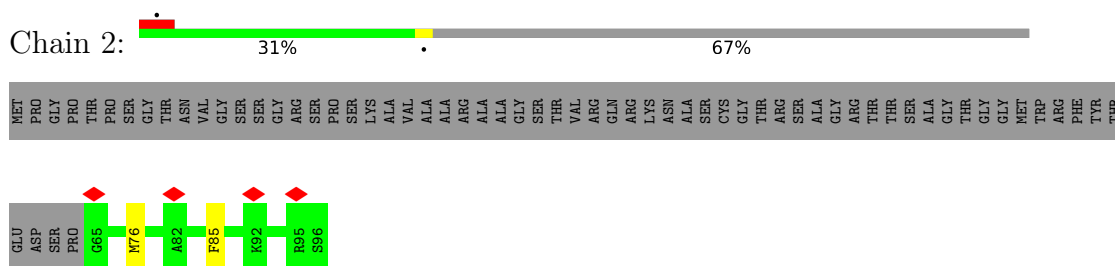
### 3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

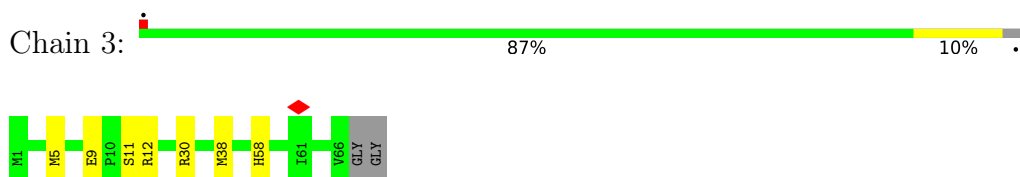
- Molecule 1: Protein transport protein Sec61 subunit alpha isoform 1



- Molecule 2: Protein transport protein Sec61 subunit beta



- Molecule 3: Protein transport protein Sec61 subunit gamma



- Molecule 4: Stress-associated endoplasmic reticulum protein

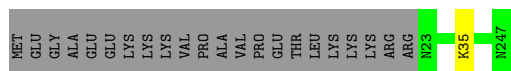




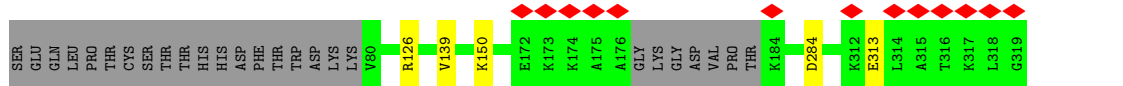
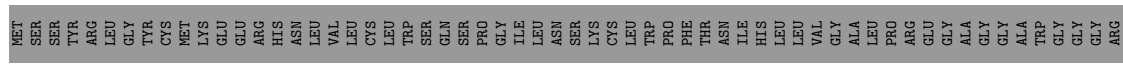




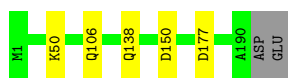




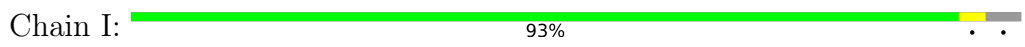
• Molecule 16: 60S ribosomal protein L7a



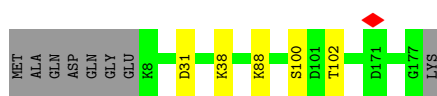
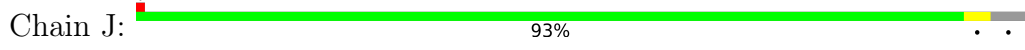
• Molecule 17: 60S ribosomal protein L9



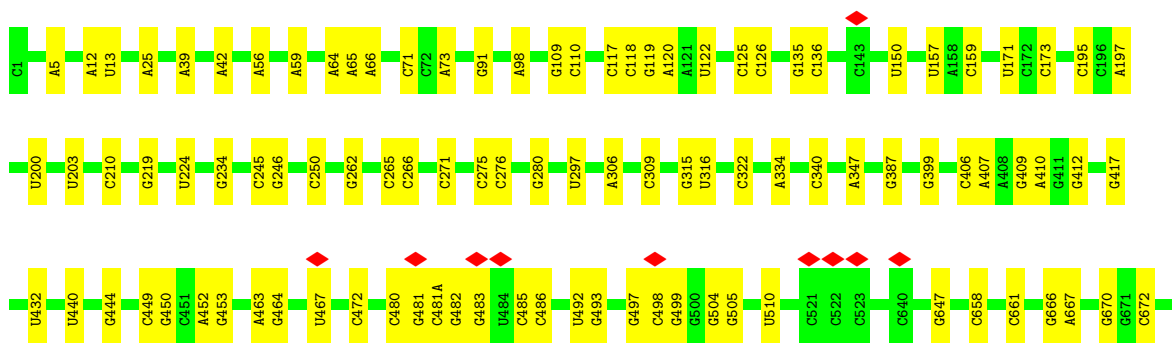
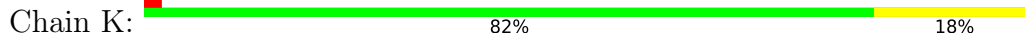
• Molecule 18: 60S ribosomal protein L10



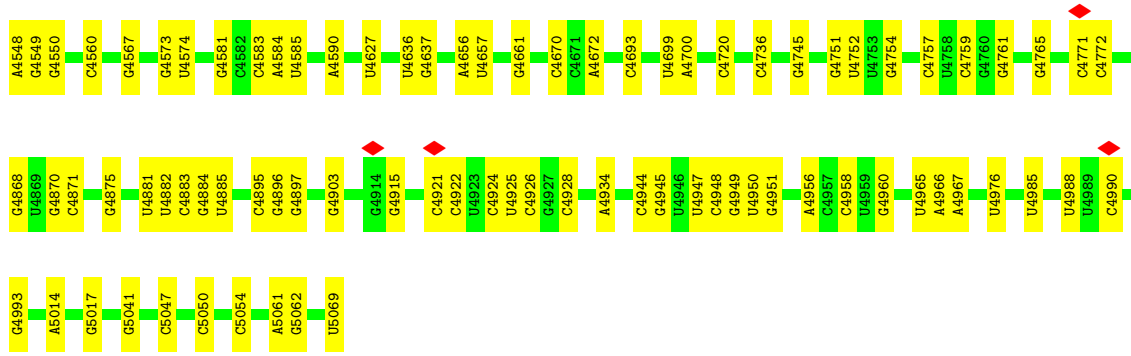
• Molecule 19: 60S ribosomal protein L11



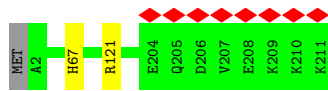
• Molecule 20: 28S rRNA



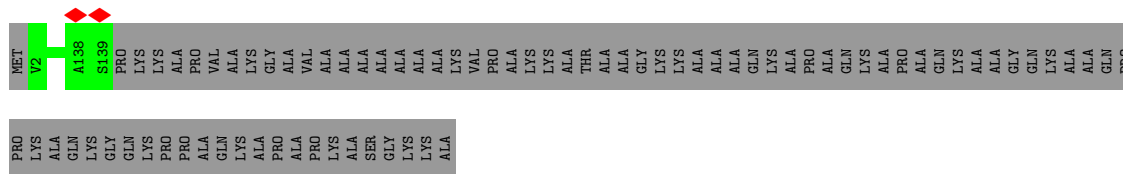
C4319	C4330	C4331	C4332	A4339	C4349	C4350	U4354	G4355	G4373	A4376	G4377	A4378	A4379	C4387	A4394	U4395	C4398	A4415	U4419	A4422	U4423	A4424	C4443	G4448	A4449	U4452	A4464	G4475	U4500	U4512	A4513	G4522	A4523	G4524	G4528	U4532							
C4101	G4107	G4108	C4119	U4120	C4121	G4122	A4127	C4148	C4162	U4163	A4170	C4171	G4183	G4184	G4191	A4203	G4225	G4228	U4229	U4232	A4233	A4234	A4251	G4254	G4266	G4267	A4268	A4271	A4280	A4281	C4286	G4291	A4304	G4305	U4306	C4314	A4317	C4318					
A3784	A3785	U3786	G3811	U3814	A3817	G3818	G3819	U3822	U3838	G3839	U3840	G3859	A3876	A3877	G3878	G3879	G3885	G3888	G3889	G3897	A3901	G3904	A3905	A3906	A3907	A3908	U3915	G3916	G3938	A3943	G3946	U4066	A4073	G4076	U4085	G4099	C4100						
A2798	A2806	C2814	U2826	U2827	U2829	G2842	G2855	C2875	C3602	G3603	A3604	G3615	U3616	G3617	G3618	G3625	G3626	A3635	U3644	A3648	A3649	A3662	C3673	A3711	A3712	G3740	C3741	A3748	G3753	A3760	G3765	A3766	U3772	U3773	G3776	G3777							
G2620	C2627	G2638	U2639	G2640	G2652	C2653	G2658	G2662	C2669	G2673	A2676	G2686	U2687	G2688	G2694	A2695	A2696	G2705	U2708	G2711	C2719	A2725	G2726	G2735	U2740	A2743	G2753	G2762	A2764	U2769	A2787	U2788	G2789	U2790	C2794								
A2395	A2396	G2402	C2422	U2425	C2441	G2460	C2469	G2475	G2476	G2483	G2486	U2487	C2488	C2489	U2490	C2491	C2492	G2493	A2502	G2503	C2504	C2505	G2506	A2512	A2513	C2520	U2530	G2544	U2545	G2546	U2554	G2562	C2563	G2566	C2583	A2587	A2601						
U2044	G2045	G2046	U2048	G2052	G2055	G2056	G2062	G2063	G2064	A2069	U2084	G2089	U2090	G2091	G2092	G2093	C2094	G2100	A2101	G2102	A2103	A2104	A2105	G2106	A2107	G2108	A2109	G2110	C2258	G2259	C2260	C2266	U2267	A2268	C2269	G2270	C2289	A2300	G2301	A2313	G2333	G2348	C2351
C1981	A1982	G1940	G1948	G1952	U1957	A1958	G1961	A1964	G1965	C1966	G1972	C1977	C1978	A1979	C1979	U1980	G1981	U1781	A1787	U1792	A1804	G1815	G1835	U1836	A1837	G1842	C1847	G1855	G1869	C1893	A1897	G1910	C1915	U1918	G1919	C1921	G1922						
G1750	G1753	U1754	U1755	U1757	G1761	G1764	A1765	A1766	A1767	C1768	G1769	U1770	C1772	A1776	C1777	U1780	U1781	A1787	U1792	A1804	G1815	G1835	U1836	A1837	G1842	C1847	G1855	G1869	C1893	A1897	G1910	C1915	U1918	G1919	C1921	G1922							
A1503	G1504	A1523	A1534	C1535	A1547	G1552	A1564	A1565	C1566	U1578	U1588	C1589	C1590	U1591	U1596	A1613	G1624	G1625	A1631	A1632	G1633	A1634	U1638	C1640	G1641	G1654	C1655	C1661	C1676	U1677	G1680	G1721	U1726	C1731	G1734	A1742							
C1304	C1314	A1326	A1337	A1354	G1359	G1370	A1371	A1387	G1394	A1397	A1398	C1405	G1406	C1411	G1415	G1416	A1420	G1421	A1433	C1436	C1437	U1438	U1440	C1441	U1445	C1446	G1447	G1448	G1455	C1456	A1457	C1458	C1477	C1478	G1482	G1498	G1502						
C983	G1064	G1070	C1071	G1072	G1074	G1075	C1079	C1082	G1174	A1175	U1179	G1187	G1196	C1197	G1198	C1210	G1211	G1212	C1215	G1234	G1235	C1236	C1237	A1238	U1247	C1248	C1249	C1250	C1251	C1252	G1271	C1280	G1284	U1285	C1286	G1287	A1294	U1295	G1296				
G684	C696	G697	C704	G705	G708	G730	G731	C738	C738A	G749	G758	U913	A915	G916	A917	C922B	C923	C924	C925	G926	G927	C928	A929	A932	G933	C934	A935	G935A	C936	U937	C938	G939	A944	U945	G959	A960	A964	G965	A966	C967	C968	C972	



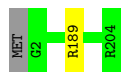
• Molecule 21: 60S ribosomal protein L13



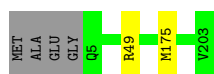
• Molecule 22: 60S ribosomal protein L14



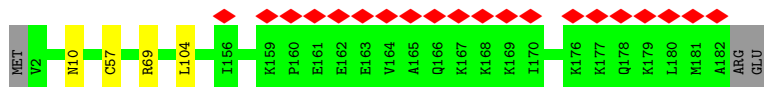
• Molecule 23: Ribosomal protein L15



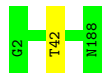
• Molecule 24: 60S ribosomal protein L13



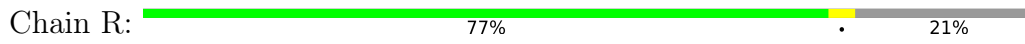
• Molecule 25: uL22



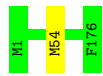
• Molecule 26: Ribosomal protein L18



• Molecule 27: Ribosomal protein L19



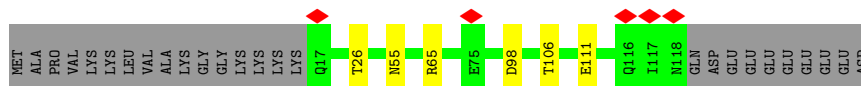
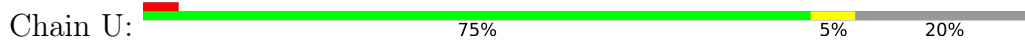
• Molecule 28: 60S ribosomal protein L18a



• Molecule 29: 60S ribosomal protein L21



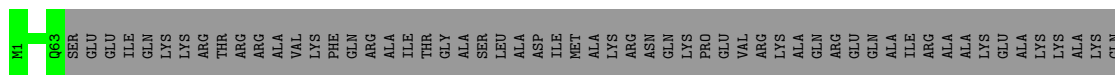
• Molecule 30: Ribosomal protein L22



• Molecule 31: Ribosomal protein L23



• Molecule 32: Ribosomal protein L24



ALA  
SER  
LYS  
LYS  
THR  
ALA  
MET  
ALA  
ALA  
LYS  
ALA  
PRO  
PRO  
THR  
ALA  
ALA  
PRO  
LYS  
LYS  
GLN  
LYS  
LEU  
ILE  
VAL  
LYS  
LYS  
PRO  
VAL  
VAL  
SER  
ALA  
PRO  
ARG  
VAL  
GLY  
GLY  
LYS  
ARG

- Molecule 33: Ribosomal\_L23eN domain-containing protein



MET  
ALA  
PRO  
LYS  
LYS  
LYS  
GLU  
ALA  
PRO  
LYS  
PRO  
PRO  
LYS  
VAL  
GLU  
ALA  
LYS  
LYS  
ALA  
LYS  
LYS  
LYS  
ALA  
VAL  
VAL  
LEU  
GLY  
VAL  
HIS  
SER  
HIS  
LYS  
LYS  
LYS  
R39  
M87  
D118  
I156

- Molecule 34: Ribosomal protein L26



K1  
Y74  
K130  
K131  
K132  
G133  
K134  
TYR  
LYS  
GLU  
GLU  
THR  
ILE  
GLU  
GLU  
LYS  
MET  
GLN  
GLU

- Molecule 35: 60S ribosomal protein L27



MET  
G2  
D30  
D35  
R102  
F136

- Molecule 36: 60S ribosomal protein L27a



MET  
P2  
H40  
K116  
R148

- Molecule 37: 60S ribosomal protein L29

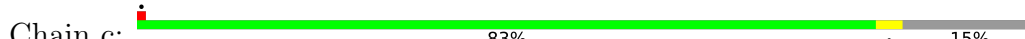


MET  
A2  
T9  
R68  
A69  
E70  
A71  
I72  
K73  
A74  
L76  
V76  
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PRO  
GLN  
LYS  
PRO  
GLU  
THR  
LYS  
VAL  
LYS  
PRO  
THR  
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GLY  
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ALA  
GLN  
ALA  
THR  
LYS  
PRO  
ALA


- Molecule 38: 60S ribosomal protein L30



MET  
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ALA  
LYS  
THR  
LYS  
S10  
I11  
R22  
R106  
S107  
MET  
PRO  
GLU  
GLN  
THR  
GLY  
GLY  
LYS



- Molecule 39: 60S ribosomal protein L31

Chain d:  83% 14%



- Molecule 40: Ribosomal protein L32

Chain e:  94% 5%



- Molecule 41: 60S ribosomal protein L35a

Chain f:  95%



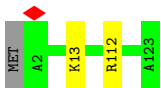
- Molecule 42: 60S ribosomal protein L34

Chain g:  97%



- Molecule 43: 60S ribosomal protein L35

Chain h:  98%




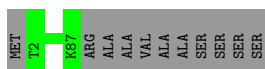
- Molecule 44: 60S ribosomal protein L36

Chain i:  94%



- Molecule 45: Ribosomal protein L37

Chain j:  89% 11%



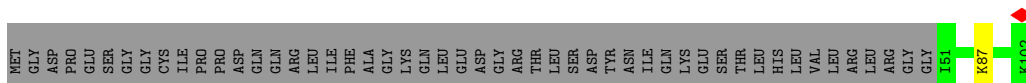
- Molecule 46: 60S ribosomal protein L38



- Molecule 47: 60S ribosomal protein L39-like



- Molecule 48: eL40



- Molecule 49: 60S ribosomal protein L41



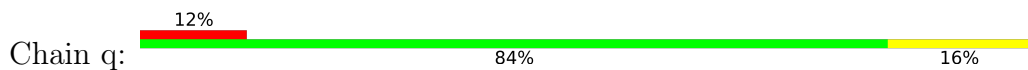
- Molecule 50: 60S ribosomal protein L36a-like

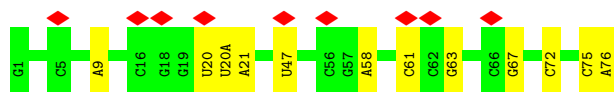


- Molecule 51: 60S ribosomal protein L37a

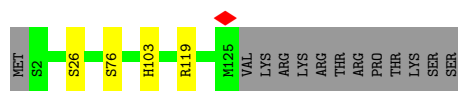
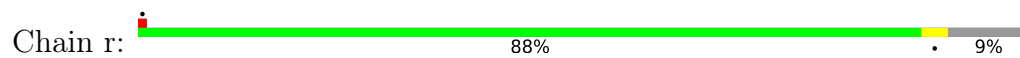


- Molecule 52: P-site tRNA





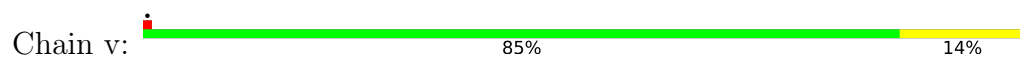
- Molecule 53: 60S ribosomal protein L28



- Molecule 54: 5S rRNA



- Molecule 55: 5.8S rRNA



- Molecule 56: Ribosomal protein L3



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	28770	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	54	Depositor
Minimum defocus (nm)	1900	Depositor
Maximum defocus (nm)	2700	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.200	Depositor
Minimum map value	-0.063	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.008	Depositor
Recommended contour level	0.0231	Depositor
Map size ( $\text{\AA}$ )	562.7185, 562.7185, 562.7185	wwPDB
Map dimensions	420, 420, 420	wwPDB
Map angles ( $^\circ$ )	90.0, 90.0, 90.0	wwPDB
Pixel spacing ( $\text{\AA}$ )	1.339806, 1.339806, 1.339806	Depositor

## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: 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	1	0.27	0/3651	0.46	0/4947
2	2	0.30	0/258	0.45	0/348
3	3	0.28	0/544	0.51	0/728
4	4	0.26	0/245	0.53	0/325
5	5	0.27	0/1457	0.50	0/1980
6	6	0.26	0/1296	0.48	0/1764
7	7	0.26	0/1482	0.43	0/2001
8	8	0.25	0/1215	0.47	0/1656
9	9	0.25	0/311	0.43	0/427
10	A	0.36	0/1936	0.61	0/2596
11	B	0.27	0/446	0.55	0/610
12	C	0.34	0/2937	0.55	0/3946
13	D	0.34	0/2437	0.52	0/3264
14	E	0.32	0/1825	0.54	0/2445
15	F	0.35	0/1911	0.54	0/2549
16	G	0.31	0/1910	0.52	0/2569
17	H	0.32	0/1535	0.54	0/2063
18	I	0.34	0/1702	0.55	0/2272
19	J	0.30	0/1385	0.55	0/1852
20	K	0.65	0/84980	0.81	11/132536 (0.0%)
21	L	0.32	0/1733	0.60	0/2316
22	M	0.33	0/1158	0.56	0/1547
23	N	0.38	0/1746	0.62	0/2338
24	O	0.35	0/1662	0.53	0/2222
25	P	0.33	0/1498	0.52	0/2003
26	Q	0.36	0/1539	0.61	0/2054
27	R	0.31	0/1310	0.57	0/1734
28	S	0.37	0/1501	0.55	0/2012
29	T	0.35	0/1326	0.56	0/1770
30	U	0.31	0/848	0.52	0/1138
31	V	0.34	0/993	0.54	0/1332
32	W	0.38	0/541	0.54	0/720

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
33	X	0.34	0/984	0.51	0/1323
34	Y	0.33	0/1132	0.56	0/1504
35	Z	0.36	0/1130	0.54	0/1507
36	a	0.35	0/1191	0.55	0/1590
37	b	0.30	0/861	0.57	0/1138
38	c	0.34	0/771	0.51	0/1034
39	d	0.34	0/903	0.58	0/1216
40	e	0.35	0/1071	0.57	0/1429
41	f	0.37	0/895	0.59	0/1198
42	g	0.36	0/916	0.59	0/1220
43	h	0.31	0/1021	0.57	0/1348
44	i	0.30	0/841	0.58	0/1112
45	j	0.39	0/720	0.62	0/952
46	k	0.32	0/575	0.51	0/761
47	l	0.33	0/459	0.57	0/608
48	m	0.34	0/435	0.56	0/575
49	n	0.27	0/241	0.77	0/305
50	o	0.34	0/864	0.56	0/1140
51	p	0.34	0/718	0.60	0/953
52	q	0.28	0/1805	0.78	0/2809
53	r	0.32	0/1010	0.57	0/1354
54	u	0.66	0/2858	0.77	0/4455
55	v	0.64	0/3701	0.78	1/5766 (0.0%)
56	w	0.36	0/3240	0.55	0/4339
All	All	0.54	0/157660	0.72	12/231700 (0.0%)

There are no bond length outliers.

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
20	K	3741	C	N3-C2-O2	-6.80	117.14	121.90
20	K	2806	A	O4'-C1'-N9	5.85	112.88	108.20
20	K	417	G	O4'-C1'-N9	5.63	112.70	108.20
55	v	81	C	C2-N1-C1'	5.53	124.89	118.80
20	K	3741	C	N1-C2-O2	5.31	122.09	118.90
20	K	2694	G	N3-C4-C5	5.25	131.23	128.60
20	K	1075	G	N3-C4-N9	-5.24	122.86	126.00
20	K	1552	G	O4'-C1'-N9	5.16	112.33	108.20
20	K	2763	U	C2-N1-C1'	5.09	123.81	117.70
20	K	1215	C	C2-N1-C1'	5.02	124.32	118.80
20	K	1639	U	C2-N1-C1'	5.01	123.71	117.70
20	K	2708	U	C2-N1-C1'	5.01	123.71	117.70

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	
1	1	455/476 (96%)	442 (97%)	13 (3%)	0	100	100
2	2	30/96 (31%)	30 (100%)	0	0	100	100
3	3	64/68 (94%)	64 (100%)	0	0	100	100
4	4	29/66 (44%)	28 (97%)	1 (3%)	0	100	100
5	5	174/286 (61%)	170 (98%)	4 (2%)	0	100	100
6	6	160/183 (87%)	156 (98%)	4 (2%)	0	100	100
7	7	177/185 (96%)	172 (97%)	5 (3%)	0	100	100
8	8	148/173 (86%)	146 (99%)	2 (1%)	0	100	100
9	9	34/593 (6%)	34 (100%)	0	0	100	100
10	A	246/257 (96%)	238 (97%)	8 (3%)	0	100	100
11	B	57/229 (25%)	45 (79%)	11 (19%)	1 (2%)	8	29
12	C	360/425 (85%)	350 (97%)	10 (3%)	0	100	100
13	D	291/297 (98%)	288 (99%)	3 (1%)	0	100	100
14	E	215/291 (74%)	207 (96%)	8 (4%)	0	100	100
15	F	223/247 (90%)	217 (97%)	6 (3%)	0	100	100
16	G	229/319 (72%)	225 (98%)	4 (2%)	0	100	100
17	H	188/192 (98%)	186 (99%)	2 (1%)	0	100	100
18	I	201/214 (94%)	198 (98%)	3 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
19	J	168/178 (94%)	166 (99%)	2 (1%)	0	100	100
21	L	208/211 (99%)	203 (98%)	5 (2%)	0	100	100
22	M	136/218 (62%)	130 (96%)	6 (4%)	0	100	100
23	N	201/204 (98%)	196 (98%)	5 (2%)	0	100	100
24	O	197/203 (97%)	193 (98%)	4 (2%)	0	100	100
25	P	179/184 (97%)	176 (98%)	3 (2%)	0	100	100
26	Q	185/187 (99%)	180 (97%)	5 (3%)	0	100	100
27	R	153/196 (78%)	151 (99%)	2 (1%)	0	100	100
28	S	174/176 (99%)	172 (99%)	2 (1%)	0	100	100
29	T	157/160 (98%)	155 (99%)	2 (1%)	0	100	100
30	U	100/128 (78%)	97 (97%)	3 (3%)	0	100	100
31	V	129/140 (92%)	129 (100%)	0	0	100	100
32	W	61/157 (39%)	60 (98%)	1 (2%)	0	100	100
33	X	116/156 (74%)	113 (97%)	3 (3%)	0	100	100
34	Y	132/145 (91%)	127 (96%)	5 (4%)	0	100	100
35	Z	133/136 (98%)	130 (98%)	3 (2%)	0	100	100
36	a	145/148 (98%)	137 (94%)	7 (5%)	1 (1%)	22	54
37	b	100/226 (44%)	94 (94%)	6 (6%)	0	100	100
38	c	96/115 (84%)	95 (99%)	1 (1%)	0	100	100
39	d	105/125 (84%)	104 (99%)	1 (1%)	0	100	100
40	e	126/135 (93%)	122 (97%)	4 (3%)	0	100	100
41	f	107/110 (97%)	106 (99%)	1 (1%)	0	100	100
42	g	112/116 (97%)	111 (99%)	1 (1%)	0	100	100
43	h	120/123 (98%)	117 (98%)	3 (2%)	0	100	100
44	i	100/105 (95%)	97 (97%)	3 (3%)	0	100	100
45	j	84/97 (87%)	83 (99%)	1 (1%)	0	100	100
46	k	67/70 (96%)	67 (100%)	0	0	100	100
47	l	48/51 (94%)	47 (98%)	1 (2%)	0	100	100
48	m	50/102 (49%)	50 (100%)	0	0	100	100
49	n	23/25 (92%)	23 (100%)	0	0	100	100
50	o	102/106 (96%)	99 (97%)	3 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
51	p	89/92 (97%)	84 (94%)	5 (6%)	0	100	100
53	r	122/137 (89%)	117 (96%)	5 (4%)	0	100	100
56	w	392/403 (97%)	385 (98%)	7 (2%)	0	100	100
All	All	7698/9662 (80%)	7512 (98%)	184 (2%)	2 (0%)	100	100

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
36	a	40	HIS
11	B	120	VAL

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

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	1	388/398 (98%)	377 (97%)	11 (3%)	43	76
2	2	28/74 (38%)	26 (93%)	2 (7%)	14	40
3	3	59/59 (100%)	52 (88%)	7 (12%)	5	15
4	4	26/55 (47%)	26 (100%)	0	100	100
5	5	157/249 (63%)	153 (98%)	4 (2%)	47	78
6	6	135/152 (89%)	132 (98%)	3 (2%)	52	81
7	7	161/164 (98%)	156 (97%)	5 (3%)	40	74
8	8	130/146 (89%)	130 (100%)	0	100	100
9	9	35/526 (7%)	34 (97%)	1 (3%)	42	76
10	A	190/199 (96%)	188 (99%)	2 (1%)	73	92
11	B	48/172 (28%)	45 (94%)	3 (6%)	18	46
12	C	302/347 (87%)	296 (98%)	6 (2%)	55	82
13	D	247/250 (99%)	245 (99%)	2 (1%)	81	94
14	E	197/251 (78%)	191 (97%)	6 (3%)	41	75
15	F	196/215 (91%)	195 (100%)	1 (0%)	88	96

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
16	G	200/272 (74%)	195 (98%)	5 (2%)	47	78
17	H	169/171 (99%)	164 (97%)	5 (3%)	41	75
18	I	175/181 (97%)	169 (97%)	6 (3%)	37	71
19	J	143/149 (96%)	138 (96%)	5 (4%)	36	70
21	L	175/176 (99%)	173 (99%)	2 (1%)	73	92
22	M	117/161 (73%)	117 (100%)	0	100	100
23	N	171/172 (99%)	170 (99%)	1 (1%)	86	96
24	O	171/173 (99%)	169 (99%)	2 (1%)	71	91
25	P	160/163 (98%)	156 (98%)	4 (2%)	47	78
26	Q	164/164 (100%)	163 (99%)	1 (1%)	86	96
27	R	138/175 (79%)	133 (96%)	5 (4%)	35	69
28	S	157/157 (100%)	156 (99%)	1 (1%)	86	96
29	T	139/140 (99%)	135 (97%)	4 (3%)	42	76
30	U	92/114 (81%)	86 (94%)	6 (6%)	17	45
31	V	101/107 (94%)	100 (99%)	1 (1%)	76	92
32	W	55/126 (44%)	55 (100%)	0	100	100
33	X	106/134 (79%)	104 (98%)	2 (2%)	57	84
34	Y	124/135 (92%)	122 (98%)	2 (2%)	62	86
35	Z	117/118 (99%)	114 (97%)	3 (3%)	46	77
36	a	119/120 (99%)	118 (99%)	1 (1%)	81	94
37	b	84/172 (49%)	83 (99%)	1 (1%)	71	91
38	c	84/98 (86%)	81 (96%)	3 (4%)	35	69
39	d	98/110 (89%)	95 (97%)	3 (3%)	40	74
40	e	114/121 (94%)	113 (99%)	1 (1%)	78	93
41	f	88/89 (99%)	84 (96%)	4 (4%)	27	61
42	g	98/99 (99%)	96 (98%)	2 (2%)	55	82
43	h	109/110 (99%)	107 (98%)	2 (2%)	59	85
44	i	86/89 (97%)	83 (96%)	3 (4%)	36	70
45	j	73/80 (91%)	73 (100%)	0	100	100
46	k	64/65 (98%)	61 (95%)	3 (5%)	26	59
47	l	47/48 (98%)	46 (98%)	1 (2%)	53	81

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
48	m	48/90 (53%)	47 (98%)	1 (2%)	53	81
49	n	24/24 (100%)	23 (96%)	1 (4%)	30	63
50	o	92/94 (98%)	88 (96%)	4 (4%)	29	62
51	p	74/75 (99%)	74 (100%)	0	100	100
53	r	108/121 (89%)	104 (96%)	4 (4%)	34	68
56	w	342/348 (98%)	340 (99%)	2 (1%)	86	96
All	All	6725/8198 (82%)	6581 (98%)	144 (2%)	56	81

All (144) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	1	40	PHE
1	1	46	CYS
1	1	57	ASP
1	1	117	LYS
1	1	119	PHE
1	1	121	MET
1	1	252	PHE
1	1	288	ASN
1	1	309	SER
1	1	368	MET
1	1	458	PHE
2	2	76	MET
2	2	85	PHE
3	3	5	MET
3	3	9	GLU
3	3	11	SER
3	3	12	ARG
3	3	30	ARG
3	3	38	MET
3	3	58	HIS
5	5	107	PHE
5	5	176	ASN
5	5	181	ASN
5	5	213	PHE
6	6	153	PHE
6	6	169	TYR
6	6	172	LYS
7	7	51	TRP
7	7	94	ASP

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
7	7	119	GLU
7	7	120	ARG
7	7	184	SER
9	9	517	LYS
10	A	208	GLU
10	A	247	ARG
11	B	79	LEU
11	B	86	MET
11	B	91	PHE
12	C	69	THR
12	C	95	MET
12	C	122	TYR
12	C	150	LEU
12	C	189	MET
12	C	353	ARG
13	D	214	GLU
13	D	235	MET
14	E	43	LYS
14	E	123	ASP
14	E	213	LYS
14	E	224	LYS
14	E	227	LYS
14	E	244	GLU
15	F	35	LYS
16	G	126	ARG
16	G	139	VAL
16	G	150	LYS
16	G	284	ASP
16	G	313	GLU
17	H	50	LYS
17	H	106	GLN
17	H	138	GLN
17	H	150	ASP
17	H	177	ASP
18	I	28	ASP
18	I	32	ARG
18	I	55	ASP
18	I	195	CYS
18	I	207	ASP
18	I	214	SER
19	J	31	ASP
19	J	38	LYS

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
19	J	88	LYS
19	J	100	SER
19	J	102	THR
21	L	67	HIS
21	L	121	ARG
23	N	189	ARG
24	O	49	ARG
24	O	175	MET
25	P	10	ASN
25	P	57	CYS
25	P	69	ARG
25	P	104	LEU
26	Q	42	THR
27	R	31	GLU
27	R	96	MET
27	R	139	MET
27	R	151	ARG
27	R	153	LYS
28	S	54	MET
29	T	117	LYS
29	T	118	GLU
29	T	157	GLU
29	T	159	MET
30	U	26	THR
30	U	55	ASN
30	U	65	ARG
30	U	98	ASP
30	U	106	THR
30	U	111	GLU
31	V	71	GLU
33	X	87	MET
33	X	118	ASP
34	Y	74	TYR
34	Y	130	LYS
35	Z	30	ASP
35	Z	35	ASP
35	Z	102	ARG
36	a	116	LYS
37	b	9	THR
38	c	10	SER
38	c	22	MET
38	c	106	ARG

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Mol	Chain	Res	Type
39	d	18	ASN
39	d	32	ARG
39	d	123	ASP
40	e	53	ILE
41	f	2	SER
41	f	24	HIS
41	f	37	ASP
41	f	104	MET
42	g	73	HIS
42	g	88	ARG
43	h	13	LYS
43	h	112	ARG
44	i	20	ASN
44	i	29	ARG
44	i	32	ARG
46	k	10	ASP
46	k	58	GLN
46	k	64	LEU
47	l	51	LEU
48	m	87	LYS
49	n	10	MET
50	o	26	TYR
50	o	77	CYS
50	o	99	ARG
50	o	105	GLN
53	r	26	SER
53	r	76	SER
53	r	103	HIS
53	r	119	ARG
56	w	153	MET
56	w	297	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (9) such sidechains are listed below:

Mol	Chain	Res	Type
1	1	343	HIS
7	7	35	ASN
15	F	57	HIS
16	G	212	HIS
18	I	143	GLN
27	R	75	HIS
30	U	38	ASN

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Mol	Chain	Res	Type
36	a	28	HIS
51	p	56	HIS

### 5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
20	K	3521/3543 (99%)	606 (17%)	51 (1%)
52	q	74/76 (97%)	12 (16%)	0
54	u	119/120 (99%)	8 (6%)	0
55	v	155/156 (99%)	23 (14%)	0
All	All	3869/3895 (99%)	649 (16%)	51 (1%)

All (649) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
20	K	5	A
20	K	13	U
20	K	25	A
20	K	39	A
20	K	42	A
20	K	56	A
20	K	59	A
20	K	64	A
20	K	65	A
20	K	66	A
20	K	71	C
20	K	73	A
20	K	91	G
20	K	98	A
20	K	109	G
20	K	110	C
20	K	117	C
20	K	118	C
20	K	119	G
20	K	120	A
20	K	122	U
20	K	126	C
20	K	135	G
20	K	136	C
20	K	150	U
20	K	157	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
20	K	159	C
20	K	171	U
20	K	173	C
20	K	195	C
20	K	197	A
20	K	200	U
20	K	203	U
20	K	210	C
20	K	219	G
20	K	224	U
20	K	234	G
20	K	246	G
20	K	250	C
20	K	262	G
20	K	265	C
20	K	266	C
20	K	271	C
20	K	275	C
20	K	276	C
20	K	280	G
20	K	297	U
20	K	306	A
20	K	309	C
20	K	315	G
20	K	316	U
20	K	322	C
20	K	334	A
20	K	340	C
20	K	347	A
20	K	387	G
20	K	399	G
20	K	407	A
20	K	409	G
20	K	410	A
20	K	412	G
20	K	432	U
20	K	440	U
20	K	444	G
20	K	449	C
20	K	450	G
20	K	452	A
20	K	453	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
20	K	463	A
20	K	464	G
20	K	467	U
20	K	472	C
20	K	481	G
20	K	481(A)	C
20	K	482	G
20	K	483	G
20	K	486	C
20	K	492	U
20	K	493	G
20	K	497	G
20	K	498	C
20	K	499	G
20	K	505	G
20	K	510	U
20	K	647	G
20	K	658	C
20	K	661	C
20	K	666	G
20	K	667	A
20	K	670	G
20	K	672	C
20	K	684	G
20	K	696	C
20	K	697	G
20	K	704	C
20	K	705	G
20	K	708	G
20	K	730	G
20	K	731	G
20	K	738	C
20	K	738(A)	C
20	K	749	G
20	K	758	G
20	K	913	U
20	K	915	A
20	K	917	A
20	K	923	C
20	K	925	C
20	K	926	G
20	K	928	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
20	K	929	A
20	K	932	A
20	K	933	G
20	K	934	C
20	K	935	A
20	K	935(A)	G
20	K	936	C
20	K	938	C
20	K	939	G
20	K	944	A
20	K	945	U
20	K	959	G
20	K	960	A
20	K	961	G
20	K	964	A
20	K	965	G
20	K	966	A
20	K	967	C
20	K	968	C
20	K	972	C
20	K	983	C
20	K	1070	G
20	K	1072	C
20	K	1073	G
20	K	1079	C
20	K	1082	C
20	K	1175	A
20	K	1179	U
20	K	1187	G
20	K	1198	G
20	K	1210	C
20	K	1211	G
20	K	1212	G
20	K	1234	G
20	K	1235	G
20	K	1236	C
20	K	1237	C
20	K	1238	A
20	K	1247	U
20	K	1272	C
20	K	1273	G
20	K	1274	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
20	K	1275	G
20	K	1280	C
20	K	1284	G
20	K	1285	U
20	K	1287	G
20	K	1294	A
20	K	1296	G
20	K	1304	C
20	K	1314	C
20	K	1326	A
20	K	1337	A
20	K	1354	A
20	K	1359	G
20	K	1371	A
20	K	1387	A
20	K	1394	G
20	K	1397	A
20	K	1398	A
20	K	1415	G
20	K	1416	G
20	K	1420	A
20	K	1421	G
20	K	1433	A
20	K	1436	C
20	K	1437	C
20	K	1438	U
20	K	1440	U
20	K	1441	C
20	K	1446	C
20	K	1448	G
20	K	1455	G
20	K	1456	C
20	K	1457	G
20	K	1458	C
20	K	1478	C
20	K	1482	G
20	K	1498	G
20	K	1502	G
20	K	1504	G
20	K	1523	A
20	K	1534	A
20	K	1535	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
20	K	1547	A
20	K	1564	A
20	K	1566	C
20	K	1578	U
20	K	1588	U
20	K	1591	U
20	K	1596	U
20	K	1613	A
20	K	1624	G
20	K	1625	G
20	K	1631	A
20	K	1633	G
20	K	1634	A
20	K	1638	A
20	K	1640	C
20	K	1641	G
20	K	1654	G
20	K	1655	C
20	K	1661	C
20	K	1676	C
20	K	1677	U
20	K	1680	G
20	K	1721	G
20	K	1726	U
20	K	1731	C
20	K	1734	G
20	K	1742	A
20	K	1750	G
20	K	1753	G
20	K	1755	C
20	K	1756	U
20	K	1757	U
20	K	1761	G
20	K	1764	G
20	K	1765	A
20	K	1766	A
20	K	1769	G
20	K	1772	C
20	K	1776	A
20	K	1777	C
20	K	1780	A
20	K	1781	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
20	K	1787	A
20	K	1792	U
20	K	1804	A
20	K	1815	G
20	K	1835	G
20	K	1836	G
20	K	1837	A
20	K	1842	G
20	K	1847	C
20	K	1855	G
20	K	1869	G
20	K	1893	C
20	K	1897	A
20	K	1910	G
20	K	1915	C
20	K	1918	U
20	K	1920	C
20	K	1921	C
20	K	1922	G
20	K	1931	C
20	K	1932	A
20	K	1940	G
20	K	1948	G
20	K	1952	G
20	K	1957	U
20	K	1958	A
20	K	1961	G
20	K	1964	A
20	K	1966	C
20	K	1972	G
20	K	1977	C
20	K	1978	C
20	K	1979	A
20	K	1980	U
20	K	1982	G
20	K	1984	A
20	K	1987	C
20	K	1988	G
20	K	1989	G
20	K	1990	A
20	K	1991	A
20	K	1992	U

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
20	K	1993	C
20	K	1997	U
20	K	1999	A
20	K	2001	G
20	K	2002	A
20	K	2003	G
20	K	2004	U
20	K	2007	G
20	K	2011	C
20	K	2018	C
20	K	2020	U
20	K	2026	A
20	K	2044	U
20	K	2045	G
20	K	2046	G
20	K	2047	A
20	K	2048	U
20	K	2052	G
20	K	2055	G
20	K	2056	G
20	K	2062	C
20	K	2064	G
20	K	2069	A
20	K	2084	U
20	K	2089	G
20	K	2090	U
20	K	2092	G
20	K	2093	G
20	K	2094	C
20	K	2100	G
20	K	2101	A
20	K	2102	G
20	K	2104	A
20	K	2105	A
20	K	2107	A
20	K	2108	G
20	K	2110	G
20	K	2259	G
20	K	2260	C
20	K	2267	U
20	K	2268	A
20	K	2270	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
20	K	2289	C
20	K	2300	A
20	K	2301	G
20	K	2313	A
20	K	2333	G
20	K	2348	G
20	K	2351	C
20	K	2395	A
20	K	2396	A
20	K	2402	G
20	K	2422	C
20	K	2425	U
20	K	2441	C
20	K	2450	G
20	K	2469	C
20	K	2475	G
20	K	2476	G
20	K	2483	G
20	K	2486	G
20	K	2488	C
20	K	2489	C
20	K	2490	U
20	K	2491	C
20	K	2493	G
20	K	2503	G
20	K	2504	C
20	K	2505	C
20	K	2506	G
20	K	2512	A
20	K	2513	A
20	K	2520	C
20	K	2530	U
20	K	2544	G
20	K	2545	U
20	K	2546	G
20	K	2554	U
20	K	2566	G
20	K	2583	C
20	K	2587	A
20	K	2601	A
20	K	2620	G
20	K	2627	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
20	K	2638	G
20	K	2640	G
20	K	2652	G
20	K	2653	C
20	K	2658	G
20	K	2662	G
20	K	2669	C
20	K	2673	G
20	K	2676	A
20	K	2686	G
20	K	2687	U
20	K	2694	G
20	K	2695	A
20	K	2696	A
20	K	2705	G
20	K	2708	U
20	K	2711	G
20	K	2719	C
20	K	2725	A
20	K	2726	G
20	K	2735	G
20	K	2740	U
20	K	2743	A
20	K	2753	G
20	K	2762	G
20	K	2763	U
20	K	2764	A
20	K	2769	U
20	K	2787	A
20	K	2788	U
20	K	2790	U
20	K	2794	C
20	K	2798	A
20	K	2814	C
20	K	2826	U
20	K	2827	G
20	K	2829	U
20	K	2842	G
20	K	2855	G
20	K	2875	C
20	K	3602	C
20	K	3604	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
20	K	3615	G
20	K	3617	G
20	K	3618	C
20	K	3625	G
20	K	3626	G
20	K	3635	A
20	K	3644	U
20	K	3648	A
20	K	3649	A
20	K	3662	A
20	K	3673	C
20	K	3711	A
20	K	3712	A
20	K	3740	G
20	K	3748	A
20	K	3753	G
20	K	3760	A
20	K	3766	A
20	K	3772	U
20	K	3773	U
20	K	3776	G
20	K	3777	G
20	K	3784	A
20	K	3785	A
20	K	3786	U
20	K	3811	G
20	K	3814	U
20	K	3817	A
20	K	3819	G
20	K	3822	U
20	K	3838	U
20	K	3840	U
20	K	3859	G
20	K	3876	A
20	K	3877	A
20	K	3878	C
20	K	3879	G
20	K	3885	G
20	K	3889	G
20	K	3897	G
20	K	3901	A
20	K	3905	A

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
20	K	3906	A
20	K	3907	G
20	K	3908	A
20	K	3915	U
20	K	3916	G
20	K	3938	G
20	K	3943	A
20	K	3946	G
20	K	4066	U
20	K	4073	A
20	K	4076	G
20	K	4085	A
20	K	4119	C
20	K	4120	U
20	K	4121	G
20	K	4122	G
20	K	4127	A
20	K	4148	C
20	K	4162	C
20	K	4163	U
20	K	4170	A
20	K	4171	C
20	K	4183	G
20	K	4184	G
20	K	4191	G
20	K	4203	A
20	K	4225	G
20	K	4228	G
20	K	4229	U
20	K	4233	A
20	K	4234	A
20	K	4251	A
20	K	4254	G
20	K	4266	G
20	K	4268	A
20	K	4271	A
20	K	4280	A
20	K	4281	A
20	K	4286	C
20	K	4291	G
20	K	4304	A
20	K	4305	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
20	K	4306	U
20	K	4314	C
20	K	4317	A
20	K	4318	C
20	K	4319	C
20	K	4330	G
20	K	4332	C
20	K	4339	A
20	K	4349	C
20	K	4350	C
20	K	4354	U
20	K	4355	G
20	K	4373	G
20	K	4376	A
20	K	4377	G
20	K	4378	A
20	K	4379	A
20	K	4387	C
20	K	4394	A
20	K	4395	U
20	K	4398	C
20	K	4415	A
20	K	4419	U
20	K	4422	A
20	K	4424	A
20	K	4443	C
20	K	4448	G
20	K	4449	A
20	K	4452	U
20	K	4464	A
20	K	4475	G
20	K	4500	U
20	K	4512	U
20	K	4513	A
20	K	4522	G
20	K	4524	G
20	K	4528	G
20	K	4532	U
20	K	4548	A
20	K	4549	G
20	K	4550	G
20	K	4560	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
20	K	4567	G
20	K	4573	G
20	K	4574	U
20	K	4581	G
20	K	4583	C
20	K	4584	A
20	K	4585	U
20	K	4590	A
20	K	4627	U
20	K	4636	U
20	K	4637	G
20	K	4656	A
20	K	4657	U
20	K	4661	G
20	K	4670	C
20	K	4672	A
20	K	4693	C
20	K	4700	A
20	K	4720	C
20	K	4736	C
20	K	4745	G
20	K	4751	G
20	K	4752	U
20	K	4754	G
20	K	4757	C
20	K	4759	C
20	K	4761	G
20	K	4765	G
20	K	4771	C
20	K	4772	C
20	K	4868	G
20	K	4870	G
20	K	4871	C
20	K	4875	G
20	K	4881	U
20	K	4882	U
20	K	4883	C
20	K	4885	U
20	K	4895	C
20	K	4896	G
20	K	4897	G
20	K	4903	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
20	K	4915	G
20	K	4921	C
20	K	4922	C
20	K	4924	C
20	K	4925	U
20	K	4926	C
20	K	4928	C
20	K	4934	A
20	K	4944	C
20	K	4945	G
20	K	4948	C
20	K	4949	G
20	K	4950	U
20	K	4951	G
20	K	4956	A
20	K	4958	C
20	K	4960	G
20	K	4965	U
20	K	4966	A
20	K	4967	A
20	K	4976	U
20	K	4985	U
20	K	4988	U
20	K	4990	C
20	K	4993	G
20	K	5014	A
20	K	5017	G
20	K	5041	G
20	K	5047	C
20	K	5050	C
20	K	5054	C
20	K	5061	A
20	K	5062	G
20	K	5069	U
52	q	9	A
52	q	20	U
52	q	20(A)	U
52	q	21	A
52	q	47	U
52	q	58	A
52	q	61	C
52	q	63	G

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
52	q	67	G
52	q	72	C
52	q	75	C
52	q	76	A
54	u	21	G
54	u	31	G
54	u	33	U
54	u	53	U
54	u	54	A
54	u	64	G
54	u	100	A
54	u	110	G
55	v	34	U
55	v	35	C
55	v	38	U
55	v	46	G
55	v	52	A
55	v	59	A
55	v	62	A
55	v	63	U
55	v	81	C
55	v	82	A
55	v	85	U
55	v	86	U
55	v	103	A
55	v	105	C
55	v	109	C
55	v	110	U
55	v	111	U
55	v	113	C
55	v	114	G
55	v	124	U
55	v	125	C
55	v	126	C
55	v	153	C

All (51) RNA pucker outliers are listed below:

<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
20	K	12	A
20	K	125	C
20	K	245	C

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
20	K	265	C
20	K	275	C
20	K	406	C
20	K	480	C
20	K	481(A)	C
20	K	485	C
20	K	504	G
20	K	696	C
20	K	922(B)	C
20	K	959	G
20	K	964	A
20	K	1072	C
20	K	1174	G
20	K	1197	C
20	K	1211	G
20	K	1236	C
20	K	1370	G
20	K	1440	U
20	K	1445	U
20	K	1455	G
20	K	1477	C
20	K	1590	C
20	K	1633	G
20	K	1992	U
20	K	2046	G
20	K	2089	G
20	K	2104	A
20	K	2258	C
20	K	2266	C
20	K	2489	C
20	K	2502	A
20	K	2639	U
20	K	2695	A
20	K	2762	G
20	K	3603	G
20	K	3625	G
20	K	3765	G
20	K	3876	A
20	K	3888	G
20	K	3904	G
20	K	4119	C
20	K	4170	A

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Mol	Chain	Res	Type
20	K	4232	U
20	K	4354	U
20	K	4448	G
20	K	4699	U
20	K	4884	G
20	K	4947	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 223 ligands modelled in this entry, 223 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

#### 5.7 Other polymers [i](#)

There are no such residues in this entry.

#### 5.8 Polymer linkage issues [i](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
20	K	23
52	q	1



All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	K	2113:G	O3'	2258:C	P	41.87
1	K	1252:C	O3'	1271:G	P	35.95
1	K	1219:G	O3'	1233:G	P	24.34
1	K	990:C	O3'	1064:G	P	17.41
1	K	4138:C	O3'	4146:G	P	17.32
1	K	4777:C	O3'	4859:C	P	17.01
1	K	4101:C	O3'	4107:G	P	17.00
1	K	3948:C	O3'	4065:G	P	16.47
1	K	1406(C):G	O3'	1411:C	P	15.11
1	K	760:G	O3'	904:C	P	14.82
1	K	1364:U	O3'	1368:A	P	14.42
1	K	182:G	O3'	189:G	P	14.13
1	K	2901:G	O3'	3597:G	P	13.55
1	K	523:C	O3'	638:G	P	13.28
1	K	5022:U	O3'	5028:G	P	13.26
1	K	1696:C	O3'	1720:C	P	12.45
1	K	1100:U	O3'	1168:G	P	8.56
1	K	1180:C	O3'	1183:C	P	8.39
1	K	4729:A	O3'	4735:G	P	8.18
1	K	512:U	O3'	515:C	P	6.27
1	q	16:C	O3'	18:G	P	6.11
1	K	500:G	O3'	504:G	P	5.94
1	K	4740:G	O3'	4743:G	P	5.33
1	K	4899:G	O3'	4902:C	P	3.90

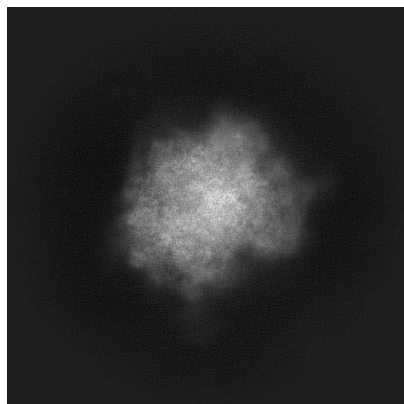
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-19197. These allow visual inspection of the internal detail of the map and identification of artifacts.

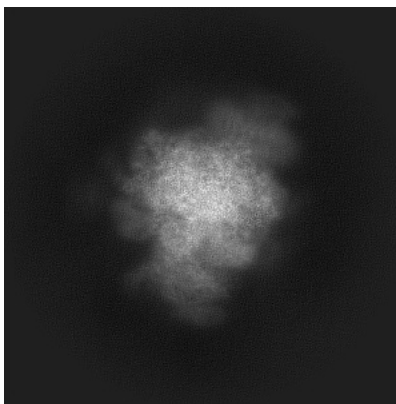
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

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

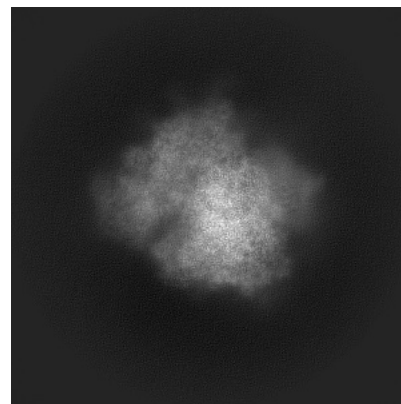
#### 6.1.1 Primary map



X

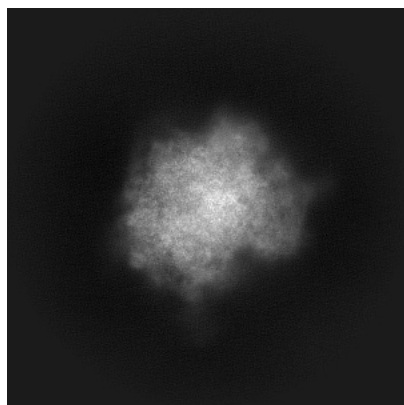


Y

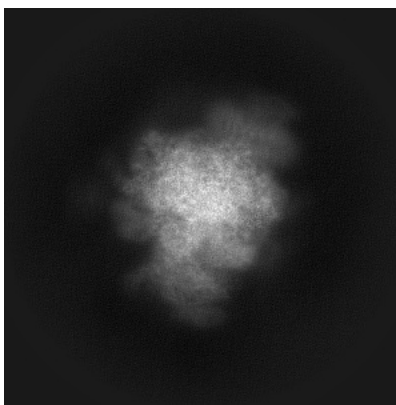


Z

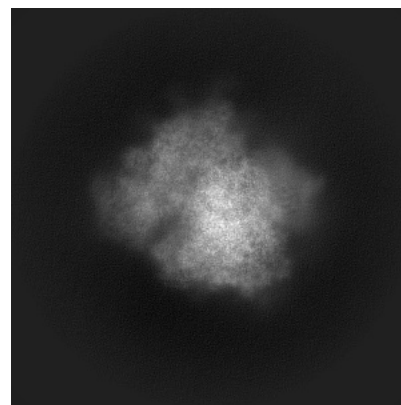
#### 6.1.2 Raw map



X



Y

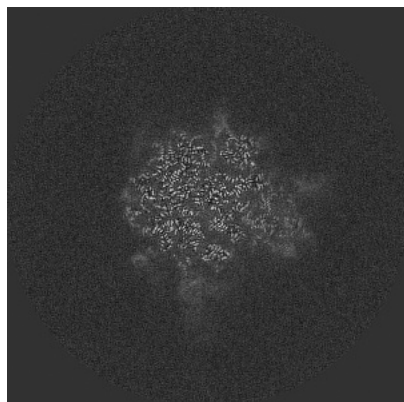


Z

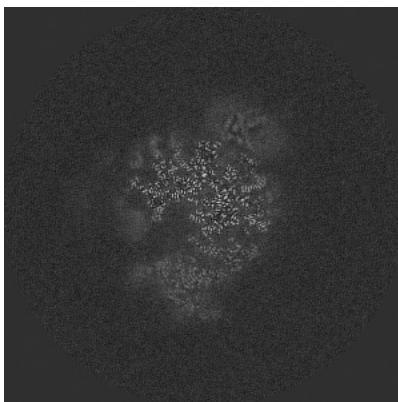
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

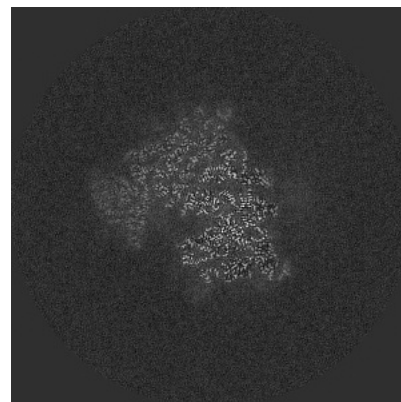
### 6.2.1 Primary map



X Index: 210

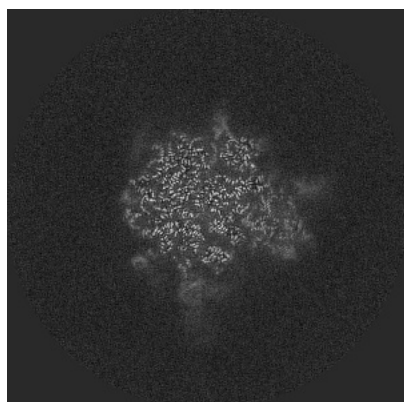


Y Index: 210

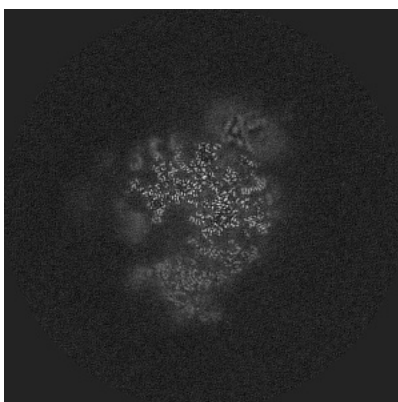


Z Index: 210

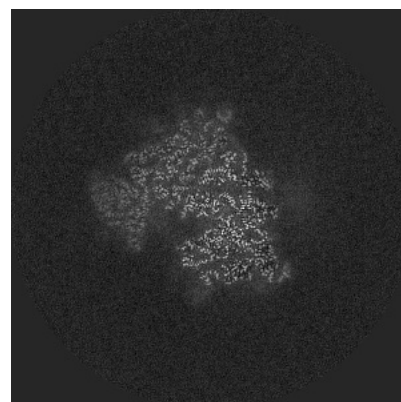
### 6.2.2 Raw map



X Index: 210



Y Index: 210

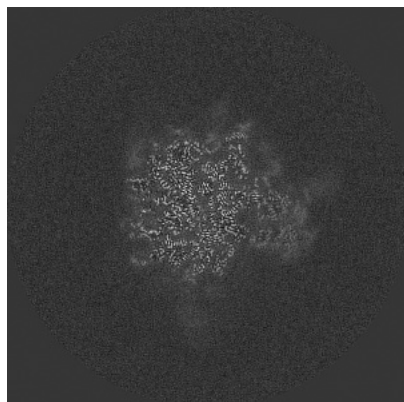


Z Index: 210

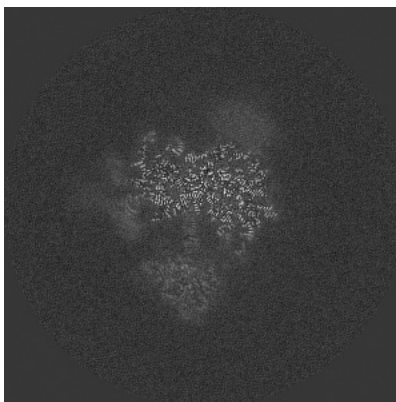
The images above show central slices of the map in three orthogonal directions.

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

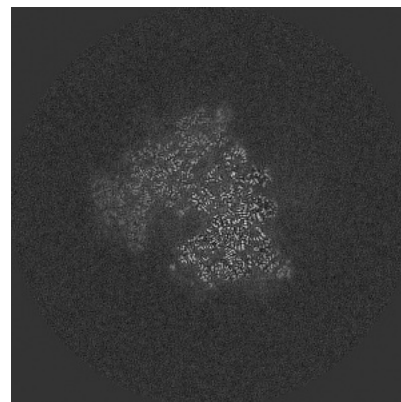
### 6.3.1 Primary map



X Index: 220

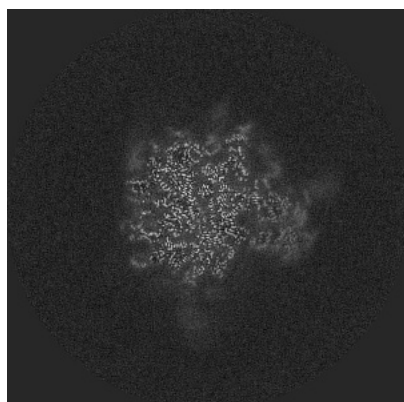


Y Index: 195

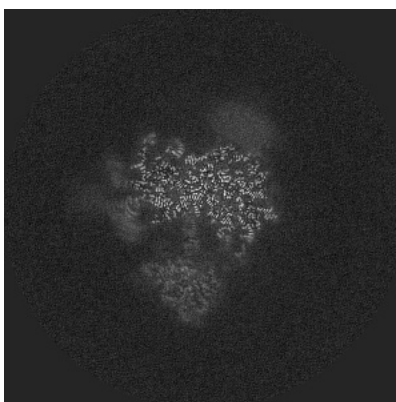


Z Index: 207

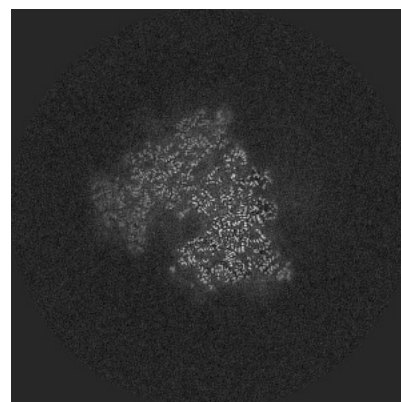
### 6.3.2 Raw map



X Index: 220



Y Index: 195

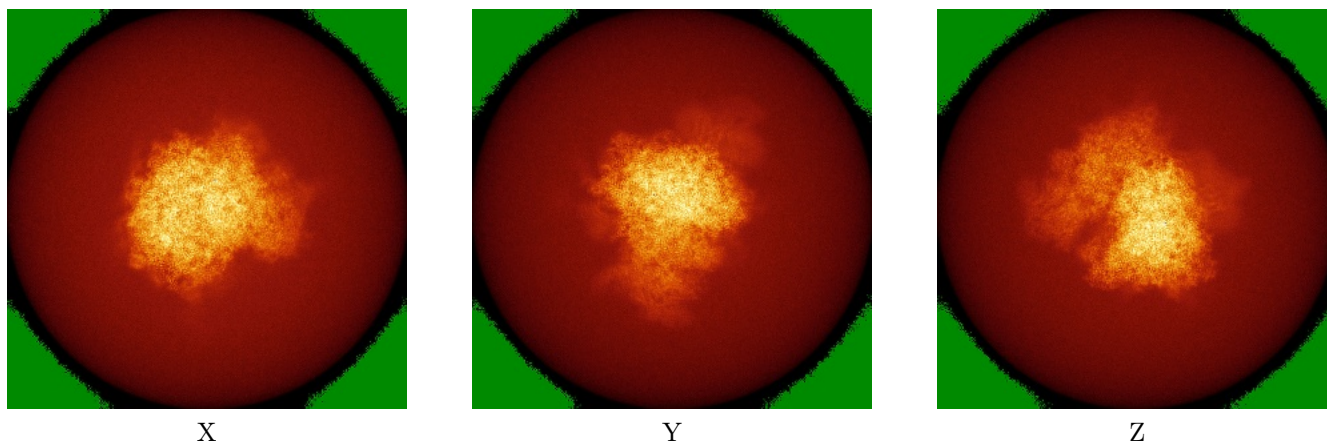


Z Index: 207

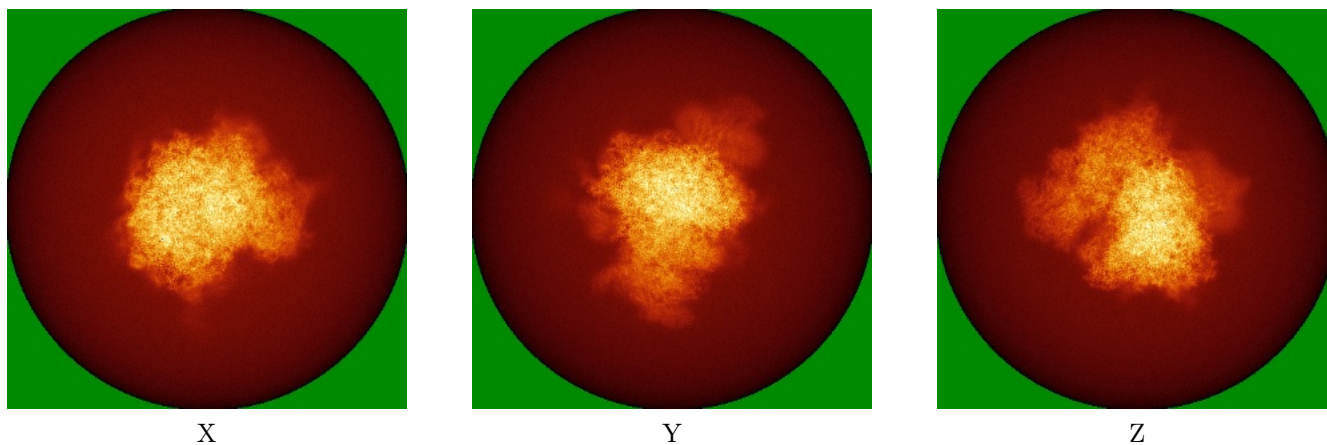
The images above show the largest variance slices of the map in three orthogonal directions.

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

### 6.4.1 Primary map



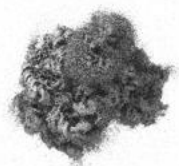
### 6.4.2 Raw map



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](#)

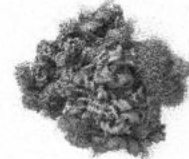
### 6.5.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.0231. 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.

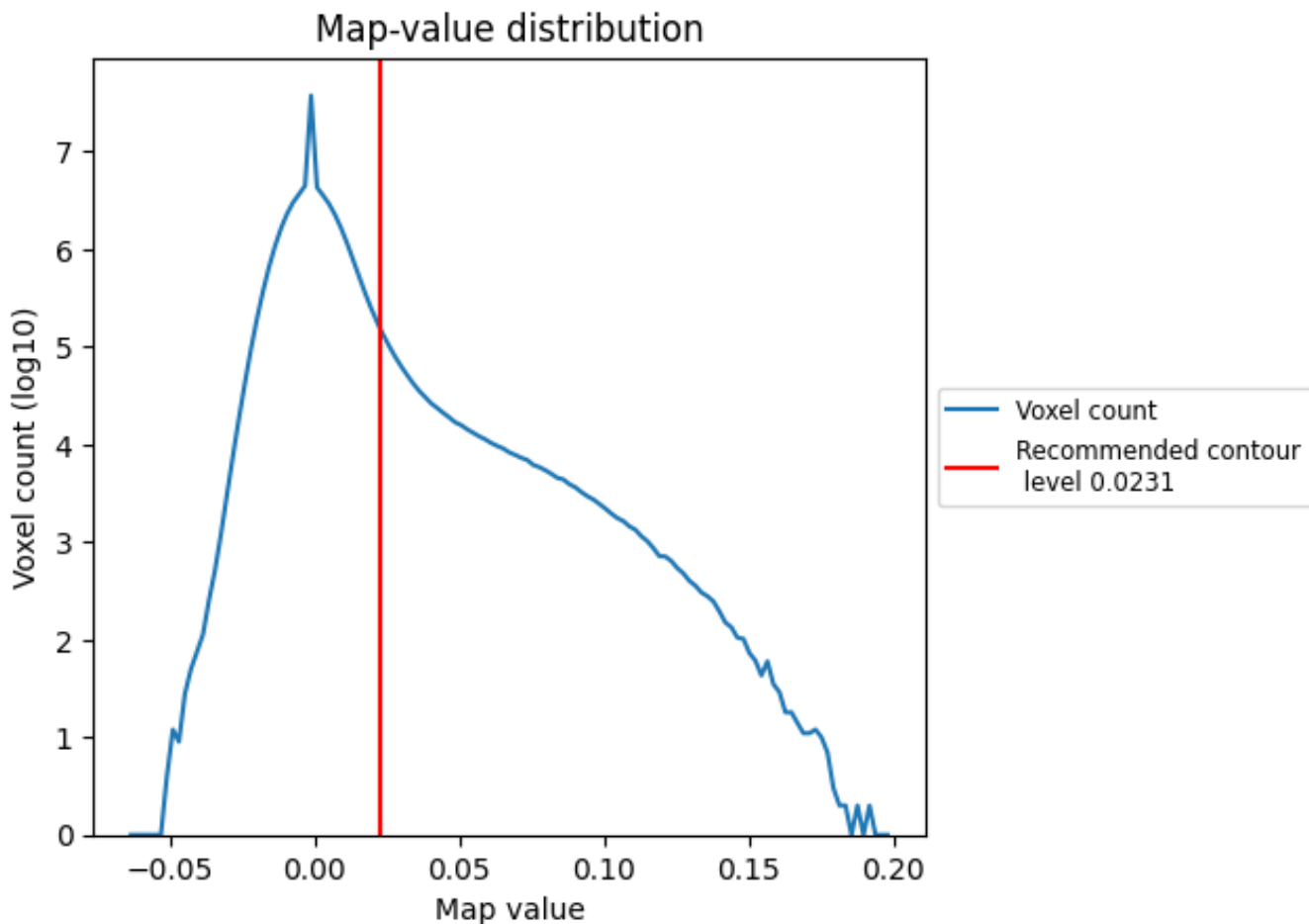
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

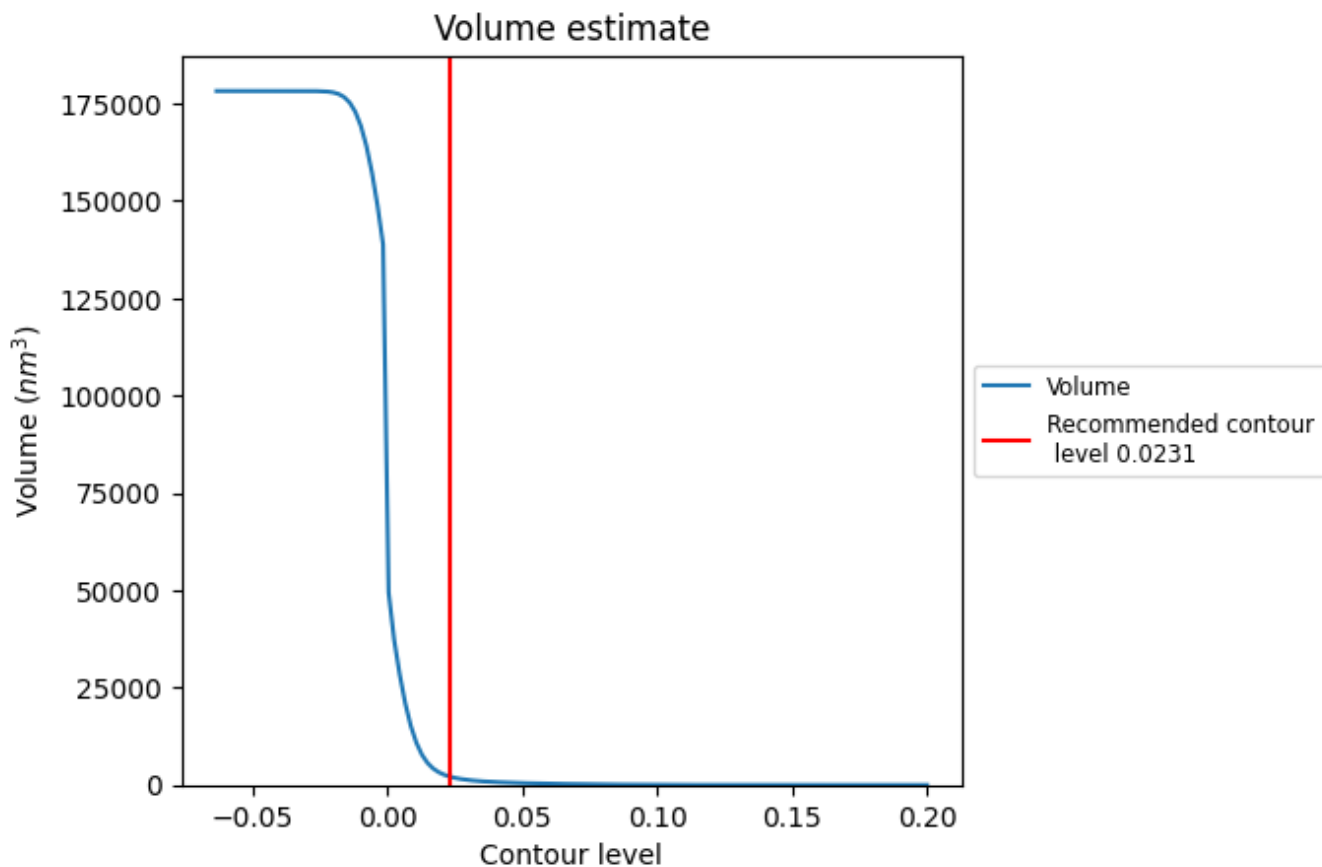
This section contains the results of statistical analysis of the map.

### 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](#)

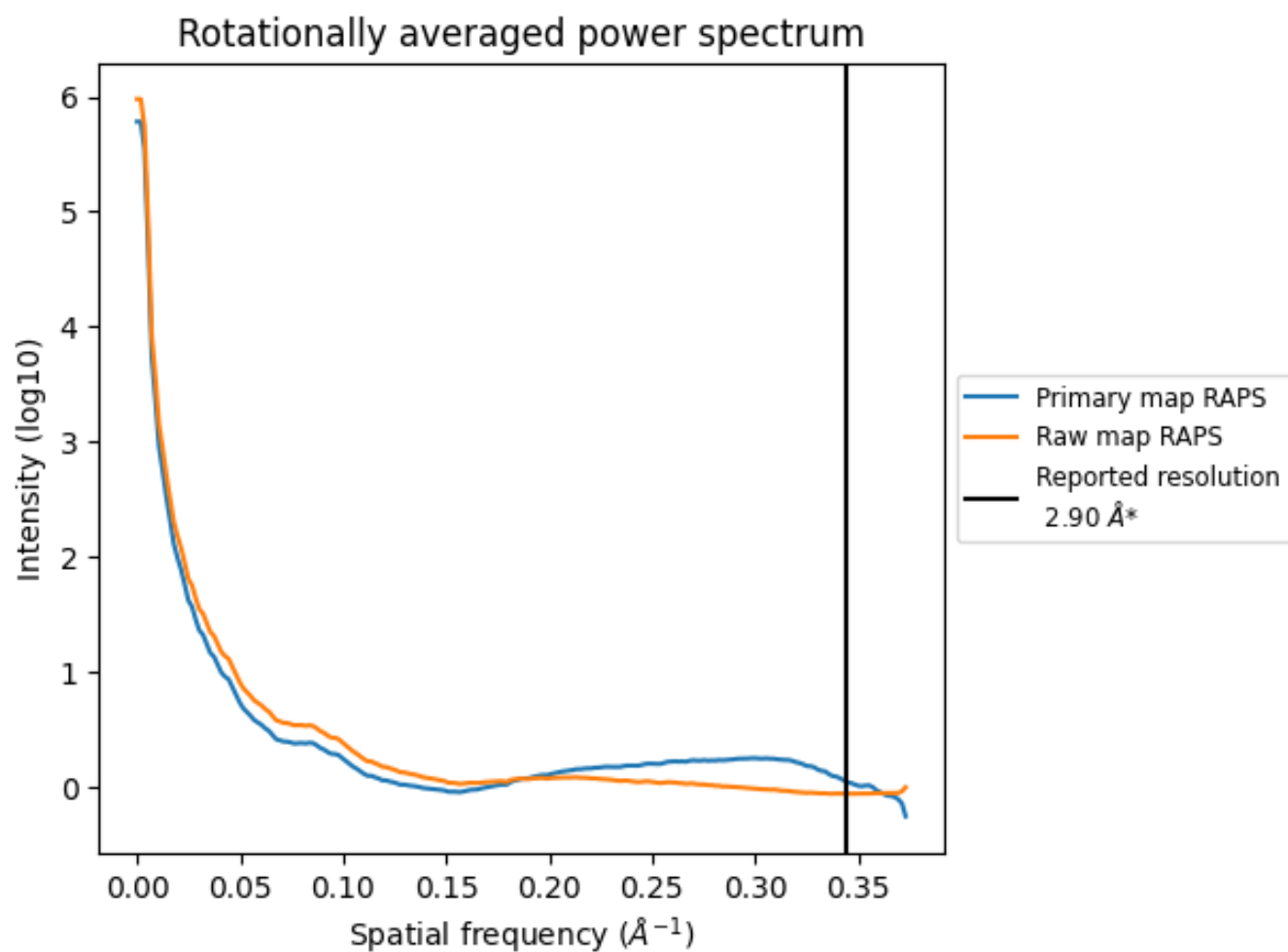


The volume at the recommended contour level is 2152  $\text{nm}^3$ ; this corresponds to an approximate mass of 1944 kDa.

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

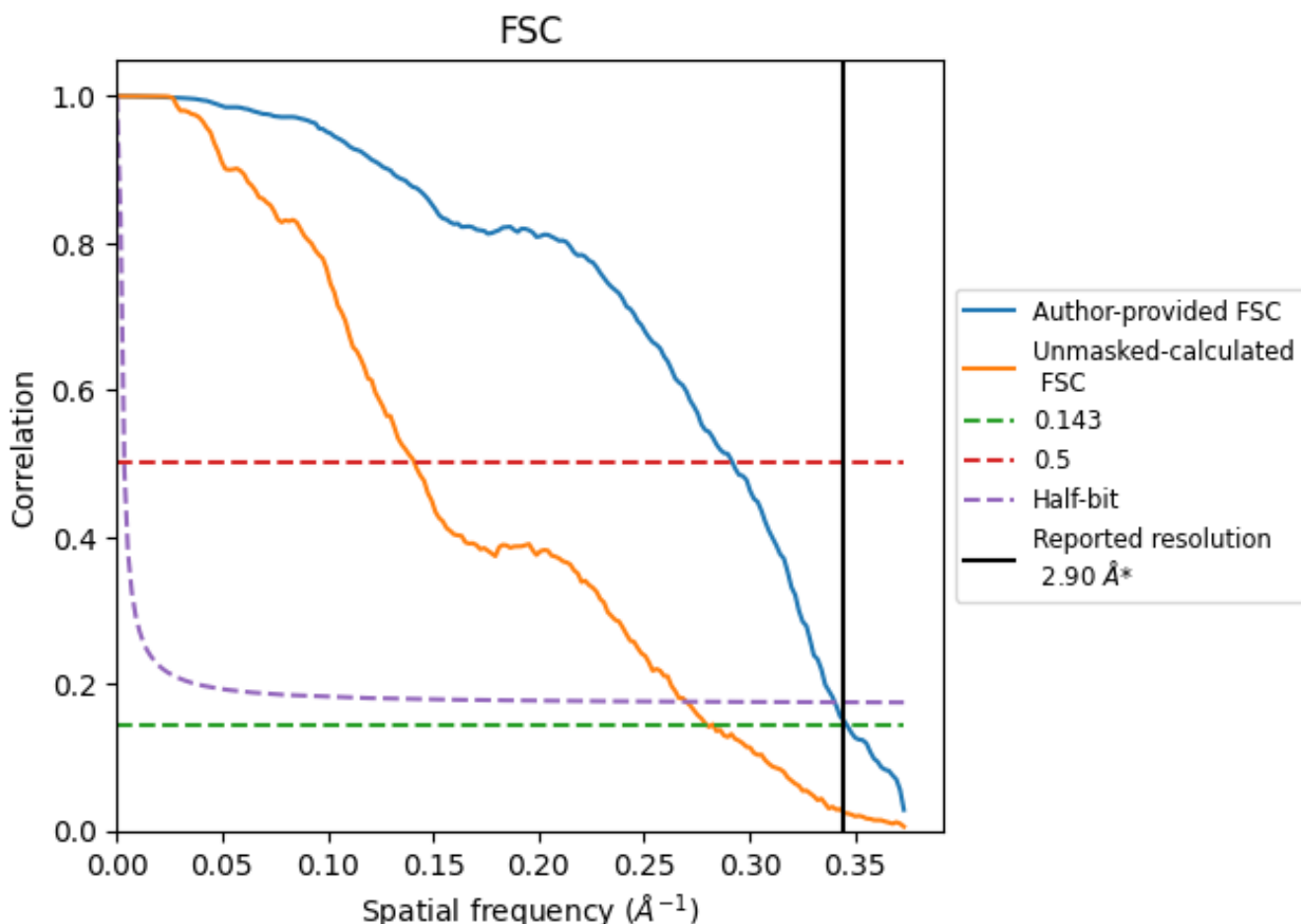


\*Reported resolution corresponds to spatial frequency of 0.345 Å<sup>-1</sup>

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

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

### 8.1 FSC [i](#)



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

## 8.2 Resolution estimates [i](#)

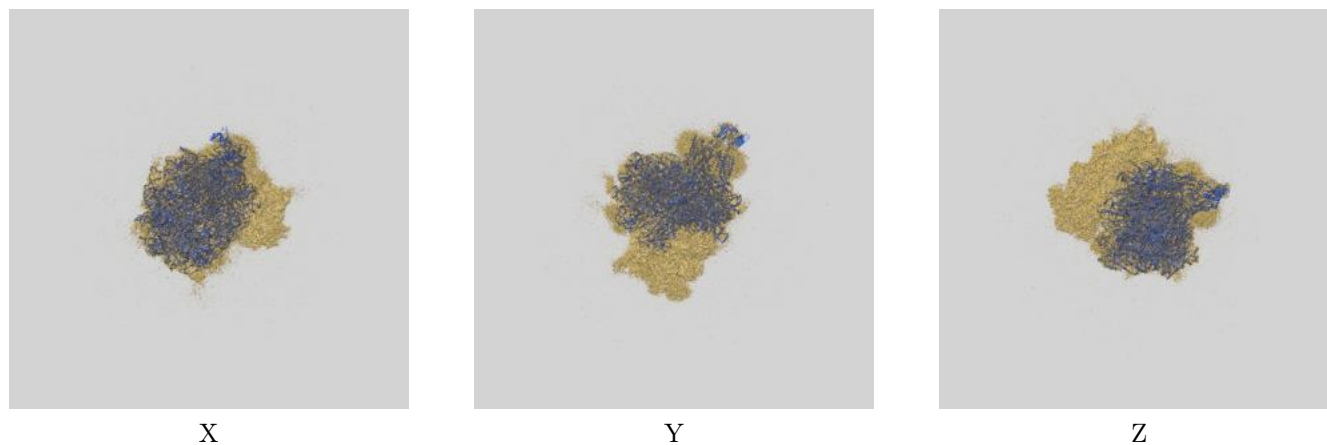
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.90	-	-
Author-provided FSC curve	2.89	3.42	2.94
Unmasked-calculated*	3.57	7.08	3.70

\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.57 differs from the reported value 2.90061 by more than 10 %

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

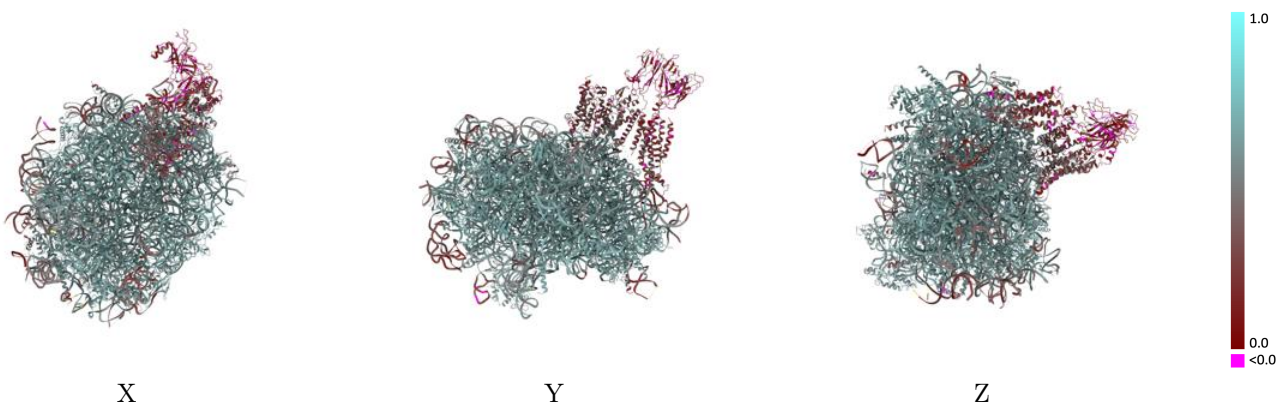
This section contains information regarding the fit between EMDB map EMD-19197 and PDB model 8RJC. Per-residue inclusion information can be found in section 3 on page 16.

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



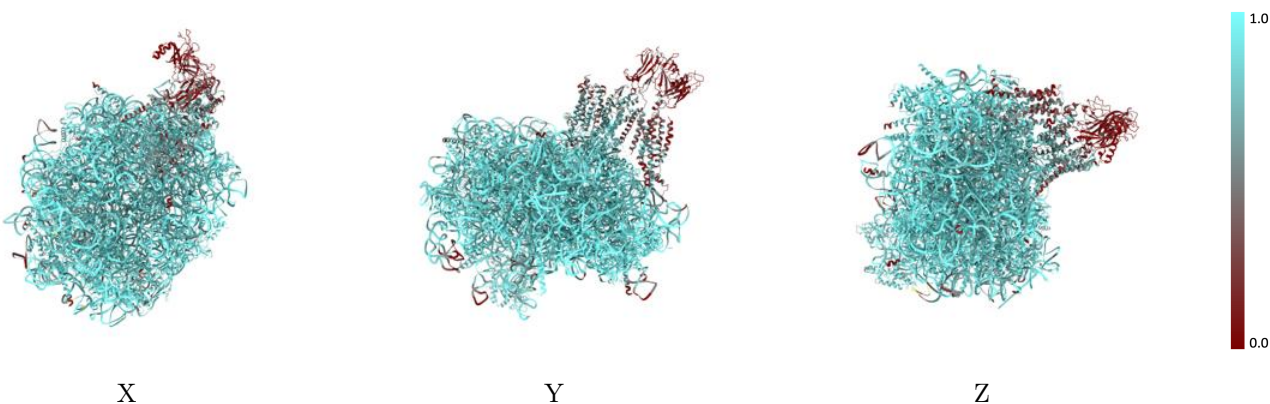
The images above show the 3D surface view of the map at the recommended contour level 0.0231 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



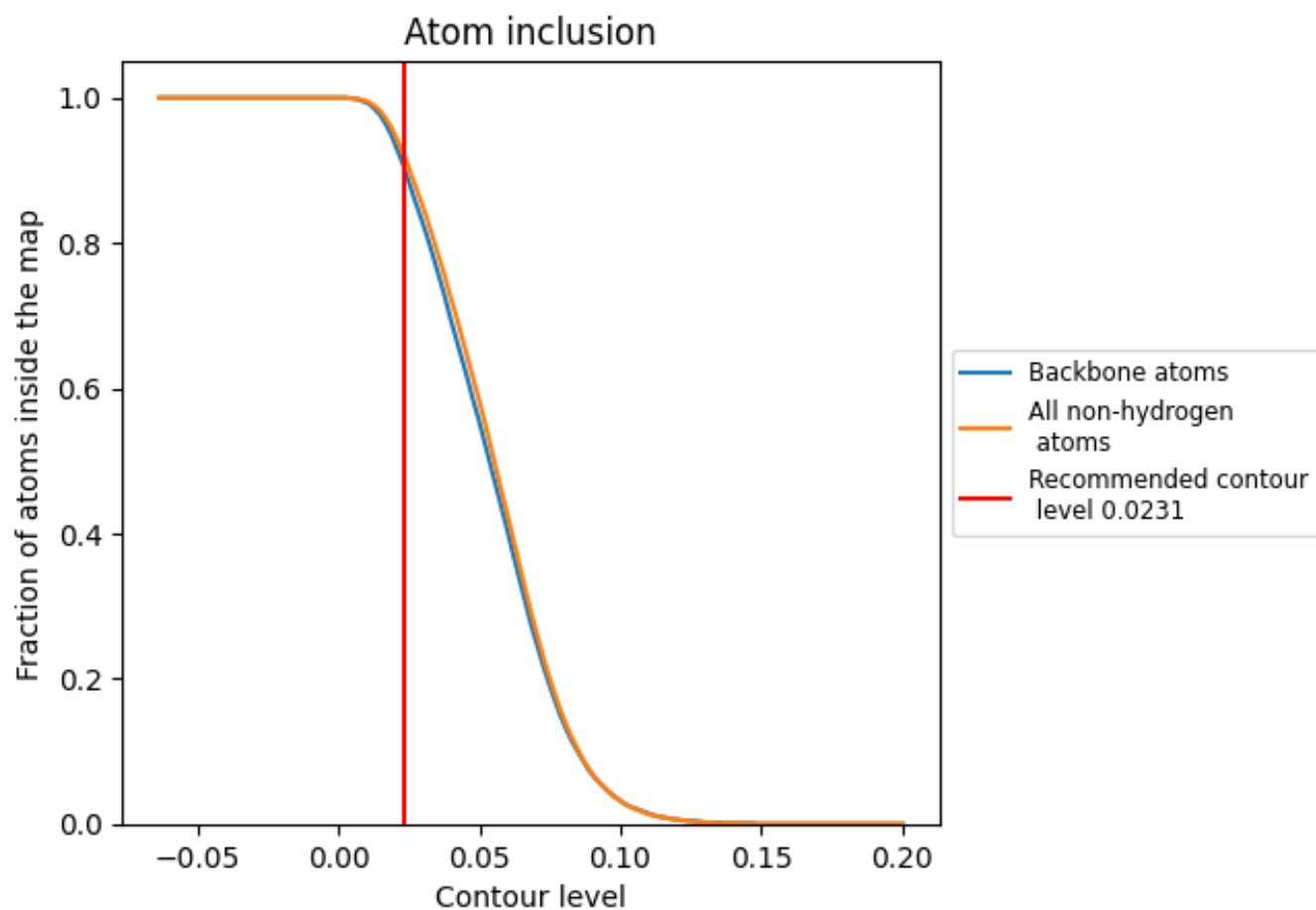
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.0231).







































































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 91% of all backbone atoms, 92% 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 (0.0231) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9230	 0.5680
1	 0.6560	 0.3620
2	 0.5830	 0.3360
3	 0.7660	 0.4230
4	 0.6230	 0.4960
5	 0.2650	 0.2140
6	 0.2000	 0.1640
7	 0.4590	 0.2590
8	 0.1590	 0.1770
9	 0.3030	 0.2120
A	 0.9920	 0.6440
B	 0.5900	 0.2820
C	 0.9690	 0.6260
D	 0.9290	 0.6020
E	 0.9160	 0.5890
F	 0.9800	 0.6310
G	 0.8900	 0.5820
H	 0.9520	 0.6200
I	 0.9640	 0.6220
J	 0.8910	 0.5780
K	 0.9550	 0.5740
L	 0.9140	 0.6060
M	 0.9490	 0.6170
N	 0.9990	 0.6520
O	 0.9740	 0.6350
P	 0.8550	 0.5860
Q	 0.9850	 0.6380
R	 0.9780	 0.6270
S	 0.9800	 0.6330
T	 0.9620	 0.6180
U	 0.8250	 0.5070
V	 0.9770	 0.6300
W	 0.9800	 0.6240
X	 0.9660	 0.6160
Y	 0.9520	 0.6210



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Chain	Atom inclusion	Q-score
Z	 0.9530	 0.6060
a	 0.9800	 0.6400
b	 0.8830	 0.5630
c	 0.9450	 0.6110
d	 0.9520	 0.6080
e	 0.9860	 0.6380
f	 0.9860	 0.6490
g	 0.9350	 0.6110
h	 0.9410	 0.6070
i	 0.9420	 0.6000
j	 0.9990	 0.6420
k	 0.8760	 0.5900
l	 0.9860	 0.6270
m	 0.9520	 0.6220
n	 0.9860	 0.6000
o	 0.9660	 0.6250
p	 0.9680	 0.6190
q	 0.6760	 0.4560
r	 0.9760	 0.6230
u	 0.9910	 0.6150
v	 0.9750	 0.5980
w	 0.9730	 0.6320