



wwPDB EM Validation Summary Report ⓘ

Mar 8, 2026 – 08:29 AM UTC

PDB ID : 8RJD / pdb_00008rjd
EMDB ID : EMD-19198
Title : Structure of the rabbit 80S ribosome stalled on a 2-TMD rhodopsin intermediate in complex with Sec61-TRAP, open conformation 2
Authors : Lewis, A.J.O.; Hegde, R.S.
Deposited on : 2023-12-20
Resolution : 2.79 Å(reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

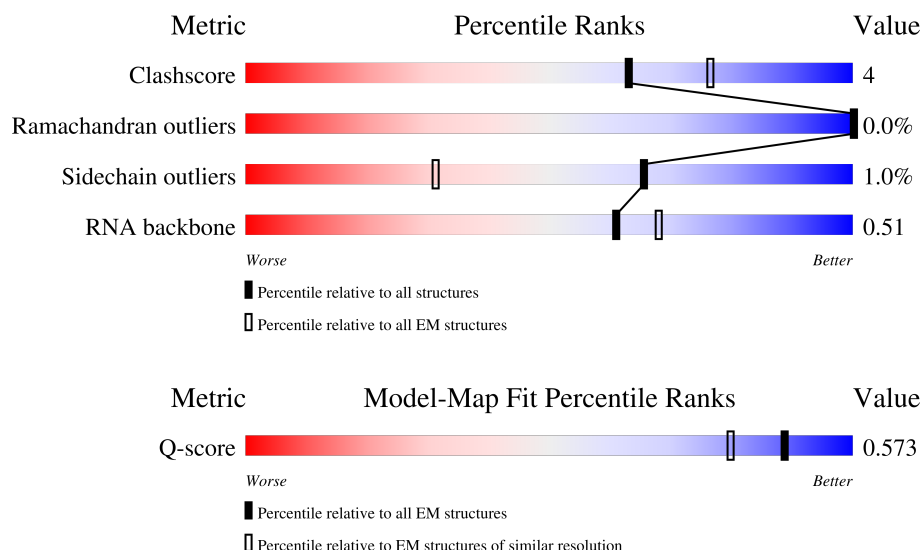
EMDB validation analysis : 0.0.1.dev132
MolProbity : 4-5-2 with Phenix2.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDb archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

1 Overall quality at a glance

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

The reported resolution of this entry is 2.79 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)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
RNA backbone	8273	3508	-
Q-score	-	25397	10740 (2.29 - 3.28)

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

Mol	Chain	Length	Quality of chain
1	1	476	20% 81% 16% .
2	2	96	9% 30% 67% .
3	3	68	7% 82% 15% .

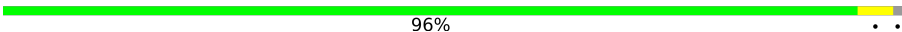
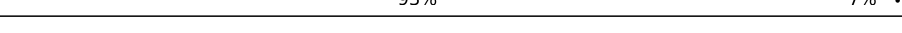
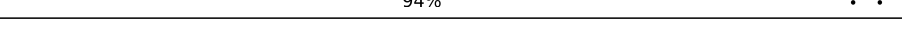
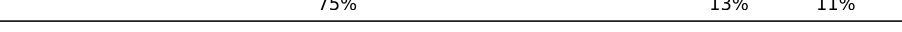
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Mol	Chain	Length	Quality of chain
4	4	66	
5	5	286	
6	6	183	
7	7	185	
8	8	173	
9	9	593	
10	A	257	
11	B	229	
12	C	425	
13	D	297	
14	E	291	
15	F	247	
16	G	319	
17	H	192	
18	I	214	
19	J	178	
20	K	3543	
21	L	211	
22	M	218	
23	N	204	
24	O	203	
25	P	184	
26	Q	187	
27	R	196	
28	S	176	

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Mol	Chain	Length	Quality of chain
29	T	160	 96%
30	U	128	 60% 19% 20%
31	V	140	 87% 6% 6%
32	W	157	 39% 60%
33	X	156	 73% 24%
34	Y	145	 83% 9% 8%
35	Z	136	 89% 10%
36	a	148	 89% 10%
37	b	226	 40% 6% 54%
38	c	115	 74% 11% 15%
39	d	125	 80% 6% 14%
40	e	135	 81% 14% 5%
41	f	110	 95% 5%
42	g	116	 91% 7%
43	h	123	 93% 7%
44	i	105	 94%
45	j	97	 75% 13% 11%
46	k	70	 90% 9%
47	l	51	 86% 10%
48	m	102	 49% 49%
49	n	25	 92% 8%
50	o	106	 92% 7%
51	p	92	 87% 12%
52	q	76	 11% 84% 12%
53	r	137	 82% 8% 9%

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Mol	Chain	Length	Quality of chain
54	u	120	76% 22%
55	v	156	69% 23% 8%
56	w	403	89% 8%

2 Entry composition

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
1	1	461	Total	C	H	N	O	S	0	0
			7275	2347	3700	576	629	23		

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

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

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

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

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

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

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

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

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

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

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

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

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

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

- Molecule 9 is a protein called Calnexin.

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

- Molecule 10 is a protein called Ribosomal protein L8.

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

- Molecule 11 is a protein called Nascent chain.

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

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

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

- Molecule 13 is a protein called Ribosomal_L18_c domain-containing protein.

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

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

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

- Molecule 15 is a protein called Ribosomal Protein uL30.

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

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
16	G	233	Total	C	H	N	O	S	0	0
			3908	1199	2029	361	315	4		

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
17	H	190	Total	C	H	N	O	S	0	0
			3114	954	1598	284	272	6		

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

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

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

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

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

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

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

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

There are 170 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
L	1	MET	ARG	conflict	UNP G1TPV0
L	3	PRO	LEU	conflict	UNP G1TPV0
L	4	SER	ALA	conflict	UNP G1TPV0
L	6	ASN	-	insertion	UNP G1TPV0
L	7	GLY	ALA	conflict	UNP G1TPV0
L	9	ILE	ARG	conflict	UNP G1TPV0
L	10	LEU	ARG	conflict	UNP G1TPV0
L	11	LYS	LEU	conflict	UNP G1TPV0
L	12	PRO	ALA	conflict	UNP G1TPV0
L	13	HIS	LYS	conflict	UNP G1TPV0
L	14	PHE	ALA	conflict	UNP G1TPV0
L	15	HIS	LEU	conflict	UNP G1TPV0
L	17	ASP	PHE	conflict	UNP G1TPV0
L	18	TRP	PHE	conflict	UNP G1TPV0
L	19	GLN	SER	conflict	UNP G1TPV0
L	20	ARG	SER	conflict	UNP G1TPV0
L	21	ARG	SER	conflict	UNP G1TPV0
L	23	ALA	ILE	conflict	UNP G1TPV0
L	25	TRP	-	insertion	UNP G1TPV0
L	26	PHE	LEU	conflict	UNP G1TPV0
L	27	ASN	ALA	conflict	UNP G1TPV0
L	28	GLN	PHE	conflict	UNP G1TPV0
L	29	PRO	SER	conflict	UNP G1TPV0
L	30	ALA	PHE	conflict	UNP G1TPV0
L	31	ARG	LEU	conflict	UNP G1TPV0

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Chain	Residue	Modelled	Actual	Comment	Reference
L	33	ILE	-	insertion	UNP G1TPV0
L	34	ARG	THR	conflict	UNP G1TPV0
L	35	ARG	PHE	conflict	UNP G1TPV0
L	37	LYS	MET	conflict	UNP G1TPV0
L	38	ALA	GLY	conflict	UNP G1TPV0
L	39	ARG	MET	conflict	UNP G1TPV0
L	40	GLN	THR	conflict	UNP G1TPV0
L	41	ALA	GLY	conflict	UNP G1TPV0
L	42	ARG	PRO	conflict	UNP G1TPV0
L	43	ALA	VAL	conflict	UNP G1TPV0
L	44	ARG	SER	conflict	UNP G1TPV0
L	45	ARG	TRP	conflict	UNP G1TPV0
L	46	ILE	VAL	conflict	UNP G1TPV0
L	48	PRO	ASN	conflict	UNP G1TPV0
L	49	ARG	PHE	conflict	UNP G1TPV0
L	50	PRO	SER	conflict	UNP G1TPV0
L	51	ALA	SER	conflict	UNP G1TPV0
L	52	ALA	SER	conflict	UNP G1TPV0
L	53	GLY	ALA	conflict	UNP G1TPV0
L	54	PRO	GLU	conflict	UNP G1TPV0
L	55	ILE	LEU	conflict	UNP G1TPV0
L	56	ARG	SER	conflict	UNP G1TPV0
L	58	ILE	PHE	conflict	UNP G1TPV0
L	59	VAL	LEU	conflict	UNP G1TPV0
L	60	ARG	GLY	conflict	UNP G1TPV0
L	61	CYS	ALA	conflict	UNP G1TPV0
L	62	PRO	GLU	conflict	UNP G1TPV0
L	63	THR	GLY	conflict	UNP G1TPV0
L	64	VAL	PHE	conflict	UNP G1TPV0
L	66	TYR	-	insertion	UNP G1TPV0
L	67	HIS	-	insertion	UNP G1TPV0
L	68	THR	GLY	conflict	UNP G1TPV0
L	70	VAL	-	insertion	UNP G1TPV0
L	71	ARG	-	insertion	UNP G1TPV0
L	72	ALA	-	insertion	UNP G1TPV0
L	73	GLY	-	insertion	UNP G1TPV0
L	75	GLY	-	insertion	UNP G1TPV0
L	76	PHE	THR	conflict	UNP G1TPV0
L	80	GLU	-	insertion	UNP G1TPV0
L	81	LEU	-	insertion	UNP G1TPV0
L	83	VAL	TYR	conflict	UNP G1TPV0
L	84	ALA	SER	conflict	UNP G1TPV0

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Chain	Residue	Modelled	Actual	Comment	Reference
L	85	GLY	PHE	conflict	UNP G1TPV0
L	86	ILE	SER	conflict	UNP G1TPV0
L	87	HIS	ARG	conflict	UNP G1TPV0
L	88	LYS	CYS	conflict	UNP G1TPV0
L	89	LYS	THR	conflict	UNP G1TPV0
L	90	VAL	LEU	conflict	UNP G1TPV0
L	92	ARG	-	insertion	UNP G1TPV0
L	93	THR	-	insertion	UNP G1TPV0
L	94	ILE	CYS	conflict	UNP G1TPV0
L	95	GLY	ARG	conflict	UNP G1TPV0
L	96	ILE	ASP	conflict	UNP G1TPV0
L	100	PRO	LEU	conflict	UNP G1TPV0
L	101	ARG	PHE	conflict	UNP G1TPV0
L	104	ASN	ARG	conflict	UNP G1TPV0
L	105	LYS	GLY	conflict	UNP G1TPV0
L	109	SER	MET	conflict	UNP G1TPV0
L	110	LEU	PRO	conflict	UNP G1TPV0
L	111	GLN	ILE	conflict	UNP G1TPV0
L	112	ALA	VAL	conflict	UNP G1TPV0
L	113	ASN	ARG	conflict	UNP G1TPV0
L	114	VAL	ALA	conflict	UNP G1TPV0
L	115	GLN	THR	conflict	UNP G1TPV0
L	116	ARG	PHE	conflict	UNP G1TPV0
L	?	-	TRP	deletion	UNP G1TPV0
L	?	-	MET	deletion	UNP G1TPV0
L	118	LYS	PRO	conflict	UNP G1TPV0
L	119	GLU	ALA	conflict	UNP G1TPV0
L	120	TYR	THR	conflict	UNP G1TPV0
L	123	LYS	SER	conflict	UNP G1TPV0
L	124	LEU	SER	conflict	UNP G1TPV0
L	125	VAL	ARG	conflict	UNP G1TPV0
L	127	PHE	LYS	conflict	UNP G1TPV0
L	130	LYS	PRO	conflict	UNP G1TPV0
L	131	PRO	ALA	conflict	UNP G1TPV0
L	132	SER	ARG	conflict	UNP G1TPV0
L	133	ALA	THR	conflict	UNP G1TPV0
L	134	PRO	PHE	conflict	UNP G1TPV0
L	135	LYS	VAL	conflict	UNP G1TPV0
L	136	LYS	TRP	conflict	UNP G1TPV0
L	137	GLY	TYR	conflict	UNP G1TPV0
L	138	ASP	ARG	conflict	UNP G1TPV0
L	139	SER	THR	conflict	UNP G1TPV0

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Chain	Residue	Modelled	Actual	Comment	Reference
L	140	SER	VAL	conflict	UNP G1TPV0
L	141	ALA	GLY	conflict	UNP G1TPV0
L	142	GLU	GLN	conflict	UNP G1TPV0
L	143	GLU	ARG	conflict	UNP G1TPV0
L	144	LEU	THR	conflict	UNP G1TPV0
L	145	LYS	MET	conflict	UNP G1TPV0
L	146	LEU	GLY	conflict	UNP G1TPV0
L	147	ALA	ARG	conflict	UNP G1TPV0
L	148	THR	MET	conflict	UNP G1TPV0
L	149	GLN	GLY	conflict	UNP G1TPV0
L	151	THR	ALA	conflict	UNP G1TPV0
L	152	GLY	PRO	conflict	UNP G1TPV0
L	153	PRO	ALA	conflict	UNP G1TPV0
L	154	VAL	ASP	conflict	UNP G1TPV0
L	155	MET	LEU	conflict	UNP G1TPV0
L	156	PRO	ALA	conflict	UNP G1TPV0
L	157	ILE	ARG	conflict	UNP G1TPV0
L	159	ASN	LEU	conflict	UNP G1TPV0
L	161	PHE	GLU	conflict	UNP G1TPV0
L	162	LYS	PRO	conflict	UNP G1TPV0
L	163	LYS	GLY	conflict	UNP G1TPV0
L	164	GLU	GLY	conflict	UNP G1TPV0
L	165	LYS	HIS	conflict	UNP G1TPV0
L	167	ARG	PRO	conflict	UNP G1TPV0
L	168	VAL	LEU	conflict	UNP G1TPV0
L	169	ILE	PRO	conflict	UNP G1TPV0
L	170	THR	VAL	conflict	UNP G1TPV0
L	171	GLU	LEU	conflict	UNP G1TPV0
L	172	GLU	VAL	conflict	UNP G1TPV0
L	174	LYS	VAL	conflict	UNP G1TPV0
L	175	ASN	ARG	conflict	UNP G1TPV0
L	176	PHE	LEU	conflict	UNP G1TPV0
L	177	LYS	GLN	conflict	UNP G1TPV0
L	178	ALA	ASP	conflict	UNP G1TPV0
L	179	PHE	HIS	conflict	UNP G1TPV0
L	181	SER	ILE	conflict	UNP G1TPV0
L	182	LEU	PRO	conflict	UNP G1TPV0
L	183	ARG	ALA	conflict	UNP G1TPV0
L	184	MET	GLY	conflict	UNP G1TPV0
L	185	ALA	ARG	conflict	UNP G1TPV0
L	186	ARG	HIS	conflict	UNP G1TPV0
L	187	ALA	GLY	conflict	UNP G1TPV0

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Chain	Residue	Modelled	Actual	Comment	Reference
L	188	ASN	CYS	conflict	UNP G1TPV0
L	189	ALA	VAL	conflict	UNP G1TPV0
L	190	ARG	LEU	conflict	UNP G1TPV0
L	192	PHE	ARG	conflict	UNP G1TPV0
L	193	GLY	ALA	conflict	UNP G1TPV0
L	194	ILE	ARG	conflict	UNP G1TPV0
L	195	ARG	THR	conflict	UNP G1TPV0
L	196	ALA	GLU	conflict	UNP G1TPV0
L	199	ALA	LYS	conflict	UNP G1TPV0
L	200	LYS	SER	conflict	UNP G1TPV0
L	202	ALA	PRO	conflict	UNP G1TPV0
L	203	ALA	GLN	conflict	UNP G1TPV0
L	204	GLU	HIS	conflict	UNP G1TPV0
L	205	GLN	PHE	conflict	UNP G1TPV0
L	207	VAL	THR	conflict	UNP G1TPV0
L	208	GLU	GLY	conflict	UNP G1TPV0
L	209	LYS	CYS	conflict	UNP G1TPV0
L	210	LYS	ARG	conflict	UNP G1TPV0
L	211	LYS	HIS	conflict	UNP G1TPV0

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

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

- Molecule 23 is a protein called Ribosomal protein L15.

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

- Molecule 24 is a protein called 60S ribosomal protein L13a.

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

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
O	174	LEU	ILE	conflict	UNP A0A0N8ETI8

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Chain	Residue	Modelled	Actual	Comment	Reference
O	194	ASP	GLU	conflict	UNP A0A0N8ETI8

- Molecule 25 is a protein called uL22.

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

- Molecule 26 is a protein called Ribosomal protein L18.

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

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
Q	134	ARG	CYS	conflict	UNP F6QKI9

- Molecule 27 is a protein called Ribosomal protein L19.

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

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
R	38	ARG	HIS	conflict	UNP G1TYL6
R	151	ARG	HIS	conflict	UNP G1TYL6

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

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

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

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

- Molecule 30 is a protein called Large ribosomal subunit protein eL22.

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

There are 5 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
U	18	LEU	VAL	conflict	UNP Q4R5I3
U	62	SER	THR	conflict	UNP Q4R5I3
U	63	LEU	ILE	conflict	UNP Q4R5I3
U	106	THR	SER	conflict	UNP Q4R5I3
U	126	GLU	ASP	conflict	UNP Q4R5I3

- Molecule 31 is a protein called Ribosomal protein L23.

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

- Molecule 32 is a protein called Ribosomal protein L24.

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

- Molecule 33 is a protein called Large ribosomal subunit protein uL23 N-terminal domain-containing protein.

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

- Molecule 34 is a protein called Ribosomal protein L26.

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

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

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

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

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

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

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

- Molecule 38 is a protein called Large ribosomal subunit protein eL30.

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

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

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

- 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 Large ribosomal subunit protein eL38.

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
47	l	50	Total	C	H	N	O	S	0	0
			928	286	481	96	64	1		

- Molecule 48 is a protein called eL40.

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

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

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

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

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

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

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

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

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

- 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 (CCD ID: 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	5	Total	Mg	0
			5	5	

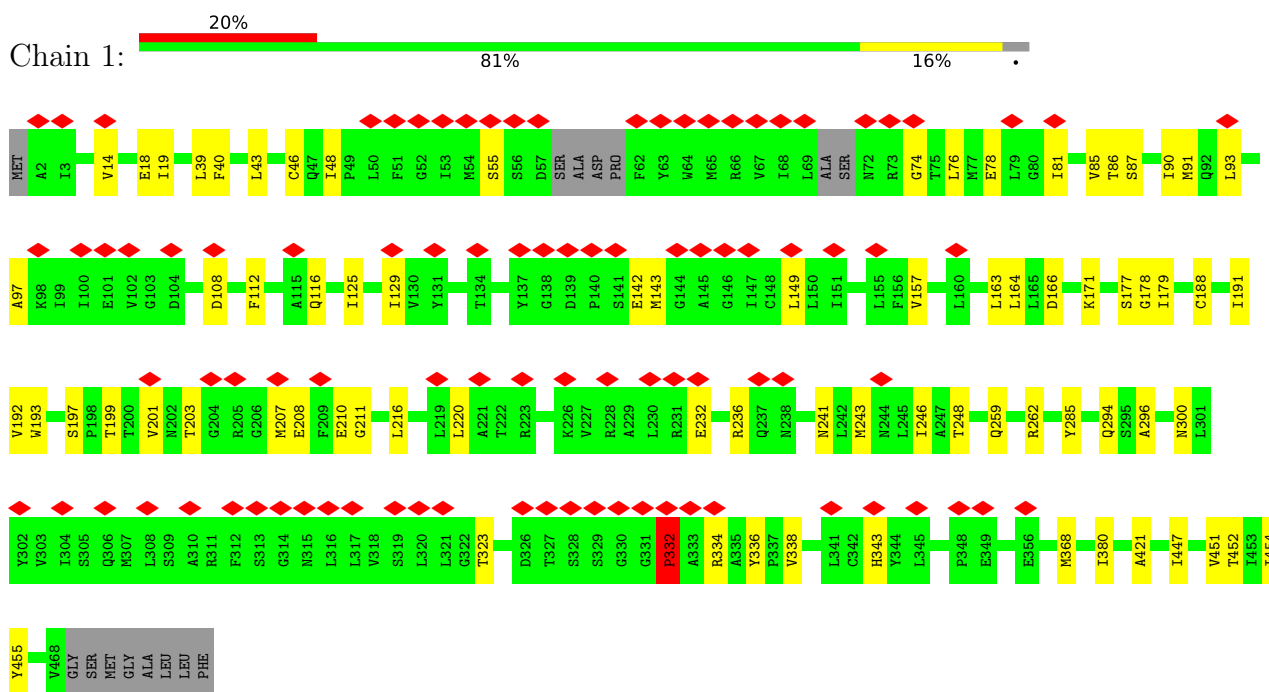
- Molecule 58 is ZINC ION (CCD ID: ZN) (formula: Zn).

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

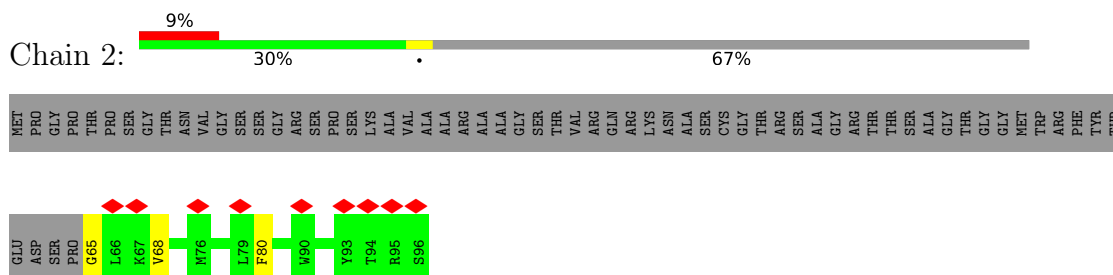
3 Residue-property plots

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.

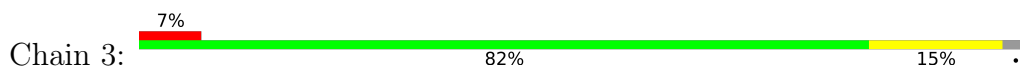
- Molecule 1: Protein transport protein Sec61 subunit alpha isoform 1



- Molecule 2: Protein transport protein Sec61 subunit beta

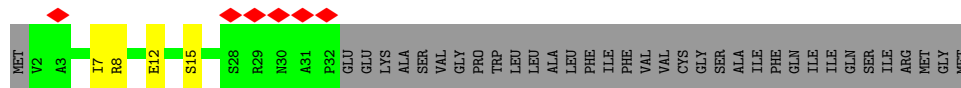
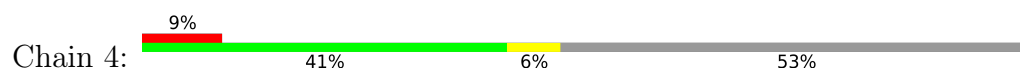


- Molecule 3: Protein transport protein Sec61 subunit gamma

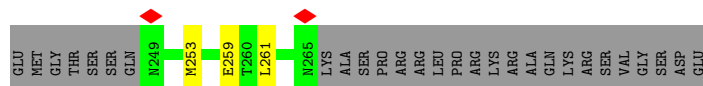
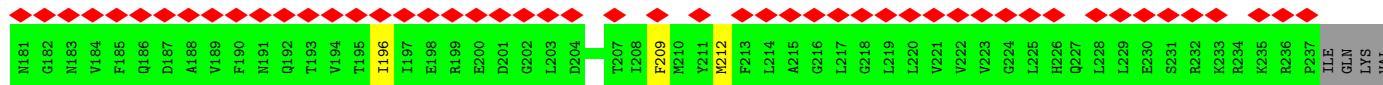
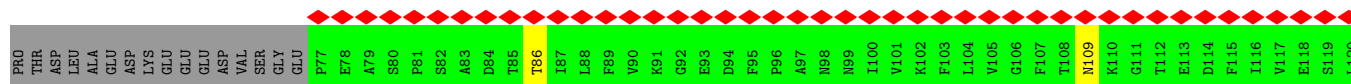
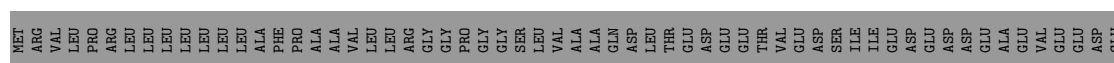




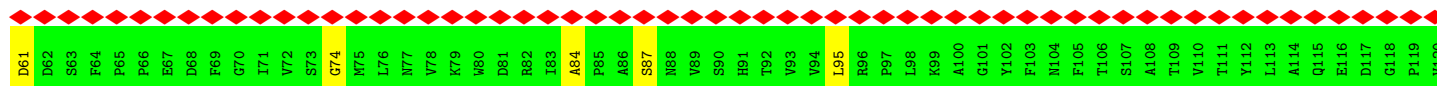
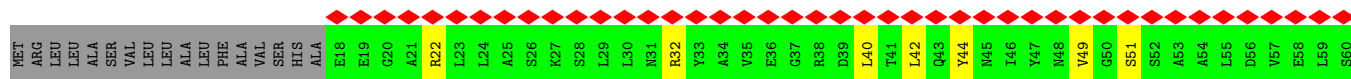
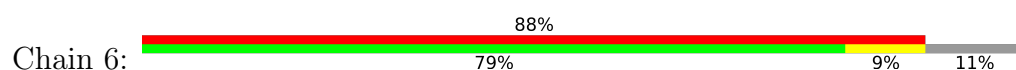
- Molecule 4: Stress-associated endoplasmic reticulum protein



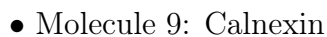
- Molecule 5: Translocon-associated protein subunit alpha

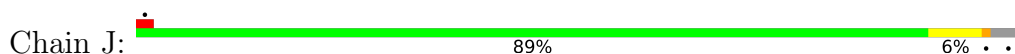


- Molecule 6: Translocon-associated protein subunit beta



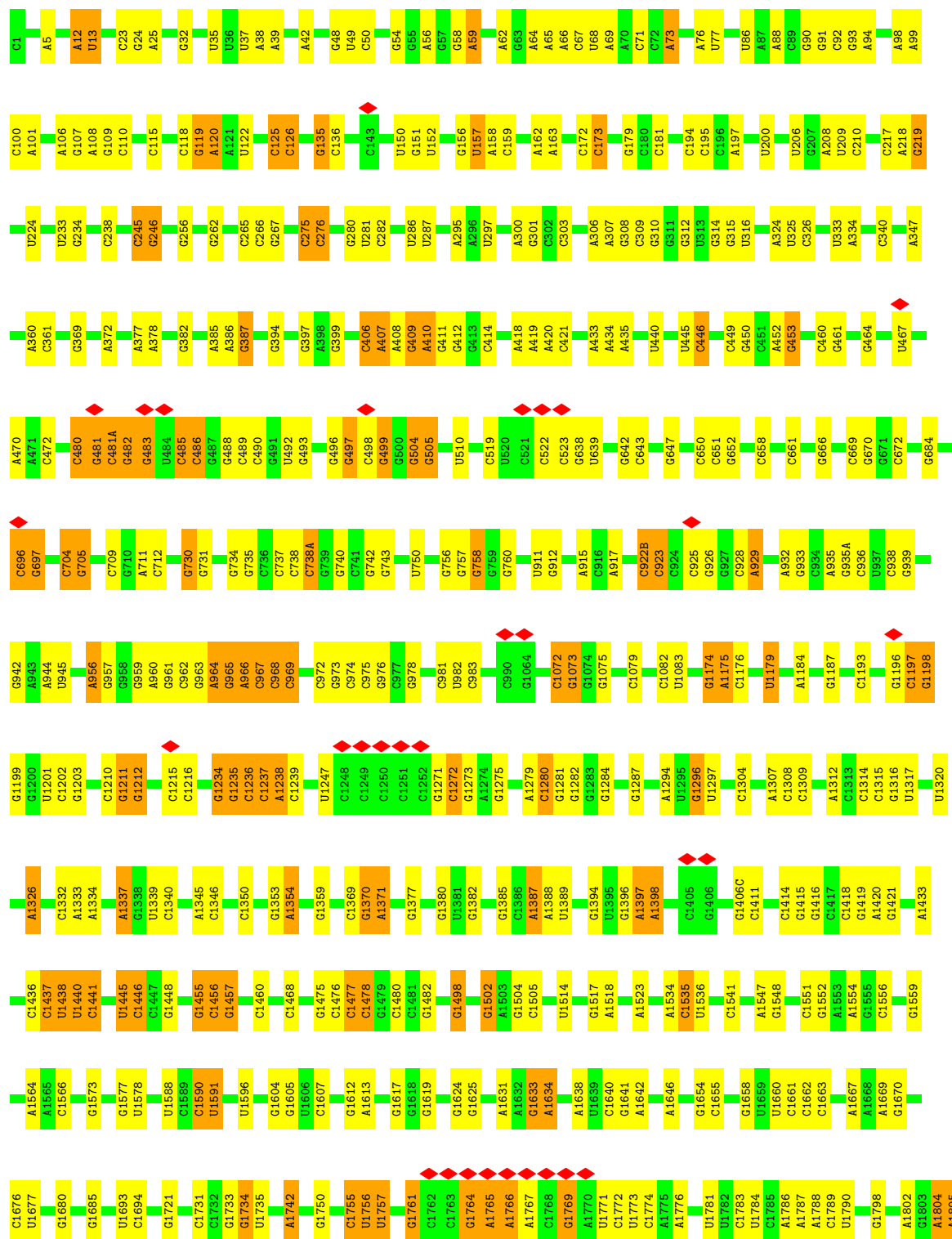
- Molecule 7: Translocon-associated protein subunit gamma







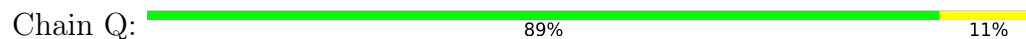
• Molecule 20: 28S rRNA



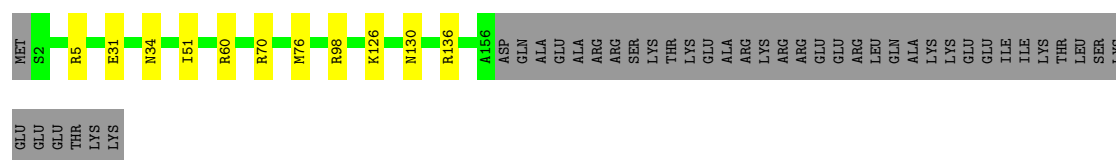
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A4311	A4312	A4313	C4314	C4318	C4319	C4320	U4321	G4322	A4325	G4326	C4327	G4328	G4329	G4330	C4331	C4332	A4339	C4342	U4343	C4344	A4348	C4349	C4350	U4351	U4354	C4355	U4360	U4361	A4362	G4371	U4372	G4373	A4376	C4377	A4378	C4379	C4387	A4390	C4391	G4392	G4393	A4394	U4395	C4398	U4521	G4522	A4523
G4201	U4202	A4203	A4212	A4213	A4214	A4219	U4220	C4221	G4225	U4228	U4229	U4232	A4233	C4237	A4251	C4252	A4253	G4254	U4260	C4261	U4265	C4266	A4268	A4271	G4272	A4273	A4274	G4275	G4276	G4277	A4280	A4281	A4282	C4288	G4291	A4292	U4293	C4294	C4303	A4304	G4305	U4306	A4307	C4308			
A3784	A3785	U3786	G3811	U3814	G3815	A3816	A3817	U3818	C3819	G3822	G3823	A3828	C3837	U3838	G3839	U3840	A3860	C3866	A3867	G3873	G3874	G3875	A3876	A3877	G3878	G3879	G3880	G3881	G3888	G3889	A3890	G3897	A3901	G3904	A3905	A3906	G3907	A3908	C3909	C3910	C3911	U3915	G3916	A3923			
C3924	G3938	G3939	A3942	A3943	G3946	U4066	A4073	G4076	U4083	U4084	G4090	G4099	C4100	C4101	G4107	G4108	G4109	C4110	U4111	C4112	C4119	U4120	G4121	G4122	A4127	A4128	C4148	G4161	C4162	U4163	C4164	C4165	A4170	C4171	U4172	G4183	G4184	U4189	U4190	G4191	G4195						
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A3784	A3785	U3786	G3811	U3814	G3815	A3816	A3817	U3818	C3819	G3822	G3823	A3828	C3837	U3838	G3839	U3840	A3860	C3866	A3867	G3873	G3874	G3875	A3876	A3877	G3878	G3879	G3880	G3881	G3888	G3889	A3890	G3897	A3901	G3904	A3905	A3906	G3907	A3908	C3909	C3910	C3911	U3915	G3916	A3923			
C3924	G3938	G3939	A3942	A3943	G3946	U4066	A4073	G4076	U4083	U4084	G4090	G4099	C4100	C4101	G4107	G4108	G4109	C4110	U4111	C4112	C4119	U4120	G4121	G4122	A4127	A4128	C4148	G4161	C4162	U4163	C4164	C4165	A4170	C4171	U4172	G4183	G4184	U4189	U4190	G4191	G4195						
G4201	U4202	A4203	A4212	A4213	A4214	A4219	U4220	C4221	G4225	U4228	U4229	U4232	A4233	C4237	A4251	C4252	A4253	G4254	U4260	C4261	U4265	C4266	A4268	A4271	G4272	A4273	A4274	G4275	G4276	G4277	A4280	A4281	A4282	C4288	G4291	A4292	U4293	C4294	C4303	A4304	G4305	U4306	A4307	C4308			
A4311	A4312	A4313	C4314	C4318	C4319	C4320	U4321	G4322	A4325	G4326	C4327	G4328	G4329	G4330	C4331	C4332	A4339	C4342	U4343	C4344	A4348	C4349	C4350	U4351	U4354	C4355	U4360	U4361	A4362	G4371	U4372	G4373	A4376	C4377	A4378	C4379	C4387	A4390	C4391	G4392	G4393	A4394	U4395	C4398	U4521	G4522	A4523
C4412	C4413	C4417	G4418	U4419	U4420	C4421	U4422	U4423	C4429	G4432	G4433	G4434	G4439	G4440	C4443	C4444	U4445	U4446	C4447	G4448	A4449	U4459	U4460	C4461	A4464	A4467	G4472	A4473	A4474	G4475	C4476	G4477	G4478	G4489	U4500	C4504	C4505	A4510	G4511	U4512	A4513	C4519	G4520	U4521	G4522	A4523	



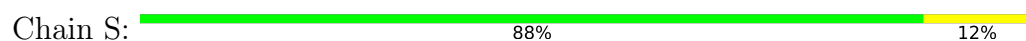
- Molecule 26: Ribosomal protein L18



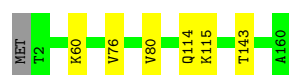
- Molecule 27: Ribosomal protein L19



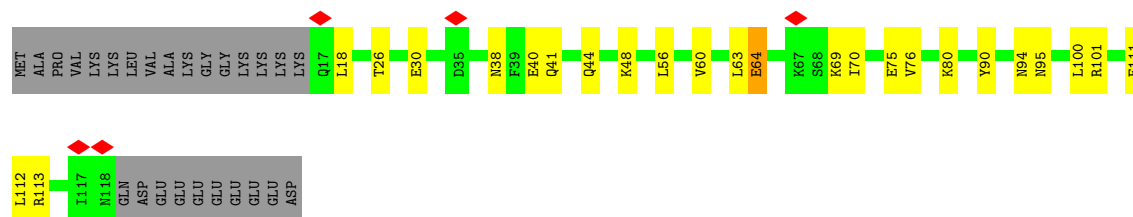
- Molecule 28: 60S ribosomal protein L18a



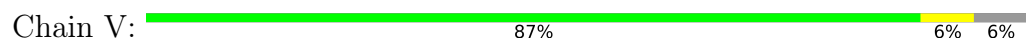
- Molecule 29: 60S ribosomal protein L21

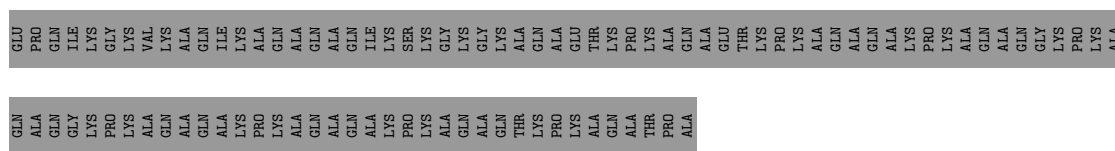


- Molecule 30: Large ribosomal subunit protein eL22

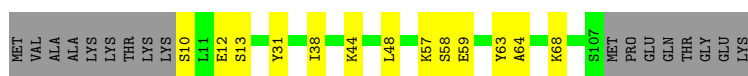


- Molecule 31: Ribosomal protein L23

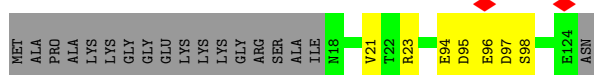




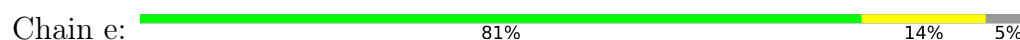
- Molecule 38: Large ribosomal subunit protein eL30



- Molecule 39: 60S ribosomal protein L31



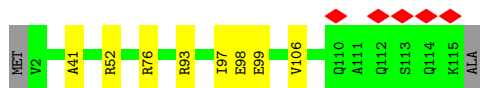
- Molecule 40: Ribosomal protein L32



- Molecule 41: 60S ribosomal protein L35a



- Molecule 42: 60S ribosomal protein L34



- Molecule 43: 60S ribosomal protein L35



- Molecule 44: 60S ribosomal protein L36

Chain i:  94%



- Molecule 45: Ribosomal protein L37

Chain j:  75% 13% 11%



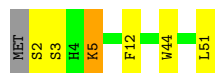
- Molecule 46: Large ribosomal subunit protein eL38

Chain k:  90% 9%



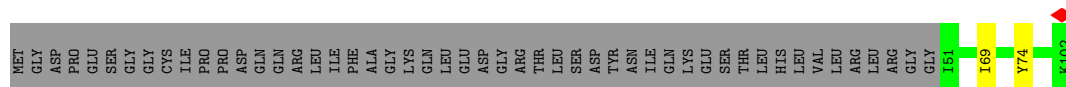
- Molecule 47: 60S ribosomal protein L39-like

Chain l:  86% 10%



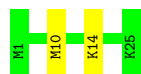
- Molecule 48: eL40

Chain m:  49% 49%



- Molecule 49: 60S ribosomal protein L41

Chain n:  92% 8%



- Molecule 50: 60S ribosomal protein L36a-like

Chain o:  92% 7%



- Molecule 51: 60S ribosomal protein L37a

Chain p:  87% 12%



• Molecule 52: P-site tRNA

Chain q:  11% 84% 12%



• Molecule 53: 60S ribosomal protein L28

Chain r:  82% 8% 9%



• Molecule 54: 5S rRNA

Chain u:  76% 22%



• Molecule 55: 5.8S rRNA

Chain v:  69% 23% 8%



• Molecule 56: Ribosomal protein L3

Chain w:  89% 8%



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	282068	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	0.218	Depositor
Minimum map value	-0.064	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.007	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 ⓘ

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	1	0.21	1/3651 (0.0%)	0.38	4/4947 (0.1%)
2	2	0.25	0/258	0.28	0/348
3	3	0.15	0/544	0.32	0/728
4	4	0.15	0/245	0.24	0/325
5	5	0.12	0/1457	0.25	0/1980
6	6	0.10	0/1296	0.23	0/1764
7	7	0.89	3/1482 (0.2%)	0.97	9/2001 (0.4%)
8	8	0.10	0/1215	0.24	0/1656
9	9	0.10	0/311	0.24	0/427
10	A	0.26	0/1936	0.34	1/2596 (0.0%)
11	B	0.17	0/446	0.36	0/610
12	C	0.25	0/2937	0.27	0/3946
13	D	0.21	0/2437	0.26	0/3264
14	E	0.20	0/1825	0.25	0/2445
15	F	0.26	0/1911	0.29	0/2549
16	G	0.21	0/1910	0.25	0/2569
17	H	0.22	0/1535	0.26	0/2063
18	I	0.23	0/1702	0.27	0/2272
19	J	0.18	0/1385	0.25	0/1852
20	K	0.31	0/84980	0.32	0/132536
21	L	0.23	0/1733	0.32	1/2316 (0.0%)
22	M	0.23	0/1158	0.33	2/1547 (0.1%)
23	N	0.28	0/1746	0.32	1/2338 (0.0%)
24	O	0.25	0/1662	0.26	0/2222
25	P	0.35	1/1498 (0.1%)	0.60	5/2003 (0.2%)
26	Q	0.26	0/1539	0.28	0/2054
27	R	0.24	0/1310	0.26	0/1734
28	S	0.26	0/1501	0.27	0/2012
29	T	0.23	0/1326	0.34	1/1770 (0.1%)
30	U	0.18	0/848	0.29	0/1138
31	V	0.23	0/993	0.25	0/1332
32	W	0.24	0/541	0.25	0/720

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
33	X	0.22	0/984	0.25	0/1323
34	Y	0.22	0/1132	0.30	0/1504
35	Z	0.23	0/1130	0.24	0/1507
36	a	0.26	0/1191	0.30	0/1590
37	b	0.20	0/861	0.25	0/1138
38	c	0.22	0/771	0.26	0/1034
39	d	0.26	0/903	0.27	0/1216
40	e	0.26	0/1071	0.30	0/1429
41	f	0.27	0/895	0.29	0/1198
42	g	0.25	0/916	0.28	0/1220
43	h	0.22	0/1021	0.25	0/1348
44	i	0.21	0/841	0.27	0/1112
45	j	0.29	0/720	0.31	0/952
46	k	0.20	0/575	0.24	0/761
47	l	0.26	0/459	0.28	0/608
48	m	0.23	0/435	0.27	0/575
49	n	0.18	0/241	0.27	0/305
50	o	0.23	0/864	0.26	0/1140
51	p	0.23	0/718	0.40	1/953 (0.1%)
52	q	0.13	0/1805	0.26	0/2809
53	r	0.24	0/1010	0.28	0/1354
54	u	0.31	0/2858	0.28	0/4455
55	v	0.31	0/3701	0.29	0/5766
56	w	0.25	0/3240	0.30	1/4339 (0.0%)
All	All	0.29	5/157660 (0.0%)	0.32	26/231700 (0.0%)

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	7	162	PRO	CG-CD	-26.89	0.59	1.50
7	7	162	PRO	CB-CG	16.70	2.33	1.49
1	1	332	PRO	CG-CD	-8.07	1.23	1.50
7	7	162	PRO	N-CD	5.73	1.55	1.47
25	P	158	PRO	CG-CD	-5.38	1.32	1.50

The worst 5 of 26 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	7	162	PRO	CB-CG-CD	-33.12	0.11	106.10
25	P	158	PRO	N-CD-CG	-15.91	79.33	103.20
7	7	162	PRO	CA-N-CD	-12.85	94.01	112.00
1	1	332	PRO	CA-CB-CG	-11.33	82.97	104.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	1	332	PRO	N-CD-CG	-11.03	86.65	103.20

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	1	3575	3700	3697	54	0
2	2	251	273	272	4	0
3	3	534	571	571	11	0
4	4	244	260	259	4	0
5	5	1423	1390	1389	10	0
6	6	1263	1244	1243	14	0
7	7	1452	1490	1489	41	0
8	8	1186	1149	1148	14	0
9	9	301	309	308	3	0
10	A	1898	1994	1993	12	0
11	B	432	424	423	9	0
12	C	2883	3054	3053	9	0
13	D	2391	2425	2424	17	0
14	E	1791	1963	1956	11	0
15	F	1875	1997	1995	13	0
16	G	1879	2029	2027	6	0
17	H	1516	1598	1597	16	0
18	I	1664	1716	1712	13	0
19	J	1362	1401	1399	7	0
20	K	75972	38363	38385	622	0
21	L	1702	1823	1820	7	0
22	M	1137	1212	1211	9	0
23	N	1701	1753	1749	10	0
24	O	1630	1780	1778	14	0
25	P	1470	1542	1541	8	0
26	Q	1515	1638	1634	15	0
27	R	1294	1436	1434	11	0
28	S	1462	1510	1508	12	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
29	T	1298	1369	1366	5	0
30	U	834	859	858	18	0
31	V	979	1040	1039	8	0
32	W	528	542	541	2	0
33	X	967	1041	1040	3	0
34	Y	1115	1205	1205	7	0
35	Z	1107	1185	1182	10	0
36	a	1162	1210	1209	14	0
37	b	848	923	920	9	0
38	c	761	796	794	7	0
39	d	888	932	930	4	0
40	e	1053	1150	1147	16	0
41	f	876	913	912	3	0
42	g	906	1004	998	5	0
43	h	1013	1148	1147	7	0
44	i	830	917	916	4	0
45	j	705	743	737	11	0
46	k	569	637	637	4	0
47	l	447	481	480	7	0
48	m	429	470	465	2	0
49	n	240	289	289	4	0
50	o	851	927	920	5	0
51	p	708	762	756	8	0
52	q	1616	823	824	5	0
53	r	994	1052	1051	9	0
54	u	2558	1296	1296	15	0
55	v	3314	1683	1683	29	0
56	w	3172	3315	3310	21	0
57	I	1	0	0	0	0
57	K	201	0	0	0	0
57	V	1	0	0	0	0
57	a	1	0	0	0	0
57	g	1	0	0	0	0
57	j	1	0	0	0	0
57	u	7	0	0	0	0
57	v	5	0	0	0	0
58	g	1	0	0	0	0
58	j	1	0	0	0	0
58	m	1	0	0	0	0
58	o	1	0	0	0	0
58	p	1	0	0	0	0
All	All	146794	108756	108667	1041	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 4.

The worst 5 of 1041 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:7:162:PRO:CG	7:7:162:PRO:N	1.73	1.40
7:7:162:PRO:CG	7:7:162:PRO:CB	2.33	1.06
6:6:150:TRP:CD1	8:8:149:THR:HG1	1.78	1.02
20:K:2104:A:O2'	20:K:2105:A:O5'	1.78	1.01
20:K:2440:U:O2'	20:K:2441:C:OP1	1.80	0.98

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	1	455/476 (96%)	440 (97%)	15 (3%)	0	100	100
2	2	30/96 (31%)	29 (97%)	1 (3%)	0	100	100
3	3	64/68 (94%)	61 (95%)	3 (5%)	0	100	100
4	4	29/66 (44%)	29 (100%)	0	0	100	100
5	5	174/286 (61%)	171 (98%)	3 (2%)	0	100	100
6	6	160/183 (87%)	158 (99%)	2 (1%)	0	100	100
7	7	177/185 (96%)	174 (98%)	3 (2%)	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%)	239 (97%)	7 (3%)	0	100	100
11	B	57/229 (25%)	50 (88%)	7 (12%)	0	100	100
12	C	360/425 (85%)	352 (98%)	8 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
13	D	291/297 (98%)	286 (98%)	5 (2%)	0	100	100
14	E	215/291 (74%)	209 (97%)	6 (3%)	0	100	100
15	F	223/247 (90%)	215 (96%)	8 (4%)	0	100	100
16	G	229/319 (72%)	228 (100%)	1 (0%)	0	100	100
17	H	188/192 (98%)	186 (99%)	2 (1%)	0	100	100
18	I	201/214 (94%)	199 (99%)	2 (1%)	0	100	100
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%)	132 (97%)	4 (3%)	0	100	100
23	N	201/204 (98%)	198 (98%)	3 (2%)	0	100	100
24	O	197/203 (97%)	194 (98%)	3 (2%)	0	100	100
25	P	179/184 (97%)	175 (98%)	4 (2%)	0	100	100
26	Q	185/187 (99%)	181 (98%)	4 (2%)	0	100	100
27	R	153/196 (78%)	152 (99%)	1 (1%)	0	100	100
28	S	174/176 (99%)	170 (98%)	4 (2%)	0	100	100
29	T	157/160 (98%)	154 (98%)	3 (2%)	0	100	100
30	U	100/128 (78%)	97 (97%)	3 (3%)	0	100	100
31	V	129/140 (92%)	128 (99%)	1 (1%)	0	100	100
32	W	61/157 (39%)	61 (100%)	0	0	100	100
33	X	116/156 (74%)	113 (97%)	3 (3%)	0	100	100
34	Y	132/145 (91%)	128 (97%)	4 (3%)	0	100	100
35	Z	133/136 (98%)	131 (98%)	2 (2%)	0	100	100
36	a	145/148 (98%)	138 (95%)	6 (4%)	1 (1%)	18	44
37	b	100/226 (44%)	98 (98%)	2 (2%)	0	100	100
38	c	96/115 (84%)	96 (100%)	0	0	100	100
39	d	105/125 (84%)	105 (100%)	0	0	100	100
40	e	126/135 (93%)	121 (96%)	5 (4%)	0	100	100
41	f	107/110 (97%)	105 (98%)	2 (2%)	0	100	100
42	g	112/116 (97%)	110 (98%)	2 (2%)	0	100	100
43	h	120/123 (98%)	118 (98%)	2 (2%)	0	100	100
44	i	100/105 (95%)	97 (97%)	3 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
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%)	48 (100%)	0	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
51	p	89/92 (97%)	84 (94%)	5 (6%)	0	100	100
53	r	122/137 (89%)	119 (98%)	3 (2%)	0	100	100
56	w	392/403 (97%)	384 (98%)	8 (2%)	0	100	100
All	All	7698/9662 (80%)	7534 (98%)	163 (2%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
36	a	40	HIS

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	1	388/398 (98%)	381 (98%)	7 (2%)	51	79
2	2	28/74 (38%)	28 (100%)	0	100	100
3	3	59/59 (100%)	59 (100%)	0	100	100
4	4	26/55 (47%)	26 (100%)	0	100	100
5	5	157/249 (63%)	156 (99%)	1 (1%)	78	91
6	6	135/152 (89%)	134 (99%)	1 (1%)	76	90
7	7	161/164 (98%)	160 (99%)	1 (1%)	78	91
8	8	130/146 (89%)	128 (98%)	2 (2%)	57	81
9	9	35/526 (7%)	35 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
10	A	190/199 (96%)	188 (99%)	2 (1%)	65	85
11	B	48/172 (28%)	47 (98%)	1 (2%)	47	76
12	C	302/347 (87%)	298 (99%)	4 (1%)	61	83
13	D	247/250 (99%)	247 (100%)	0	100	100
14	E	197/251 (78%)	194 (98%)	3 (2%)	57	81
15	F	196/215 (91%)	194 (99%)	2 (1%)	68	86
16	G	200/272 (74%)	200 (100%)	0	100	100
17	H	169/171 (99%)	168 (99%)	1 (1%)	78	91
18	I	175/181 (97%)	174 (99%)	1 (1%)	78	91
19	J	143/149 (96%)	140 (98%)	3 (2%)	47	76
21	L	175/176 (99%)	175 (100%)	0	100	100
22	M	117/161 (73%)	116 (99%)	1 (1%)	70	87
23	N	171/172 (99%)	169 (99%)	2 (1%)	63	84
24	O	171/173 (99%)	168 (98%)	3 (2%)	51	79
25	P	160/163 (98%)	157 (98%)	3 (2%)	50	78
26	Q	164/164 (100%)	164 (100%)	0	100	100
27	R	138/175 (79%)	138 (100%)	0	100	100
28	S	157/157 (100%)	154 (98%)	3 (2%)	50	78
29	T	139/140 (99%)	138 (99%)	1 (1%)	76	90
30	U	92/114 (81%)	89 (97%)	3 (3%)	33	66
31	V	101/107 (94%)	101 (100%)	0	100	100
32	W	55/126 (44%)	55 (100%)	0	100	100
33	X	106/134 (79%)	105 (99%)	1 (1%)	70	87
34	Y	124/135 (92%)	122 (98%)	2 (2%)	55	81
35	Z	117/118 (99%)	115 (98%)	2 (2%)	53	80
36	a	119/120 (99%)	119 (100%)	0	100	100
37	b	84/172 (49%)	82 (98%)	2 (2%)	43	74
38	c	84/98 (86%)	83 (99%)	1 (1%)	63	84
39	d	98/110 (89%)	97 (99%)	1 (1%)	68	86
40	e	114/121 (94%)	113 (99%)	1 (1%)	70	87
41	f	88/89 (99%)	88 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
42	g	98/99 (99%)	97 (99%)	1 (1%)	68	86
43	h	109/110 (99%)	109 (100%)	0	100	100
44	i	86/89 (97%)	86 (100%)	0	100	100
45	j	73/80 (91%)	73 (100%)	0	100	100
46	k	64/65 (98%)	64 (100%)	0	100	100
47	l	47/48 (98%)	46 (98%)	1 (2%)	47	76
48	m	48/90 (53%)	48 (100%)	0	100	100
49	n	24/24 (100%)	24 (100%)	0	100	100
50	o	92/94 (98%)	91 (99%)	1 (1%)	65	85
51	p	74/75 (99%)	73 (99%)	1 (1%)	59	82
53	r	108/121 (89%)	105 (97%)	3 (3%)	38	70
56	w	342/348 (98%)	338 (99%)	4 (1%)	63	84
All	All	6725/8198 (82%)	6659 (99%)	66 (1%)	65	86

5 of 66 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
50	o	74	GLU
53	r	26	SER
56	w	395	ASP
17	H	39	ASN
15	F	100	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 41 such sidechains are listed below:

Mol	Chain	Res	Type
33	X	111	GLN
45	j	57	ASN
34	Y	14	ASN
40	e	80	HIS
53	r	30	ASN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
20	K	3521/3543 (99%)	589 (16%)	55 (1%)

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Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
52	q	74/76 (97%)	8 (10%)	0
54	u	119/120 (99%)	8 (6%)	0
55	v	155/156 (99%)	26 (16%)	0
All	All	3869/3895 (99%)	631 (16%)	55 (1%)

5 of 631 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
20	K	5	A
20	K	12	A
20	K	13	U
20	K	25	A
20	K	35	U

5 of 55 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
20	K	1990	A
20	K	2266	C
20	K	4947	U
20	K	4232	U
20	K	1992	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 oligosaccharides 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

There are no such residues in this entry.

5.8 Polymer linkage issues

The following chains have linkage breaks:

Mol	Chain	Number of breaks
20	K	23
52	q	1

The worst 5 of 24 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	41.92
1	K	1252:C	O3'	1271:G	P	35.44
1	K	1219:G	O3'	1233:G	P	24.79
1	K	4138:C	O3'	4146:G	P	17.60
1	K	990:C	O3'	1064:G	P	17.52

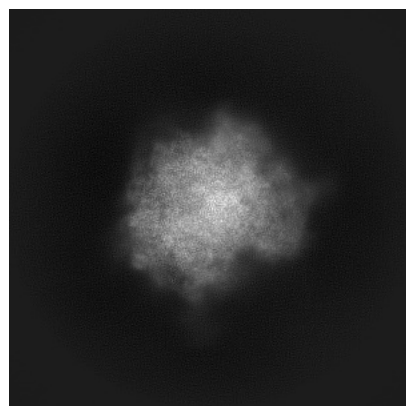
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-19198. These allow visual inspection of the internal detail of the map and identification of artifacts.

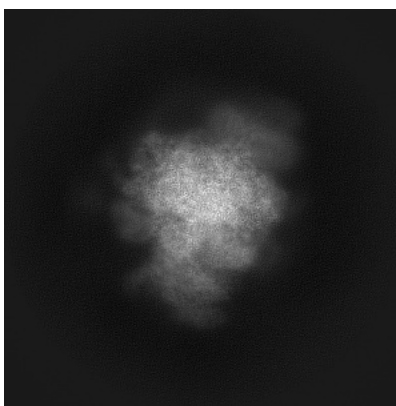
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

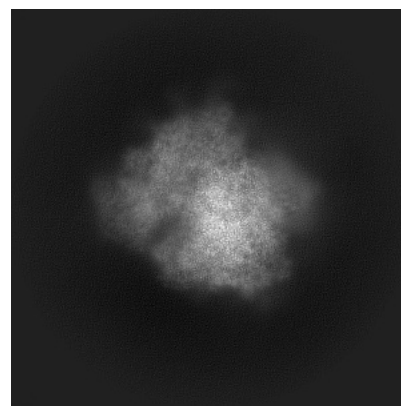
6.1.1 Primary map



X

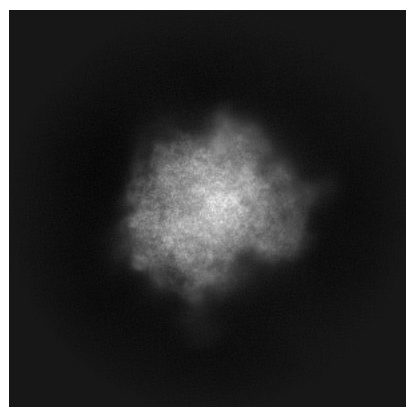


Y

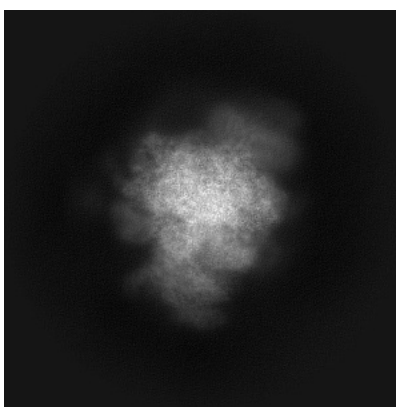


Z

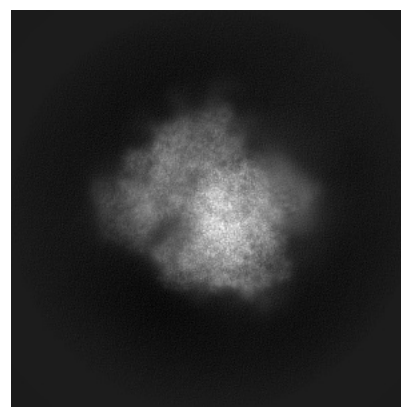
6.1.2 Raw map



X



Y

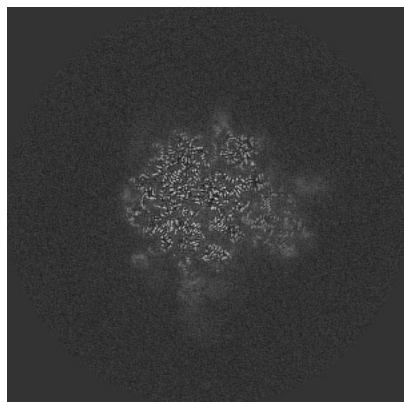


Z

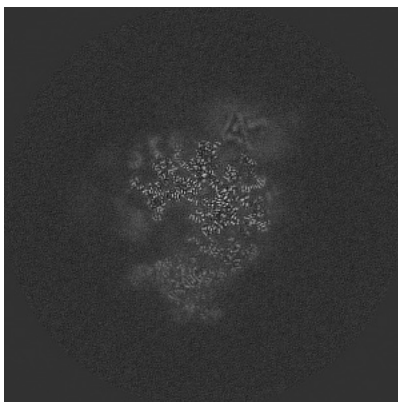
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

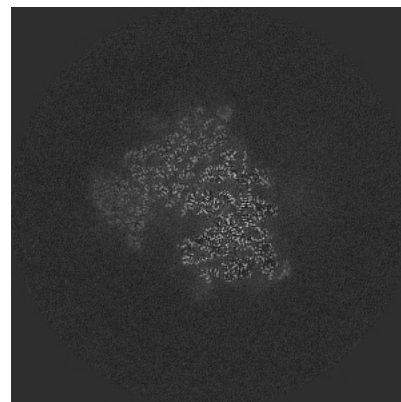
6.2.1 Primary map



X Index: 210

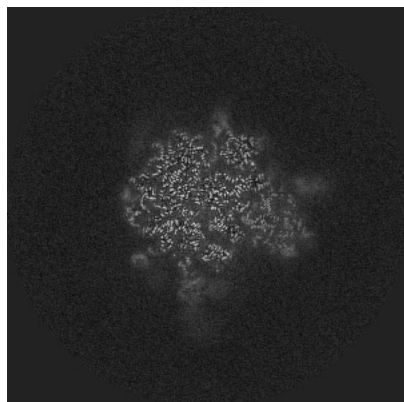


Y Index: 210

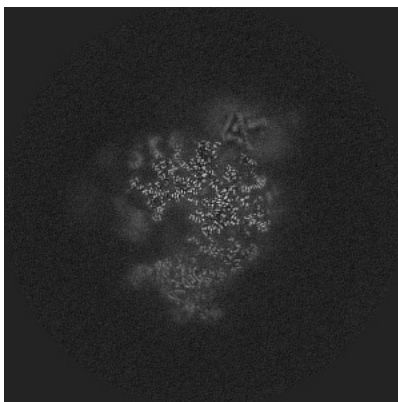


Z Index: 210

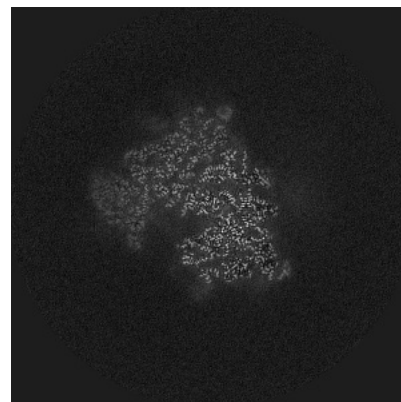
6.2.2 Raw map



X Index: 210



Y Index: 210

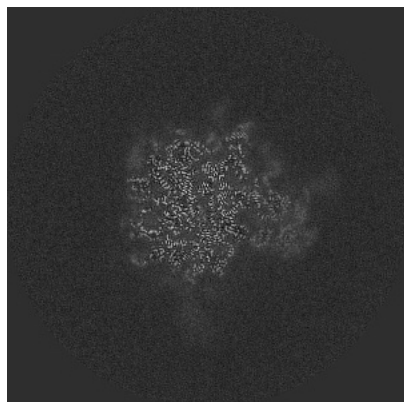


Z Index: 210

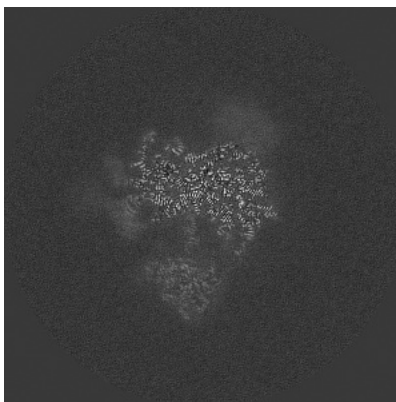
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

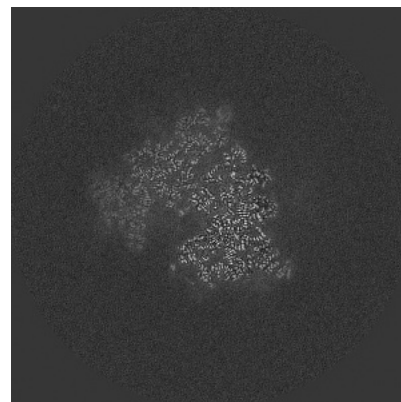
6.3.1 Primary map



X Index: 220

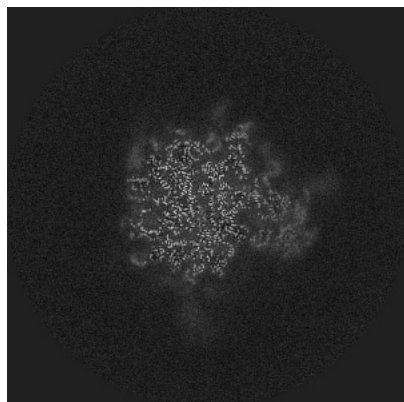


Y Index: 195

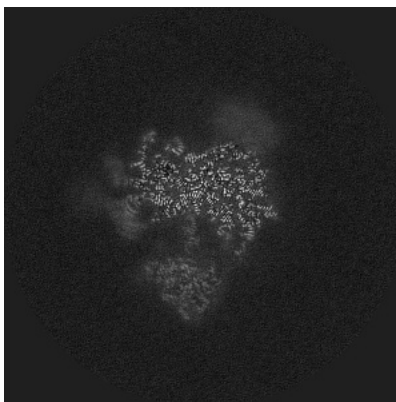


Z Index: 207

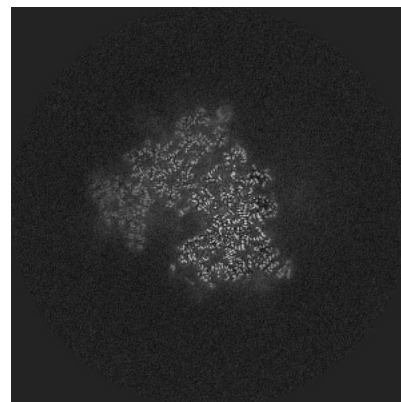
6.3.2 Raw map



X Index: 220



Y Index: 195

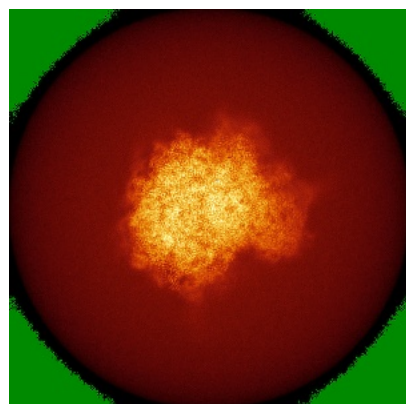


Z Index: 207

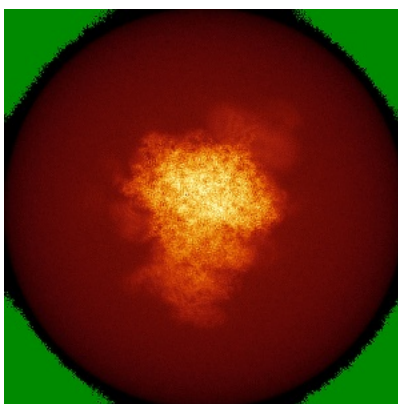
The images above show the largest variance slices of the map in three orthogonal directions.

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

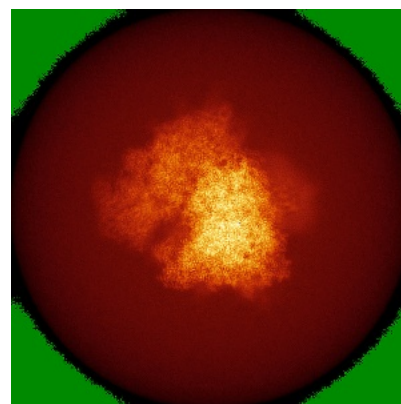
6.4.1 Primary map



X

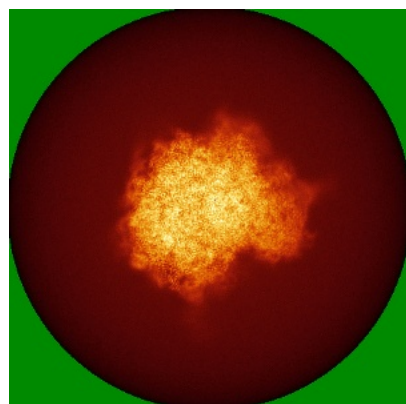


Y

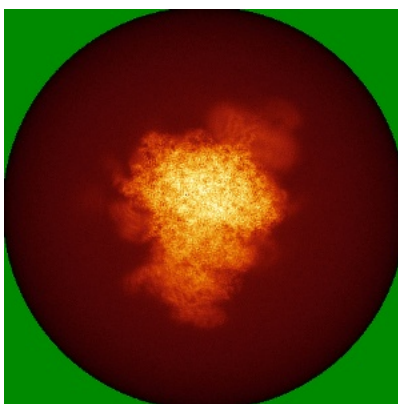


Z

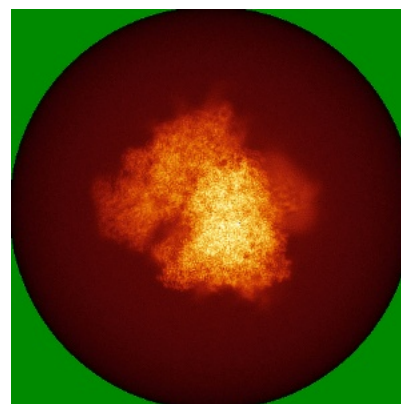
6.4.2 Raw map



X



Y

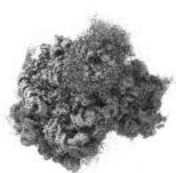


Z

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](#)

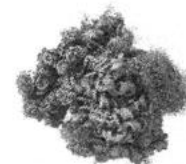
6.5.1 Primary map



X



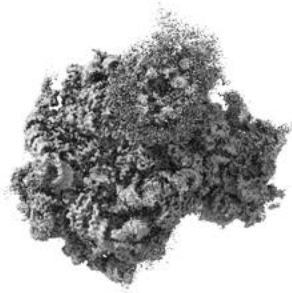
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.0231. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

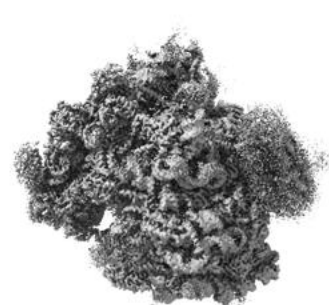
6.5.2 Raw map



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.

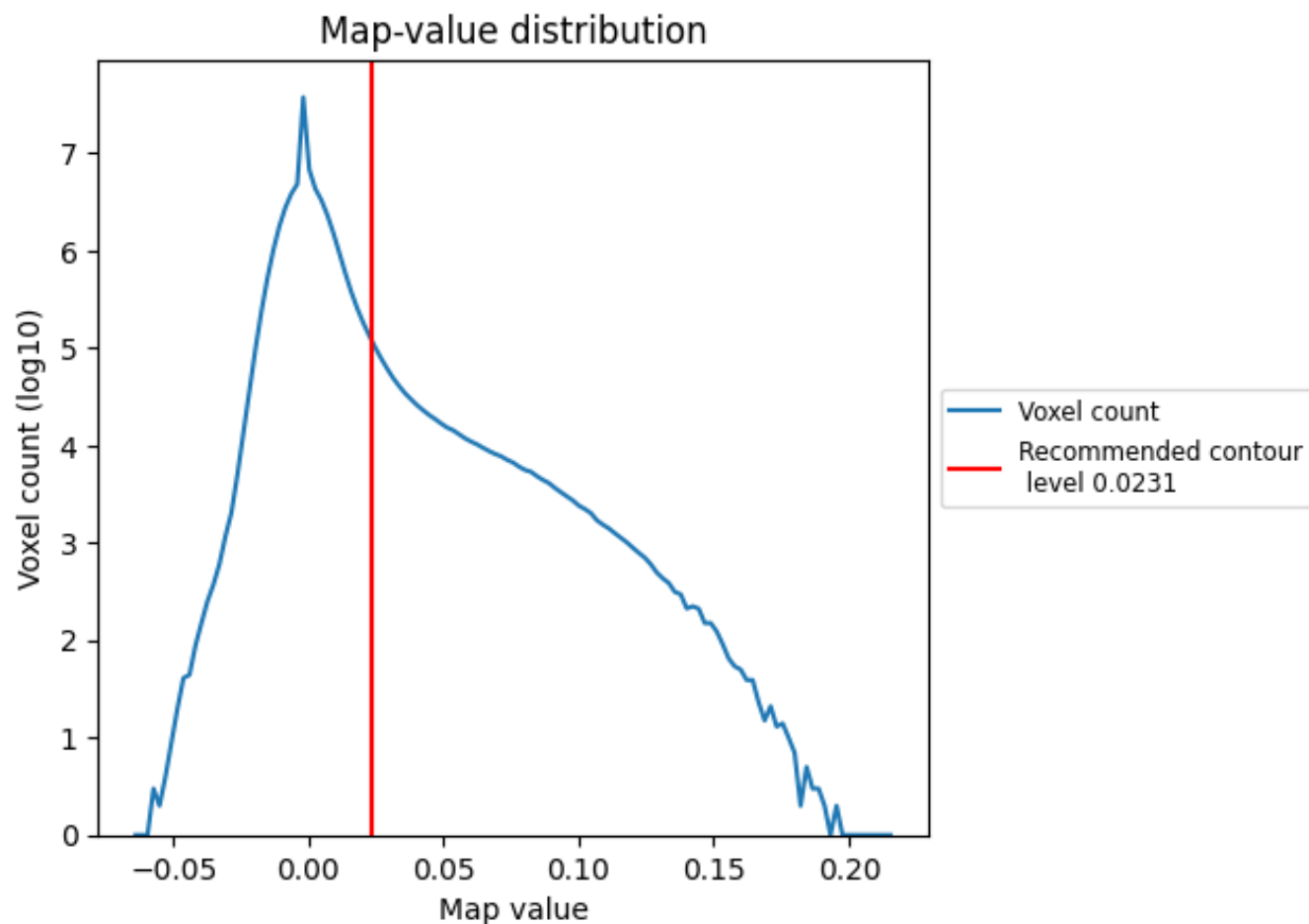
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

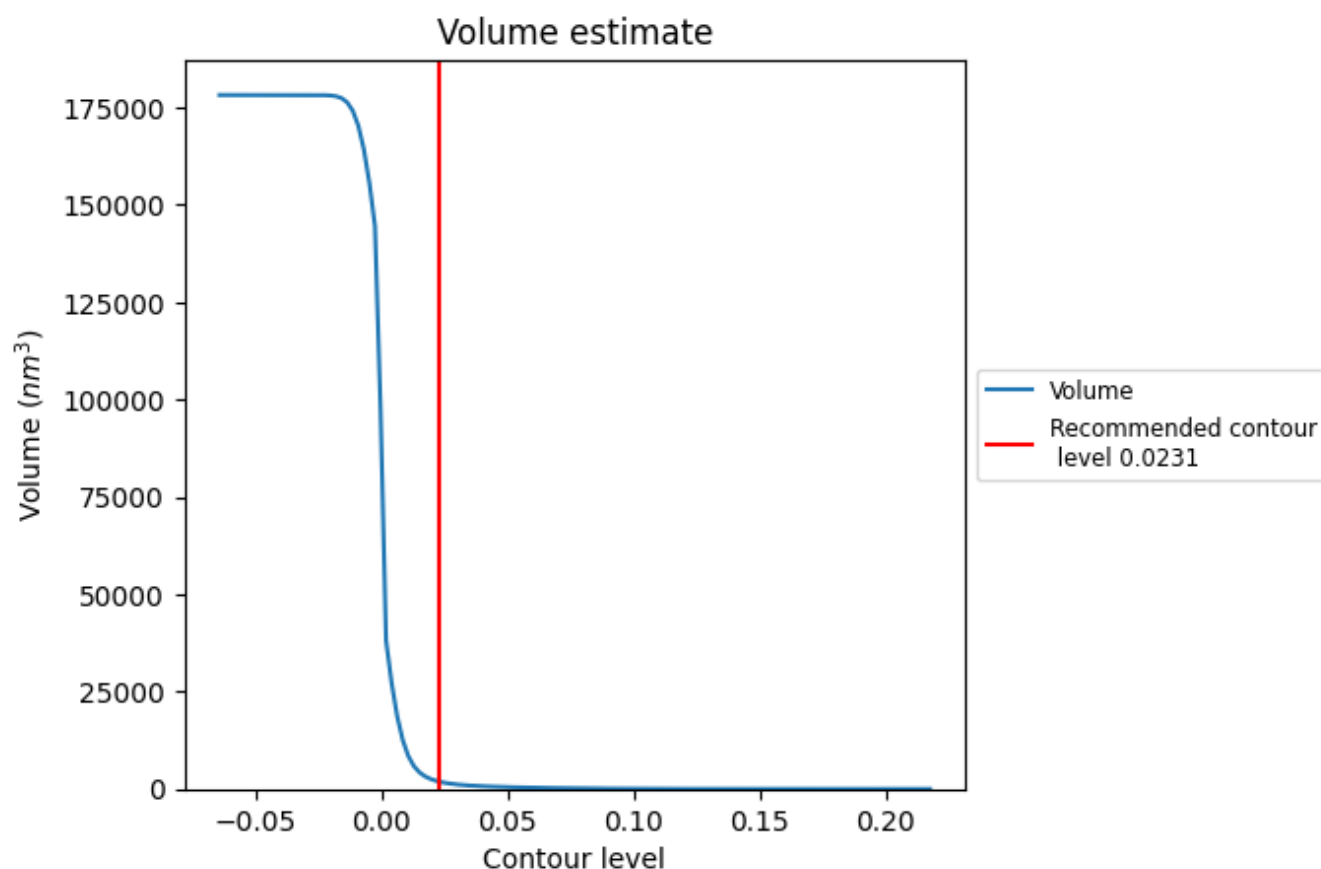
This section contains the results of statistical analysis of the map.

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.

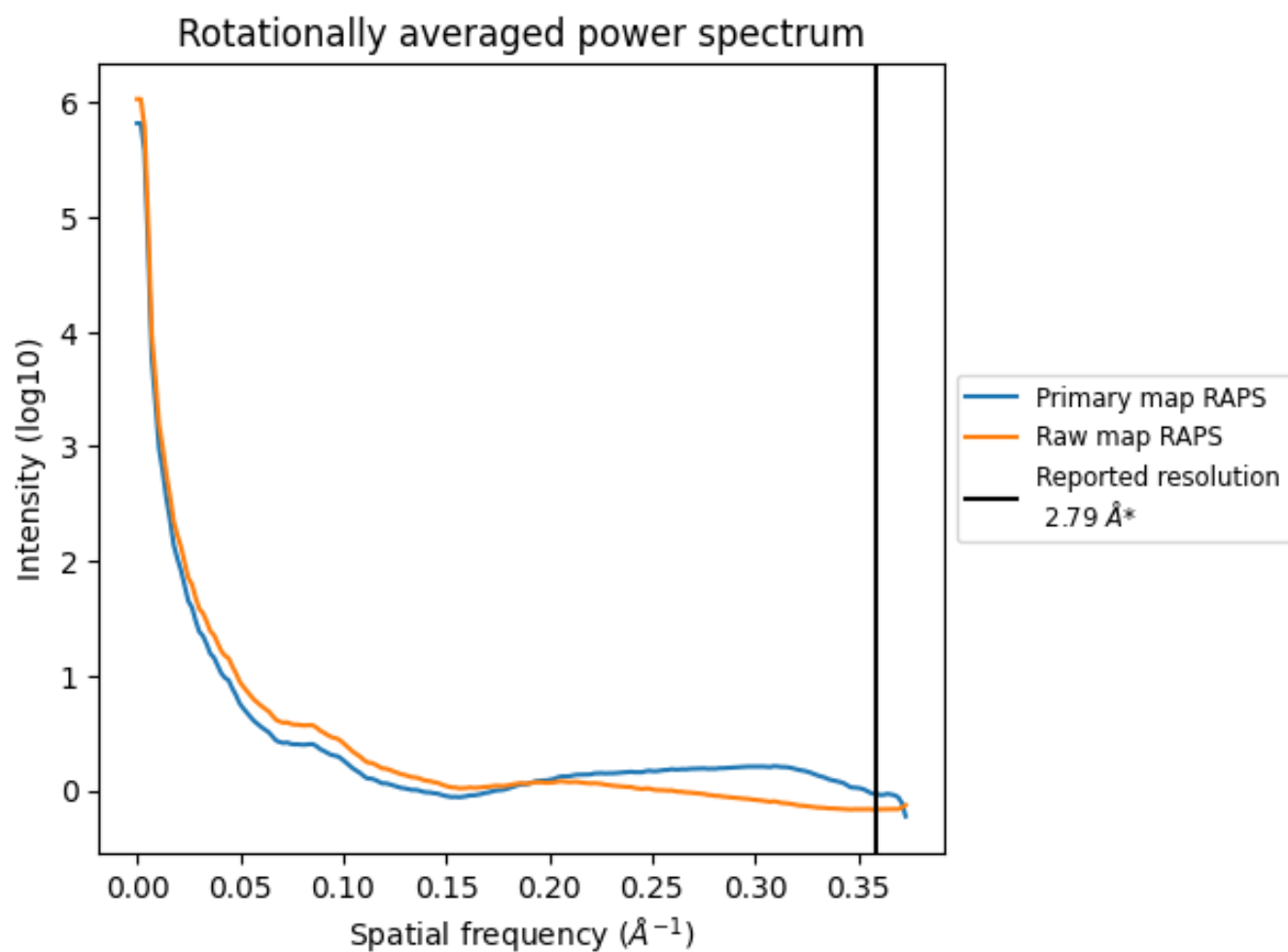
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1884 nm^3 ; this corresponds to an approximate mass of 1702 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum ⓘ

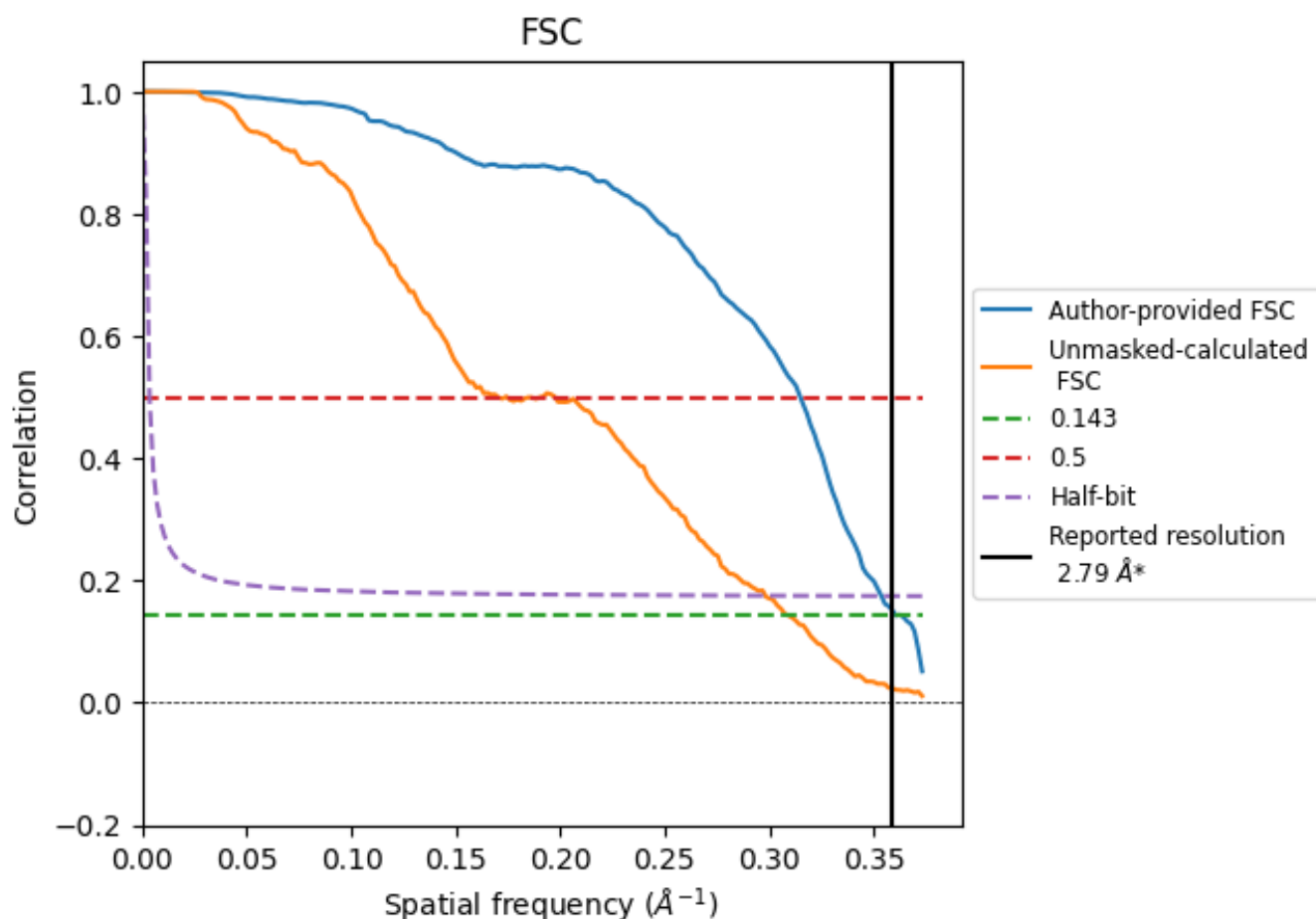


*Reported resolution corresponds to spatial frequency of 0.359 Å⁻¹

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 0.359 $\text{\AA}^{-1}$

8.2 Resolution estimates [i](#)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.79	-	-
Author-provided FSC curve	2.77	3.18	2.83
Unmasked-calculated*	3.24	5.87	3.35

*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 3.24 differs from the reported value 2.78574 by more than 10 %

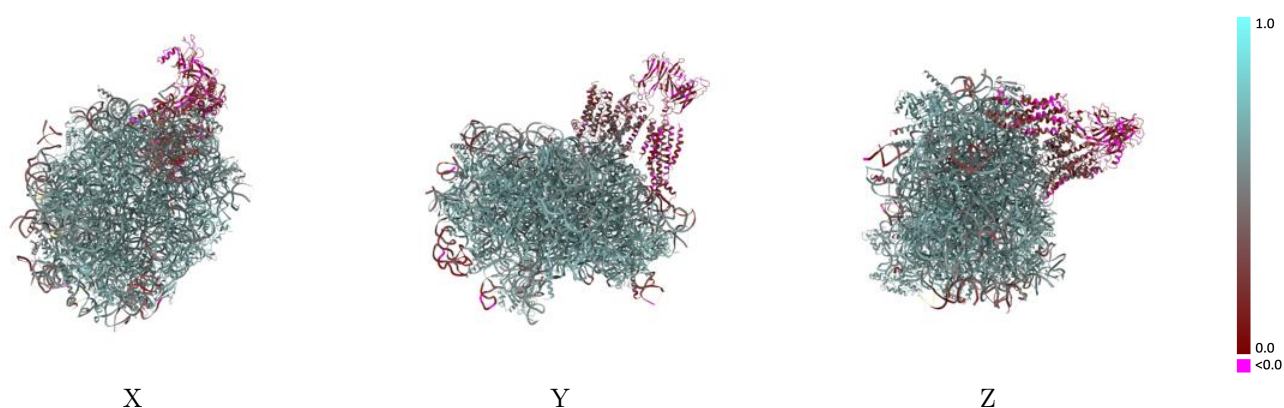
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-19198 and PDB model 8RJD. Per-residue inclusion information can be found in section 3 on page 20.

9.1 Map-model overlay [i](#)

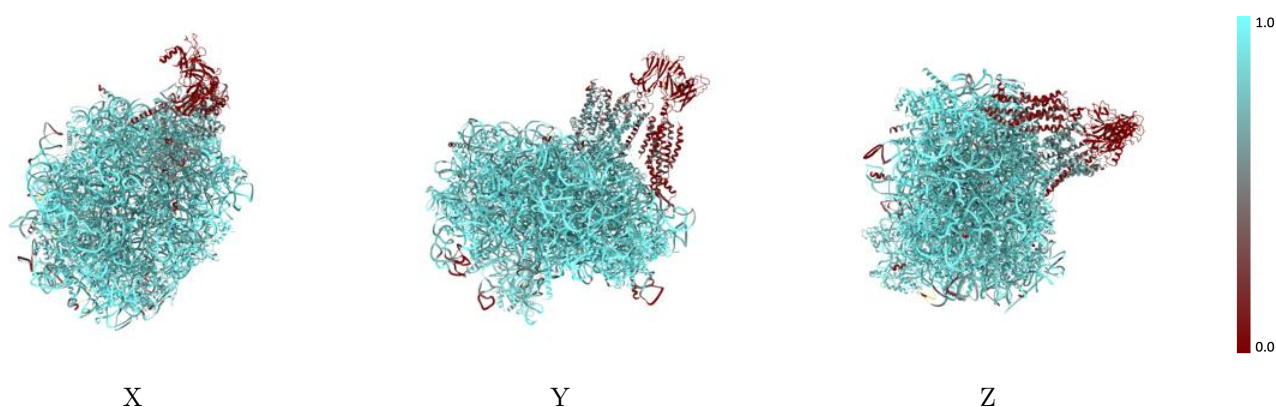
This section was not generated.

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



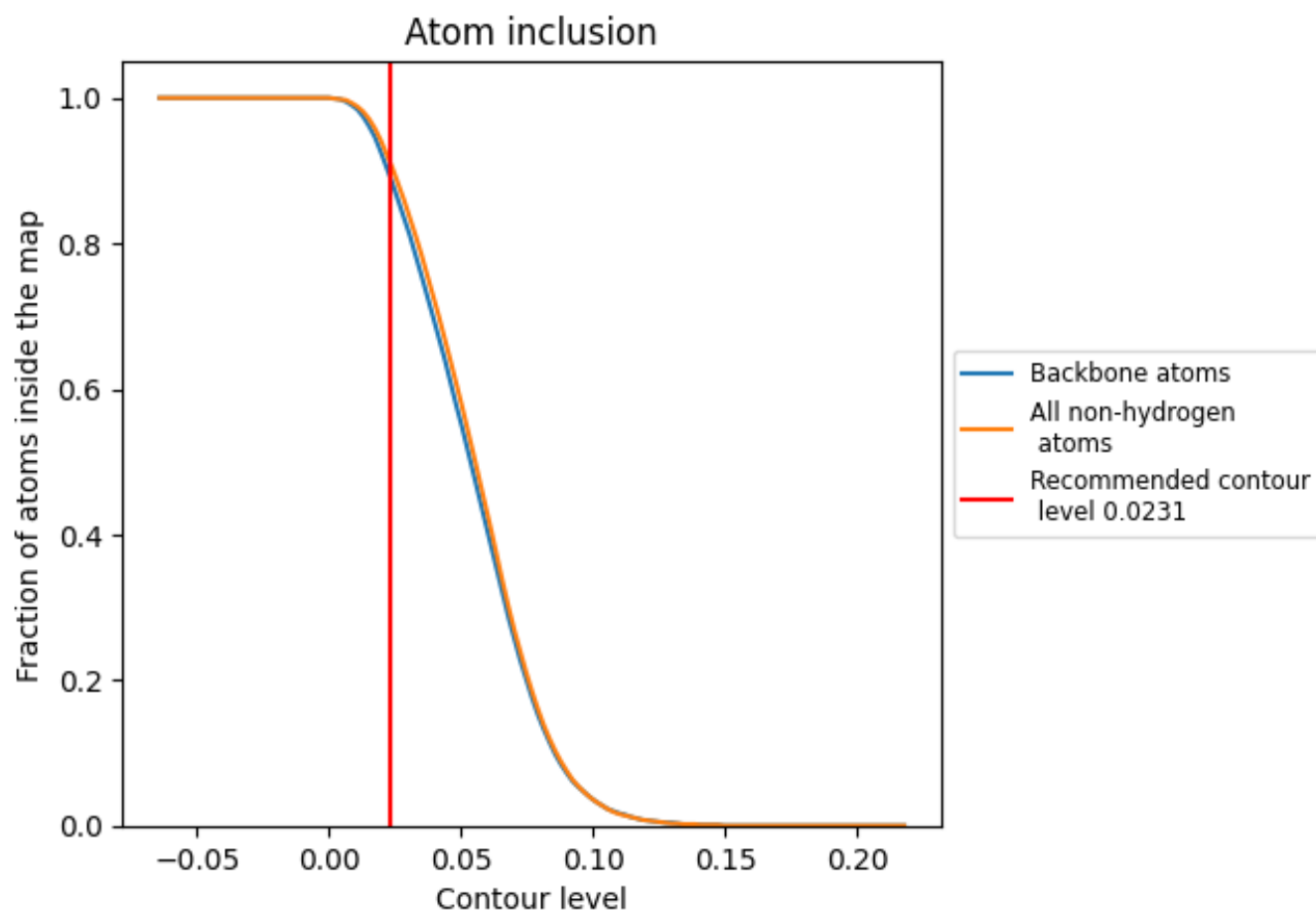
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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, 89% of all backbone atoms, 91% 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	 0.9120	 0.5730
1	 0.6250	 0.3460
2	 0.5220	 0.2910
3	 0.7260	 0.4160
4	 0.6270	 0.5100
5	 0.1290	 0.1720
6	 0.0440	 0.1240
7	 0.1740	 0.1810
8	 0.0440	 0.1120
9	 0.0640	 0.1450
A	 0.9890	 0.6510
B	 0.5430	 0.3100
C	 0.9670	 0.6340
D	 0.9260	 0.6170
E	 0.9140	 0.5980
F	 0.9710	 0.6390
G	 0.8820	 0.5850
H	 0.9410	 0.6250
I	 0.9650	 0.6350
J	 0.8850	 0.5880
K	 0.9500	 0.5810
L	 0.9200	 0.6140
M	 0.9420	 0.6180
N	 0.9960	 0.6560
O	 0.9750	 0.6460
P	 0.8660	 0.6010
Q	 0.9830	 0.6470
R	 0.9670	 0.6320
S	 0.9840	 0.6420
T	 0.9520	 0.6240
U	 0.8160	 0.5280
V	 0.9740	 0.6390
W	 0.9760	 0.6410
X	 0.9660	 0.6290
Y	 0.9410	 0.6270



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Chain	Atom inclusion	Q-score
Z	 0.9400	 0.6140
a	 0.9770	 0.6490
b	 0.8540	 0.5680
c	 0.9490	 0.6230
d	 0.9350	 0.6200
e	 0.9870	 0.6480
f	 0.9860	 0.6520
g	 0.9320	 0.6140
h	 0.9400	 0.6220
i	 0.9380	 0.6060
j	 0.9910	 0.6500
k	 0.8420	 0.5820
l	 0.9770	 0.6300
m	 0.9570	 0.6270
n	 0.9730	 0.6180
o	 0.9520	 0.6360
p	 0.9750	 0.6340
q	 0.6680	 0.4800
r	 0.9740	 0.6360
u	 0.9930	 0.6250
v	 0.9720	 0.6040
w	 0.9680	 0.6400