Full wwPDB EM Validation Report ⓘ

Jan 1, 2025 – 01:06 AM EST

PDB ID	:	8RJD
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 Full wwPDB EM Validation 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:

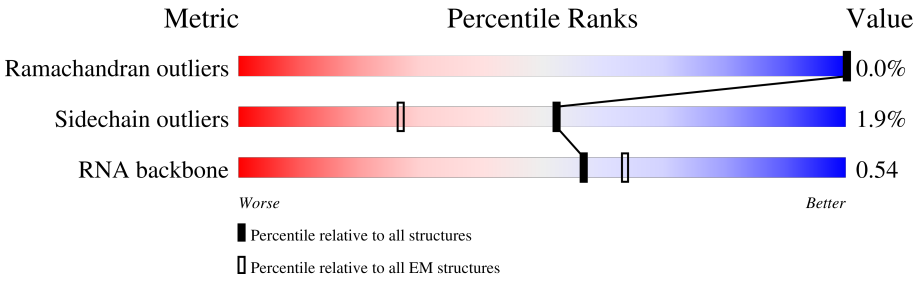
EMDB validation analysis	:	0.0.1.dev113
MolProbity	:	4.02b-467
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.40

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.



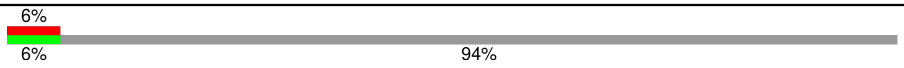
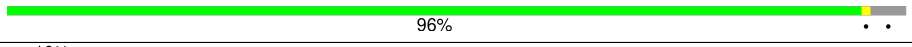
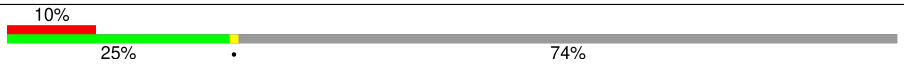
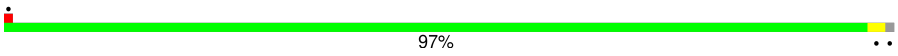
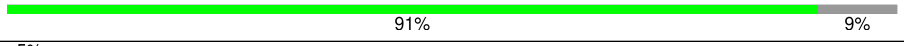
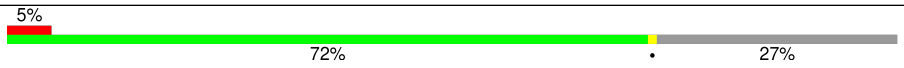
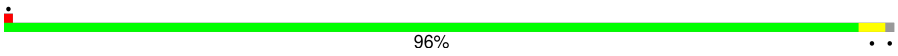
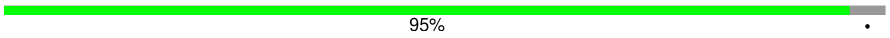
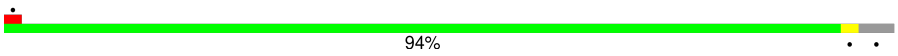
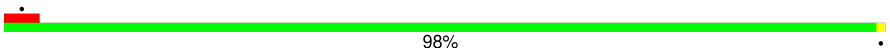
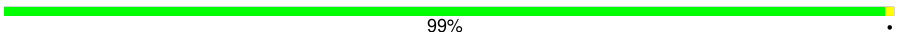
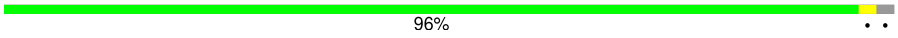
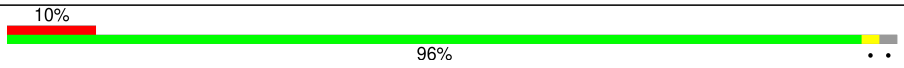
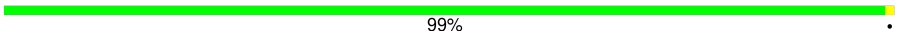
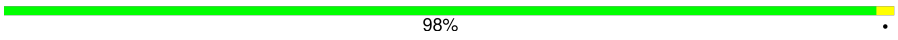
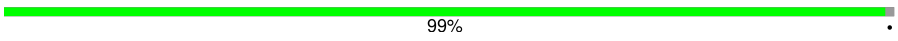
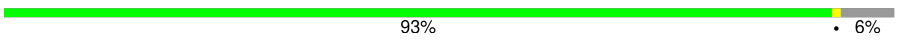
Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

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

Mol	Chain	Length	Quality of chain
1	1	476	20% 95%
2	2	96	9% 32% 67%
3	3	68	7% 91% 6%
4	4	66	9% 44% 53%
5	5	286	55% 60% 38%
6	6	183	88% 87% 11%
7	7	185	89% 94%
8	8	173	84% 85% 13%

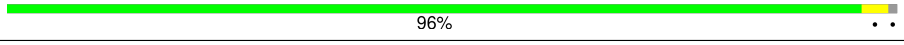
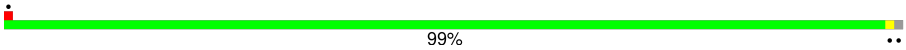
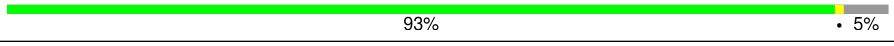
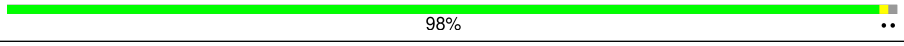
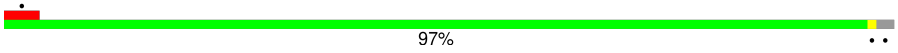
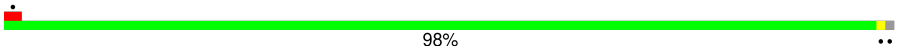
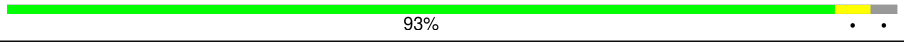
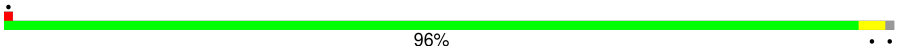
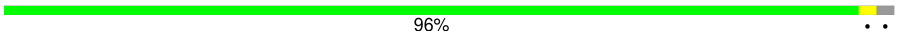
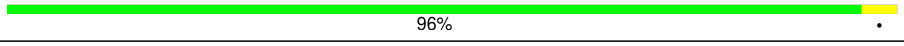
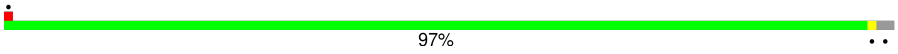
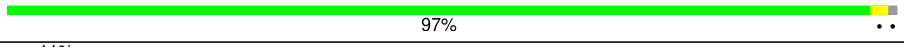
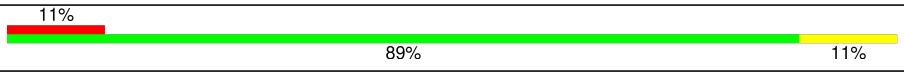
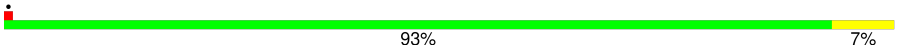
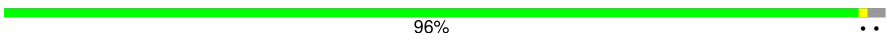
Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
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	
29	T	160	
30	U	128	
31	V	140	
32	W	157	
33	X	156	

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
34	Y	145	
35	Z	136	
36	a	148	
37	b	226	
38	c	115	
39	d	125	
40	e	135	
41	f	110	
42	g	116	
43	h	123	
44	i	105	
45	j	97	
46	k	70	
47	l	51	
48	m	102	
49	n	25	
50	o	106	
51	p	92	
52	q	76	
53	r	137	
54	u	120	
55	v	156	
56	w	403	

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
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

Continued on next page...

Continued from previous page...

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

Continued on next page...

Continued from previous page...

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

Continued on next page...

Continued from previous page...

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

Continued on next page...

Continued from previous page...

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

Continued on next page...

Continued from previous page...

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 (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	5	Total	Mg	0
			5	5	

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

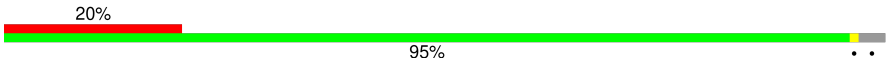
Mol	Chain	Residues	Atoms		AltConf
58	g	1	Total	Zn	0
			1	1	
58	j	1	Total	Zn	0
			1	1	
58	m	1	Total	Zn	0
			1	1	
58	o	1	Total	Zn	0
			1	1	
58	p	1	Total	Zn	0
			1	1	

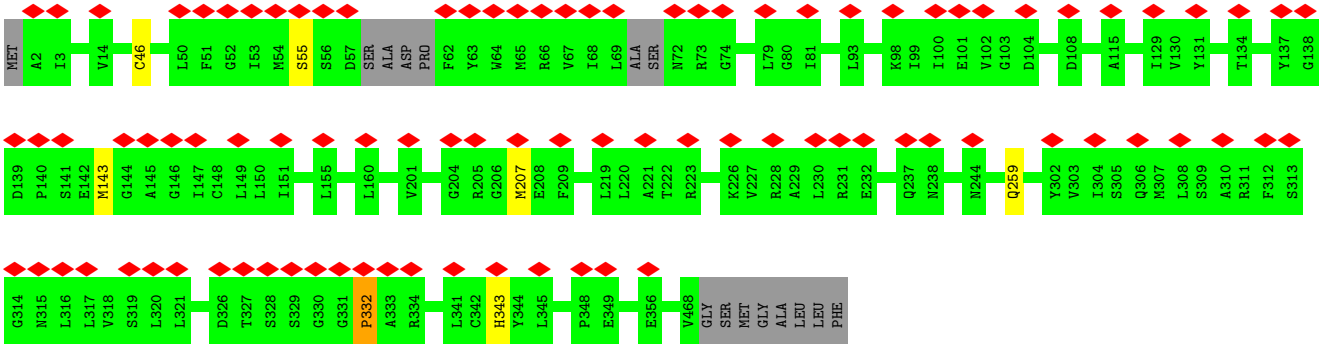
3 Residue-property plots (i)

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

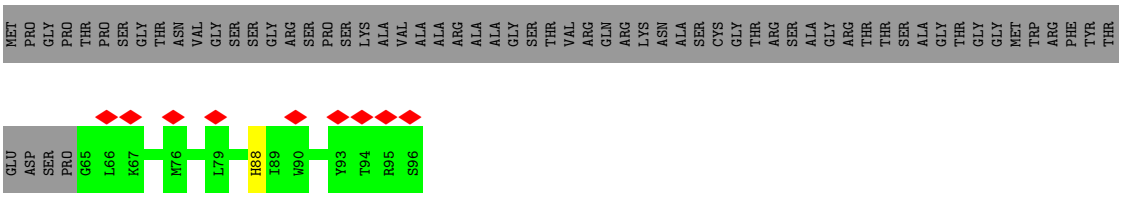
Chain 1:





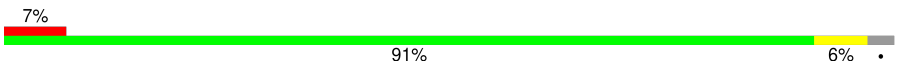
• Molecule 2: Protein transport protein Sec61 subunit beta

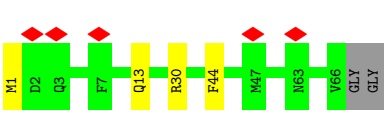
Chain 2:



• Molecule 3: Protein transport protein Sec61 subunit gamma

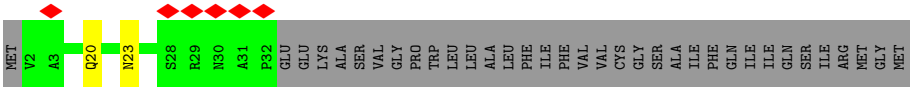
Chain 3:





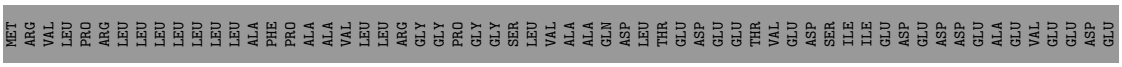
• Molecule 4: Stress-associated endoplasmic reticulum protein

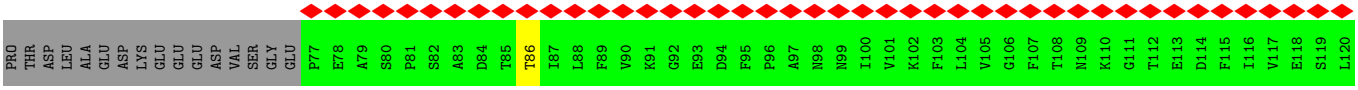
Chain 4:

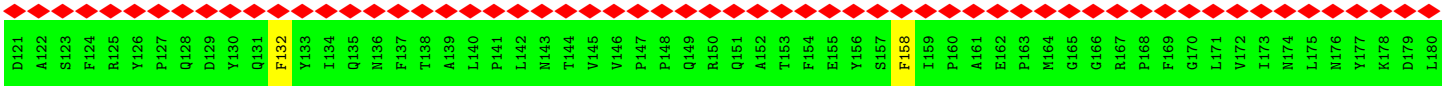


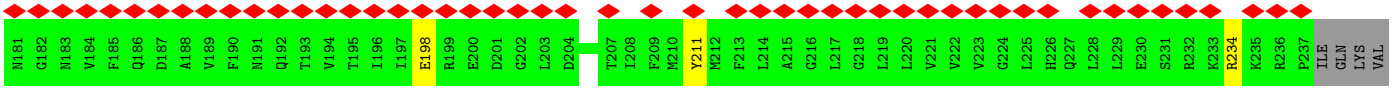
• Molecule 5: Translocon-associated protein subunit alpha

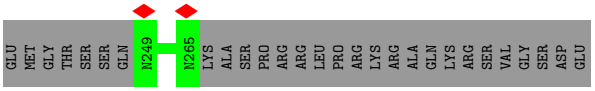
Chain 5:





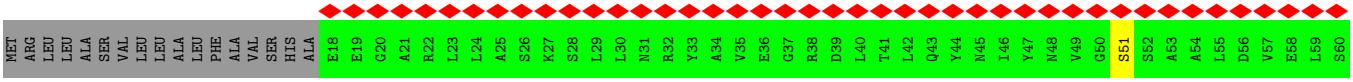


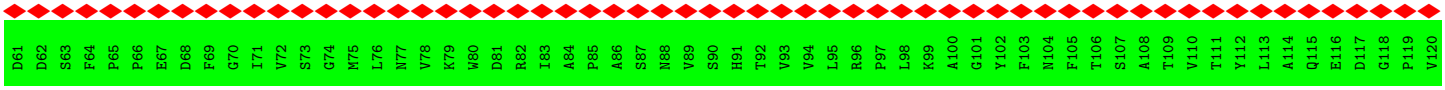


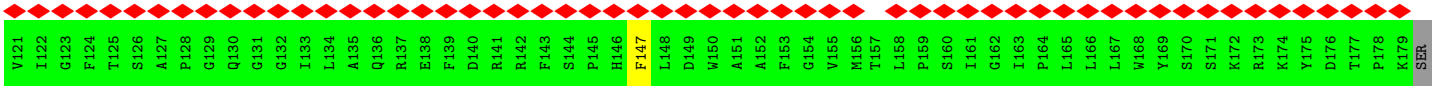


• Molecule 6: Translocon-associated protein subunit beta

Chain 6:

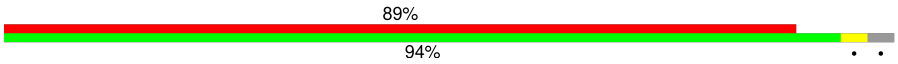


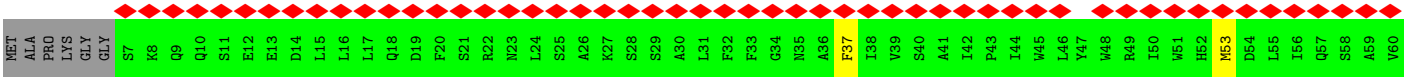


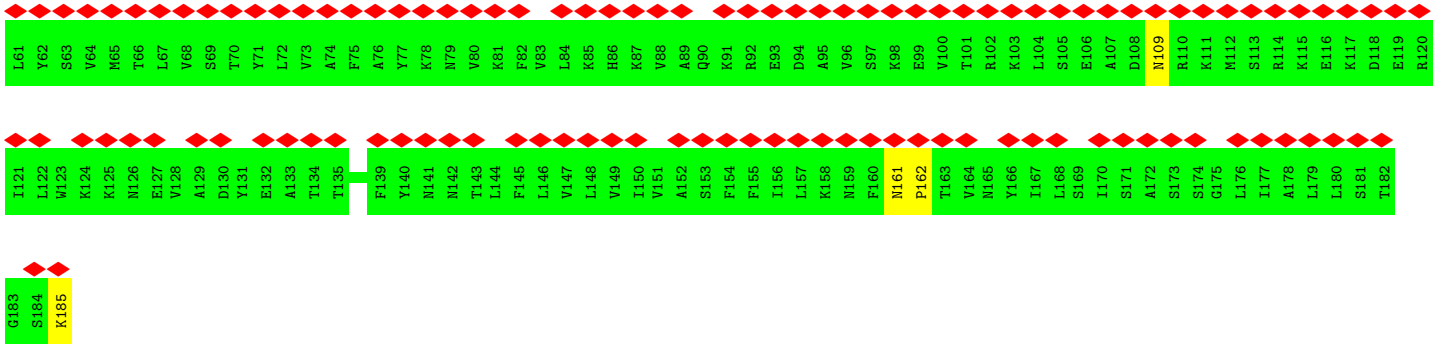


• Molecule 7: Translocon-associated protein subunit gamma

Chain 7:

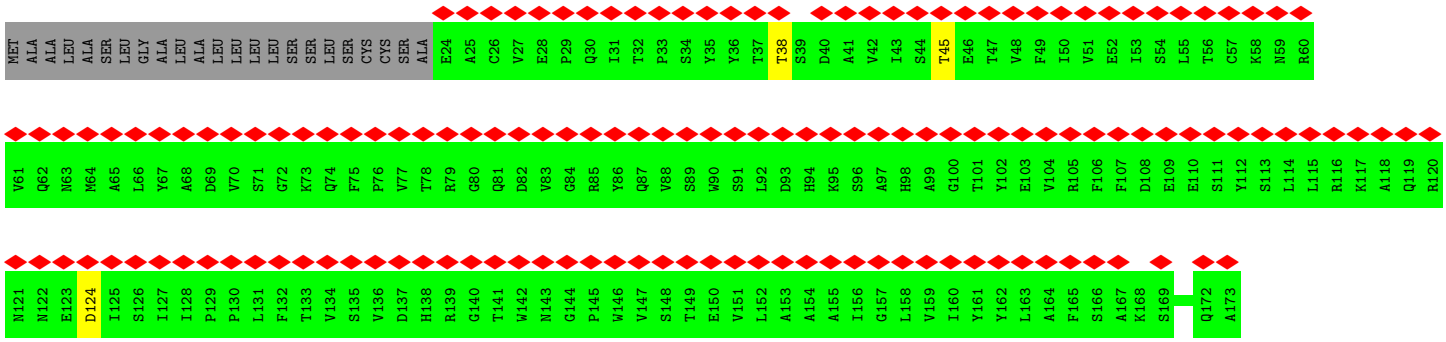






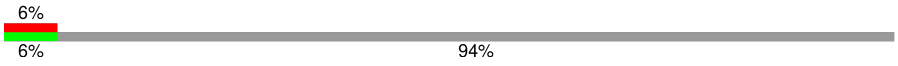
• Molecule 8: Translocon-associated protein subunit delta

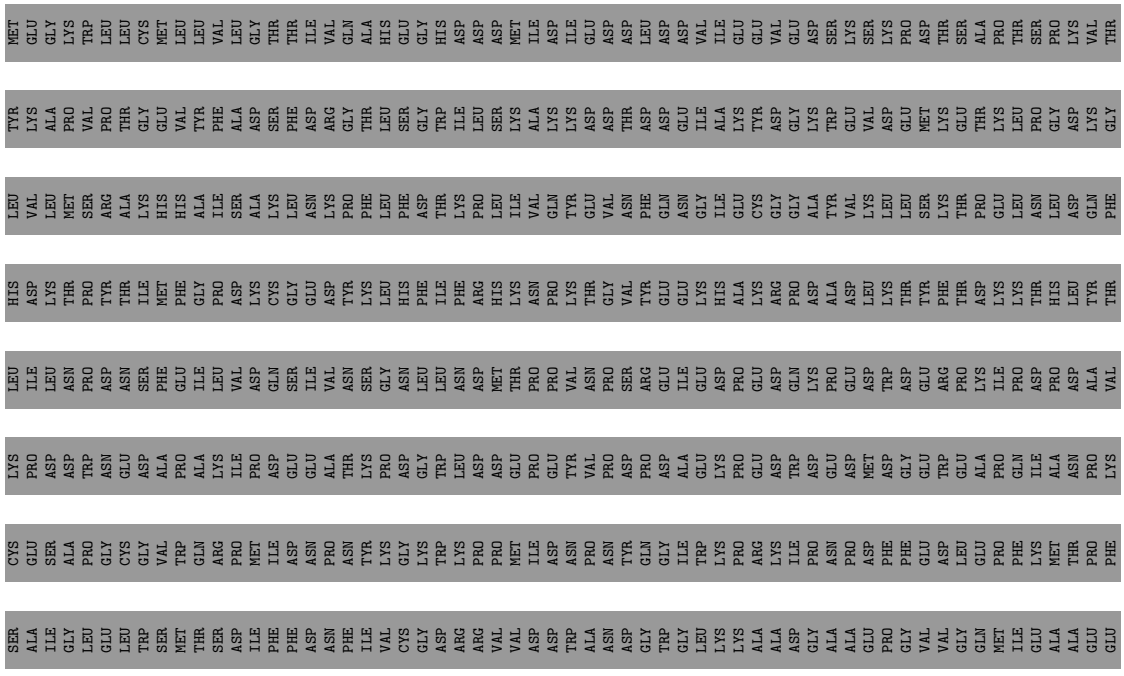
Chain 8:

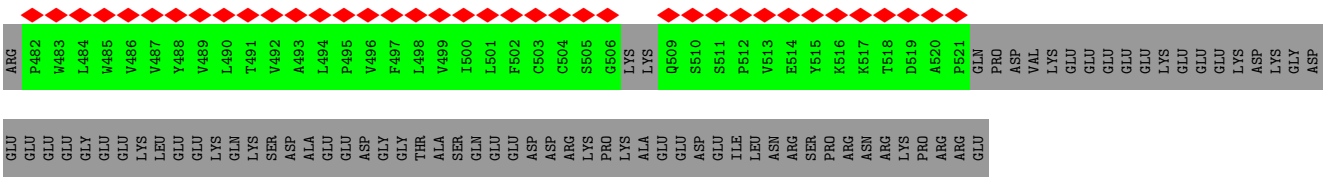


• Molecule 9: Calnexin

Chain 9:

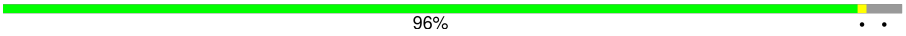


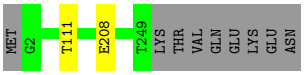




• Molecule 10: Ribosomal protein L8

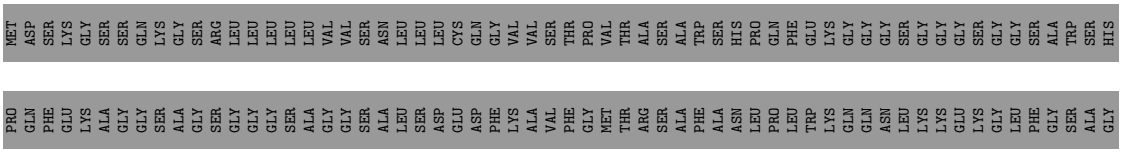
Chain A:





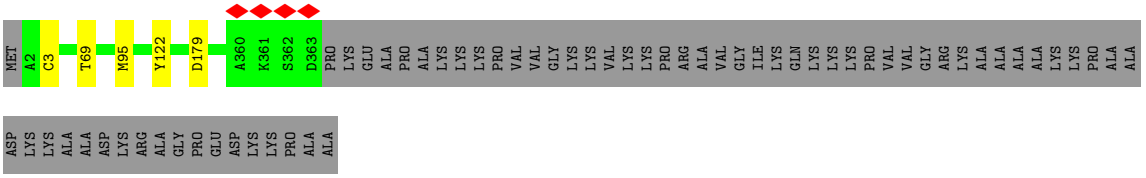
• Molecule 11: Nascent chain

Chain B:



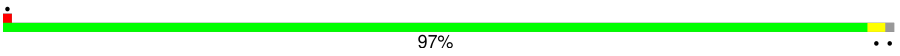
• Molecule 12: Large ribosomal subunit protein uL4

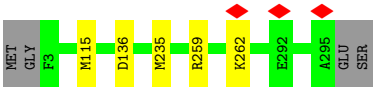
Chain C:



• Molecule 13: Ribosomal_L18_c domain-containing protein

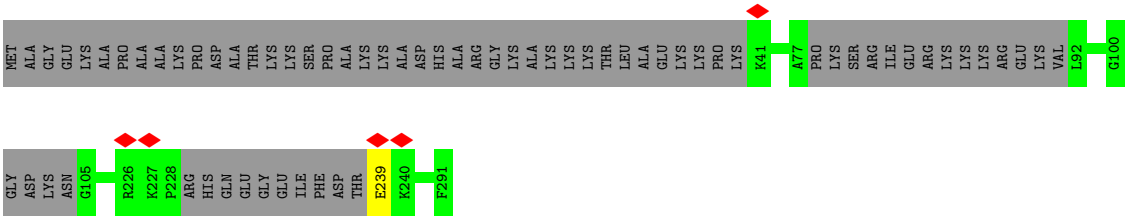
Chain D:





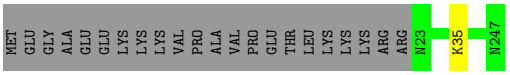
• Molecule 14: 60S ribosomal protein L6

Chain E:



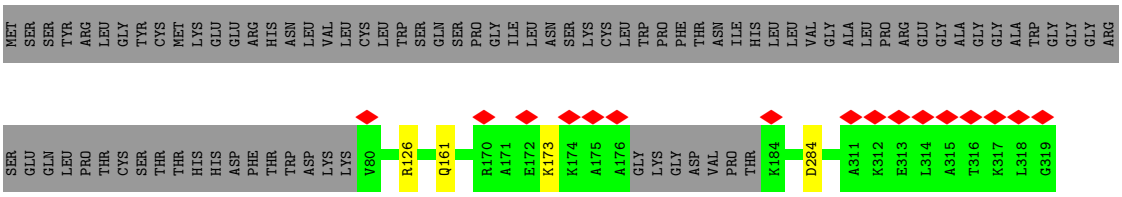
• Molecule 15: Ribosomal Protein uL30

Chain F:



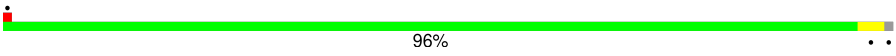
• Molecule 16: 60S ribosomal protein L7a

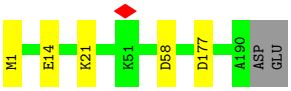
Chain G:



• Molecule 17: 60S ribosomal protein L9

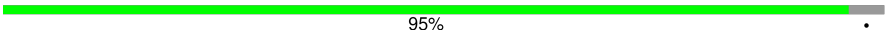
Chain H:

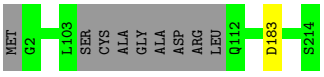




• Molecule 18: 60S ribosomal protein L10

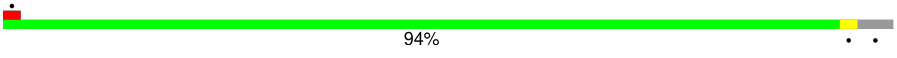
Chain I:

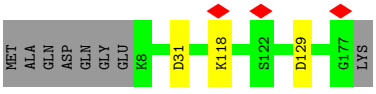




• Molecule 19: 60S ribosomal protein L11

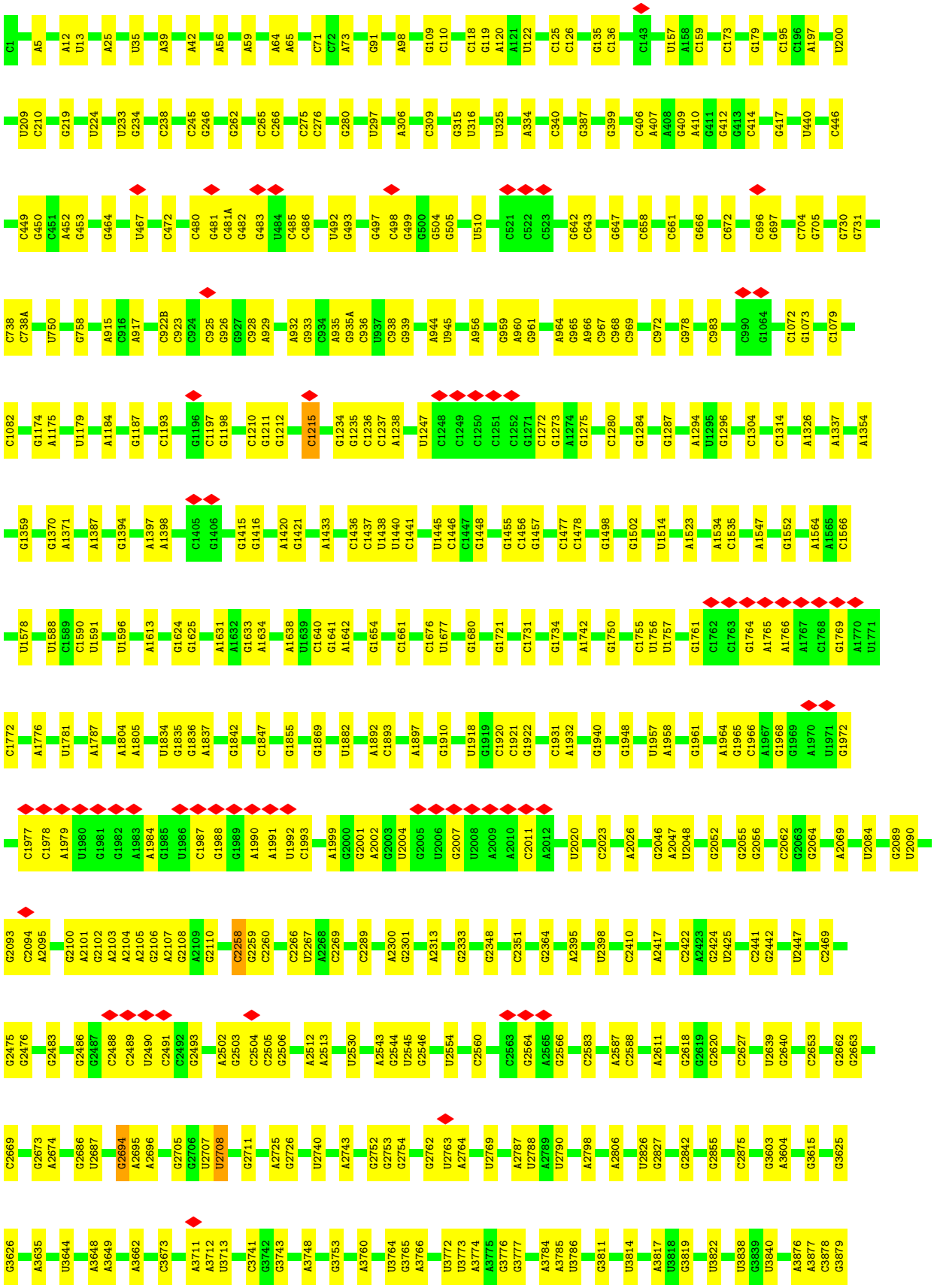
Chain J:

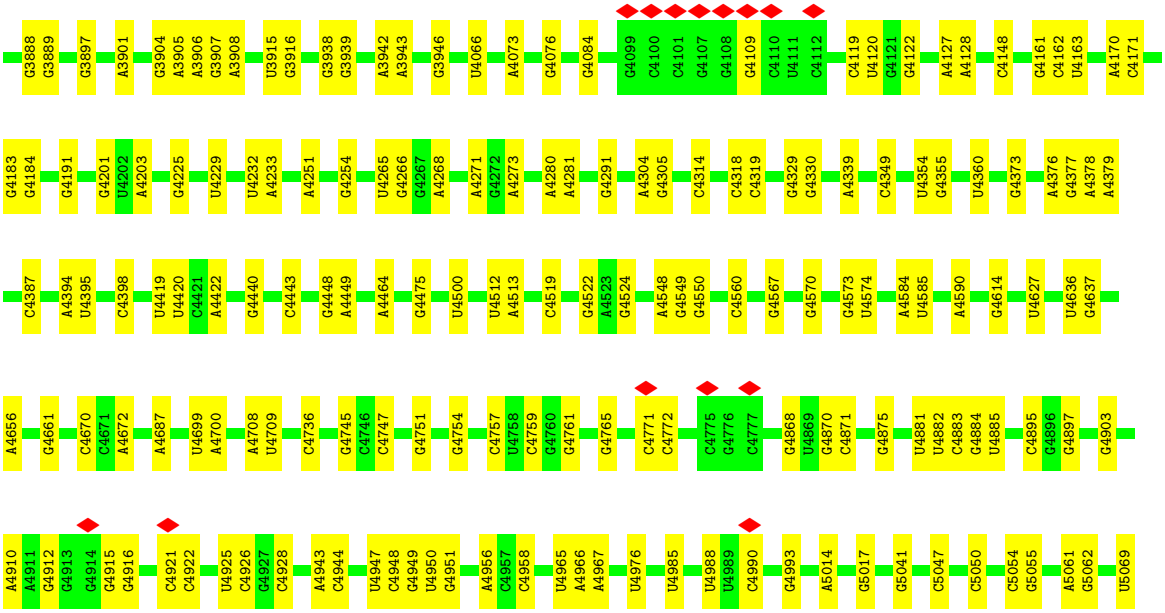




• Molecule 20: 28S rRNA

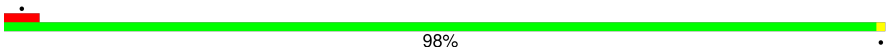
Chain K:

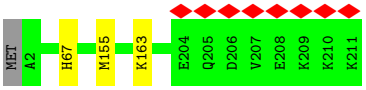

C1 A5 A12 U13 A25 U35 A39 A42 A56 A59 A64 A65 C71 C72 A73 G91 A98 G109 C110 C118 G119 A120 A121 U122 C125 C126 G135 C136 C143 U157 A158 C159 C173 G179 C195 C196 A197 U200
U209 C210 G219 U224 U233 G234 C238 C245 G246 G262 C265 C266 C275 C276 G280 U297 A306 C309 G315 U316 U325 A334 C340 G387 G399 C406 A407 A408 G409 A410 G411 G412 G413 C414 G417 U440 C446
C449 G450 C451 A452 G453 G464 U467 C472 C480 G481 C481A G482 G483 U484 C485 C486 U492 G493 G497 C498 G499 G500 G504 G505 U510 C521 C522 C523 G642 C643 G647 C658 C661 G666 C672 C696 G697 C704 G705 G730 G731
C738 C738A U750 G758 A915 C916 A917 C922B C923 C924 C925 G926 G927 C928 A929 A932 G933 C934 A935 G935A C936 U937 C938 G939 A944 U945 A956 G959 A960 G961 A964 G965 A966 C967 C968 C969 C972 G978 C983 C990 G1064 C1072 G1073 C1079
C1082 G1174 A1175 U1179 A1184 G1187 C1193 G1196 C1197 G1198 C1210 G1211 G1212 C1215 G1234 G1235 C1236 C1237 A1238 U1247 C1248 C1249 C1250 C1251 C1252 G1271 C1272 G1273 A1274 G1275 C1280 G1284 G1287 A1294 U1295 G1296 C1304 C1314 A1326 A1337 A1354
G1359 G1370 A1371 A1387 C1394 A1397 A1398 C1405 G1406 G1415 G1416 A1420 G1421 A1433 C1436 C1437 U1438 U1440 C1441 U1445 C1446 C1447 G1448 G1455 C1456 G1457 C1477 C1478 G1498 G1502 U1514 A1523 A1534 C1535 A1547 G1552 A1564 A1565 C1566
U1578 U1588 C1589 C1590 U1591 U1596 A1613 G1624 G1625 A1631 A1632 G1633 A1634 A1638 U1639 C1640 G1641 A1642 G1654 C1661 C1676 U1677 G1680 G1721 C1731 G1734 A1742 G1750 C1755 U1756 U1757 G1761 C1762 C1763 G1764 A1765 A1766 A1767 C1768 G1769 A1770 U1771
C1772 A1776 U1781 A1787 A1804 A1805 U1834 G1835 G1836 A1837 G1842 C1847 G1855 G1869 U1882 A1892 C1893 A1897 G1910 U1918 G1919 C1920 C1921 G1922 C1931 A1932 G1940 G1948 U1957 A1958 G1961 A1964 G1965 C1966 A1967 G1968 G1969 A1970 U1971 G1972
C1977 C1978 A1979 U1980 G1981 G1982 A1983 A1984 G1985 U1986 C1987 G1988 G1989 A1990 A1991 U1992 C1993 A1999 G2000 G2001 A2002 G2003 U2004 G2005 U2006 G2007 U2008 A2009 A2010 C2011 A2012 U2020 C2023 A2026 G2046 A2047 U2048 G2052 G2055 G2056 C2062 G2063 G2064 A2069 U2084 G2089 U2090
G2093 C2094 A2095 G2100 A2101 G2102 A2103 A2104 A2105 G2106 A2107 G2108 A2109 G2110 C2258 G2259 C2260 C2266 U2267 A2268 C2269 C2289 A2300 G2301 A2313 G2333 G2348 C2351 G2364 A2395 U2398 C2410 A2417 C2422 A2423 G2424 U2425 C2441 G2442 U2447 C2469
G2475 G2476 G2483 G2486 G2487 C2488 C2489 U2490 C2491 C2492 G2493 A2502 G2503 C2504 C2505 G2506 A2512 A2513 U2530 A2543 G2544 U2545 G2546 U2554 C2560 C2563 G2564 A2565 G2566 C2583 A2587 C2588 A2611 G2618 G2619 G2620 C2627 U2639 G2640 C2653 G2662 G2663
C2669 G2673 A2674 G2686 U2687 G2694 A2695 A2696 G2705 G2706 U2707 U2708 G2711 A2725 G2726 U2740 A2743 G2752 G2753 G2754 G2762 U2763 A2764 U2769 A2787 U2788 A2789 U2790 A2798 A2806 U2826 G2827 G2842 G2855 C2875 G3603 A3604 G3615 G3625
G3626 A3635 U3644 A3648 A3649 A3662 C3673 A3711 A3712 U3713 C3741 G3742 G3743 A3748 G3753 A3760 U3764 G3765 A3766 U3772 U3773 A3774 A3775 G3776 G3777 A3784 A3785 U3786 G3811 U3814 A3817 U3818 G3819 U3822 U3838 G3839 U3840 A3876 A3877 C3878 G3879



• Molecule 21: 60S ribosomal protein L13

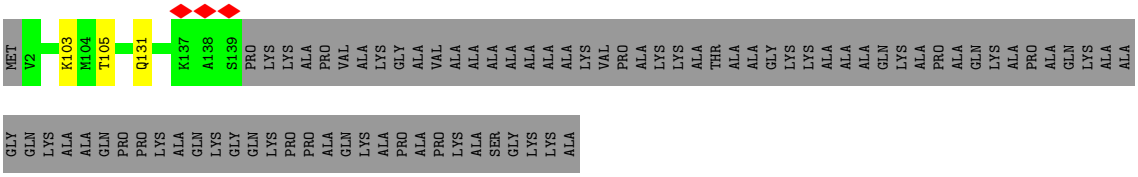
Chain L:





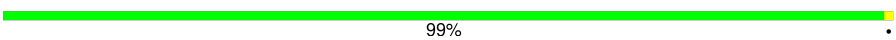
• Molecule 22: 60S ribosomal protein L14

Chain M:



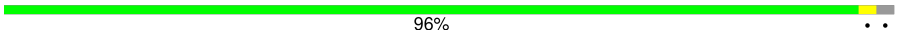
• Molecule 23: Ribosomal protein L15

Chain N:



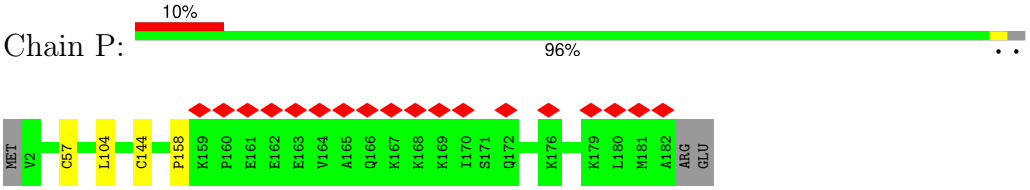
• Molecule 24: 60S ribosomal protein L13a

Chain O:



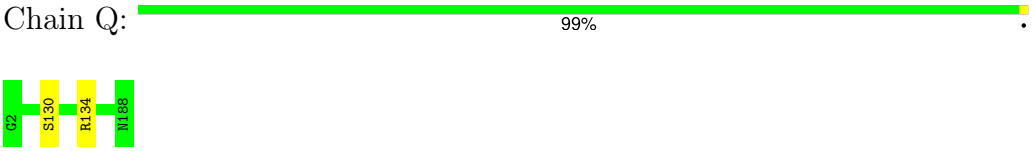
• Molecule 25: uL22

Chain P:



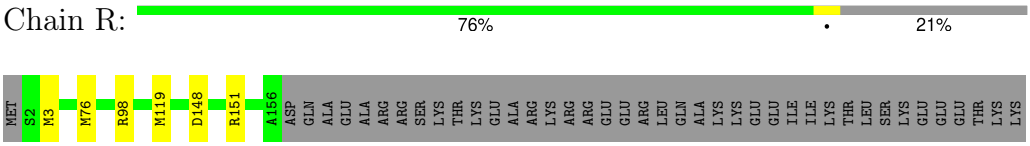
• Molecule 26: Ribosomal protein L18

Chain Q:



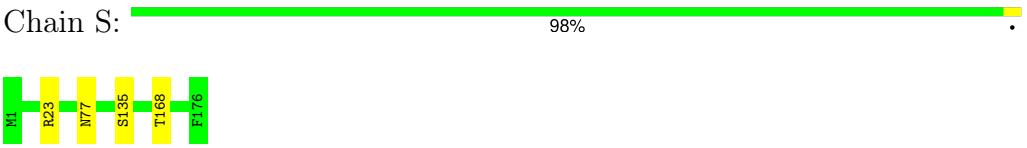
• Molecule 27: Ribosomal protein L19

Chain R:



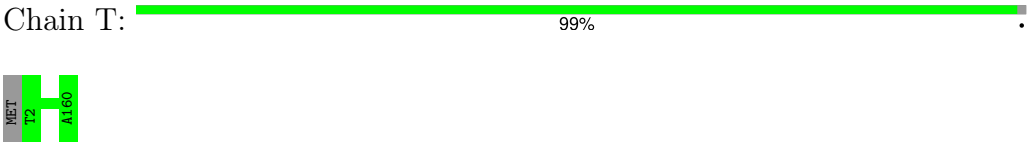
• Molecule 28: 60S ribosomal protein L18a

Chain S:



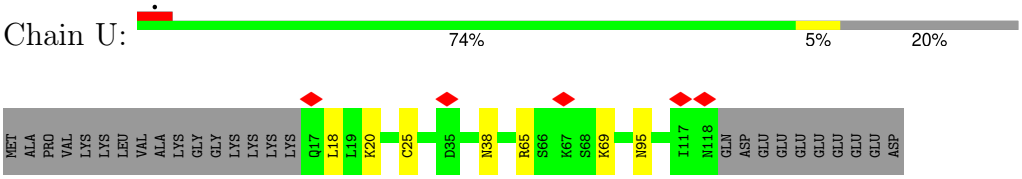
• Molecule 29: 60S ribosomal protein L21

Chain T:



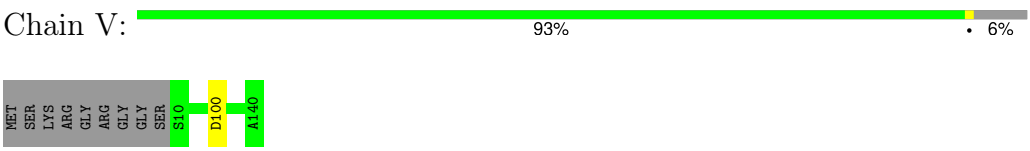
• Molecule 30: Large ribosomal subunit protein eL22

Chain U:



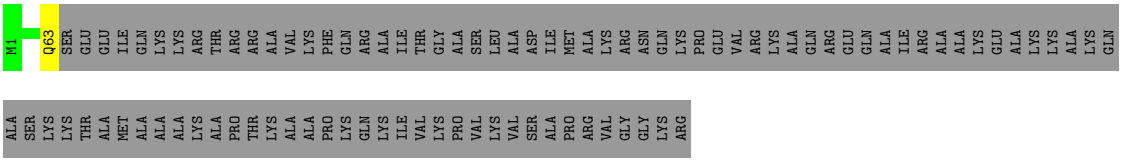
• Molecule 31: Ribosomal protein L23

Chain V:



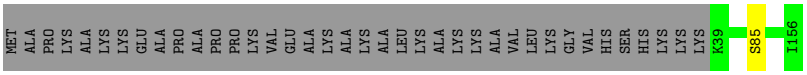
• Molecule 32: Ribosomal protein L24

Chain W:



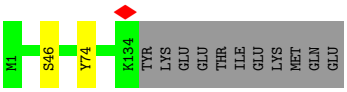
• Molecule 33: Large ribosomal subunit protein uL23 N-terminal domain-containing protein

Chain X:



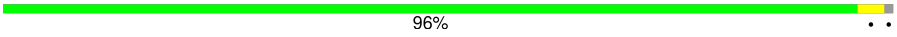
• Molecule 34: Ribosomal protein L26

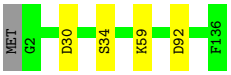
Chain Y:



• Molecule 35: 60S ribosomal protein L27

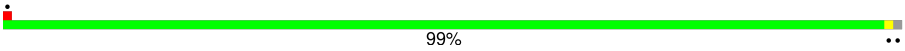
Chain Z:

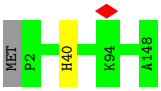




• Molecule 36: 60S ribosomal protein L27a

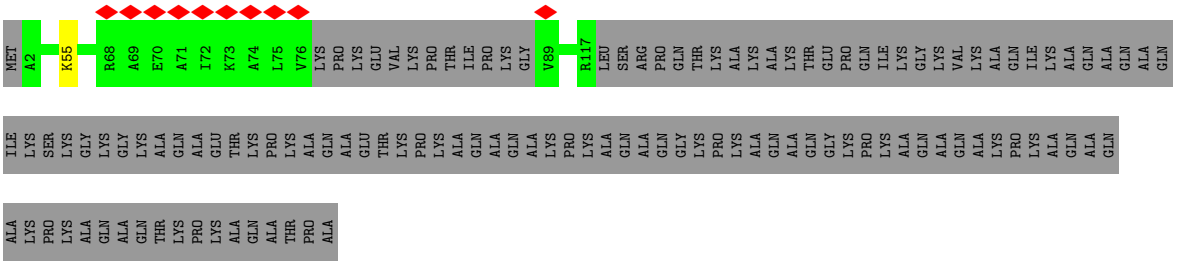
Chain a:





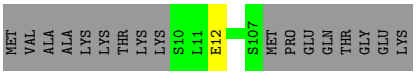
• Molecule 37: 60S ribosomal protein L29

Chain b:



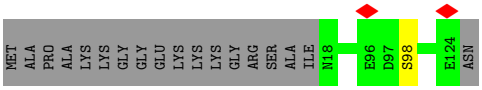
• Molecule 38: Large ribosomal subunit protein eL30

Chain c:



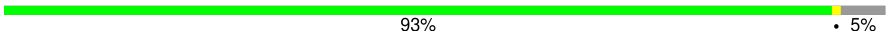
• Molecule 39: 60S ribosomal protein L31

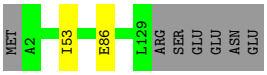
Chain d:



• Molecule 40: Ribosomal protein L32

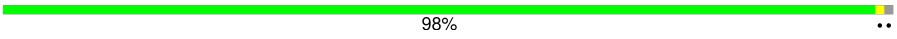
Chain e:





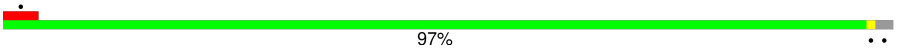
• Molecule 41: 60S ribosomal protein L35a

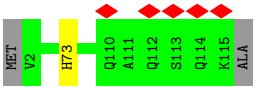
Chain f:



• Molecule 42: 60S ribosomal protein L34

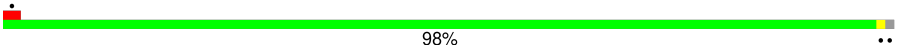
Chain g:





• Molecule 43: 60S ribosomal protein L35

Chain h:

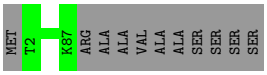


• Molecule 44: 60S ribosomal protein L36

Chain i:

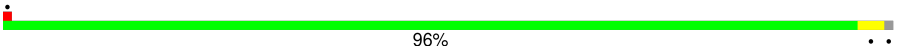
• Molecule 45: Ribosomal protein L37

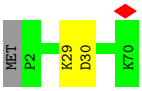
Chain j:



• Molecule 46: Large ribosomal subunit protein eL38

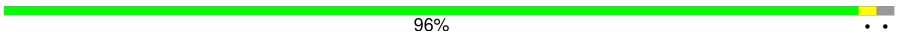
Chain k:





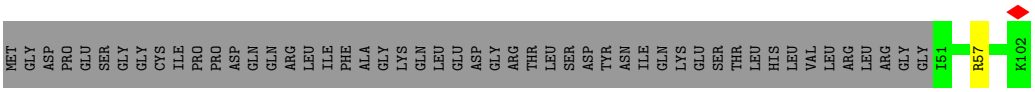
• Molecule 47: 60S ribosomal protein L39-like

Chain l:



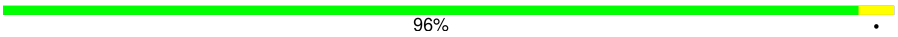
• Molecule 48: eL40

Chain m:



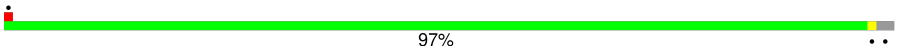
• Molecule 49: 60S ribosomal protein L41

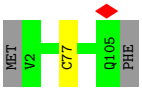
Chain n:



• Molecule 50: 60S ribosomal protein L36a-like

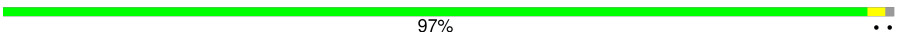
Chain o:

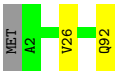




• Molecule 51: 60S ribosomal protein L37a

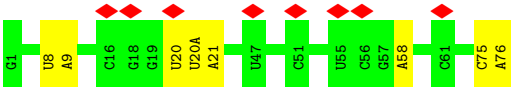
Chain p:





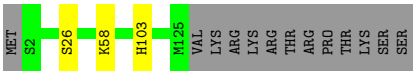
• Molecule 52: P-site tRNA

Chain q:



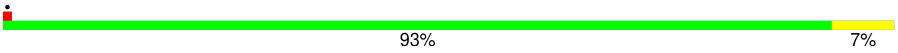
• Molecule 53: 60S ribosomal protein L28

Chain r:



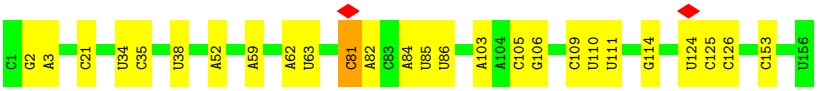
• Molecule 54: 5S rRNA

Chain u:



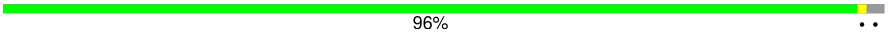
• Molecule 55: 5.8S rRNA

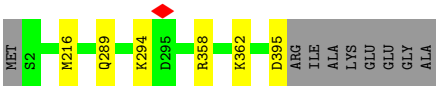
Chain v:



• Molecule 56: Ribosomal protein L3

Chain w:





4 Experimental information (i)

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 ($e^-/Å^2$)	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 (Å)	562.7185, 562.7185, 562.7185	wwPDB
Map dimensions	420, 420, 420	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	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	0.31	1/3651 (0.0%)	0.51	3/4947 (0.1%)
2	2	0.29	0/258	0.42	0/348
3	3	0.26	0/544	0.48	0/728
4	4	0.26	0/245	0.54	0/325
5	5	0.26	0/1457	0.47	0/1980
6	6	0.26	0/1296	0.48	0/1764
7	7	0.90	3/1482 (0.2%)	0.90	6/2001 (0.3%)
8	8	0.24	0/1215	0.46	0/1656
9	9	0.24	0/311	0.39	0/427
10	A	0.35	0/1936	0.61	0/2596
11	B	0.27	0/446	0.48	0/610
12	C	0.32	0/2937	0.55	0/3946
13	D	0.33	0/2437	0.51	0/3264
14	E	0.30	0/1825	0.53	0/2445
15	F	0.34	0/1911	0.55	0/2549
16	G	0.30	0/1910	0.51	0/2569
17	H	0.31	0/1535	0.54	0/2063
18	I	0.33	0/1702	0.55	0/2272
19	J	0.30	0/1385	0.55	0/1852
20	K	0.67	0/84980	0.81	14/132536 (0.0%)
21	L	0.31	0/1733	0.59	0/2316
22	M	0.32	0/1158	0.56	1/1547 (0.1%)
23	N	0.37	0/1746	0.61	0/2338
24	O	0.34	0/1662	0.54	0/2222
25	P	0.39	1/1498 (0.1%)	0.69	3/2003 (0.1%)
26	Q	0.34	0/1539	0.60	0/2054
27	R	0.30	0/1310	0.58	0/1734
28	S	0.36	0/1501	0.55	0/2012
29	T	0.34	0/1326	0.56	0/1770
30	U	0.30	0/848	0.50	0/1138
31	V	0.33	0/993	0.52	0/1332
32	W	0.36	0/541	0.53	0/720

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\| > 5$	RMSZ	$\#\|Z\| > 5$
33	X	0.32	0/984	0.50	0/1323
34	Y	0.32	0/1132	0.55	0/1504
35	Z	0.34	0/1130	0.53	0/1507
36	a	0.34	0/1191	0.55	0/1590
37	b	0.28	0/861	0.54	0/1138
38	c	0.33	0/771	0.48	0/1034
39	d	0.34	0/903	0.56	0/1216
40	e	0.34	0/1071	0.57	0/1429
41	f	0.37	0/895	0.58	0/1198
42	g	0.34	0/916	0.59	0/1220
43	h	0.30	0/1021	0.54	0/1348
44	i	0.30	0/841	0.58	0/1112
45	j	0.37	0/720	0.63	0/952
46	k	0.31	0/575	0.50	0/761
47	l	0.31	0/459	0.57	0/608
48	m	0.32	0/435	0.55	0/575
49	n	0.26	0/241	0.75	0/305
50	o	0.33	0/864	0.56	0/1140
51	p	0.34	0/718	0.60	0/953
52	q	0.27	0/1805	0.75	0/2809
53	r	0.33	0/1010	0.58	0/1354
54	u	0.67	0/2858	0.77	0/4455
55	v	0.67	0/3701	0.80	1/5766 (0.0%)
56	w	0.34	0/3240	0.53	0/4339
All	All	0.56	5/157660 (0.0%)	0.72	28/231700 (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	-27.68	0.59	1.50
7	7	162	PRO	CB-CG	16.64	2.33	1.50
1	1	332	PRO	CG-CD	-8.29	1.23	1.50
7	7	162	PRO	N-CD	5.66	1.55	1.47
25	P	158	PRO	CG-CD	-5.51	1.32	1.50

All (28) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
7	7	162	PRO	CB-CG-CD	-27.28	0.11	106.50
25	P	158	PRO	N-CD-CG	-15.91	79.33	103.20
7	7	161	ASN	C-N-CD	13.51	156.78	128.40
7	7	162	PRO	CA-N-CD	-12.49	94.01	111.50

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	1	332	PRO	CA-CB-CG	-11.07	82.97	104.00
1	1	332	PRO	N-CD-CG	-11.03	86.65	103.20
7	7	162	PRO	CA-CB-CG	-9.39	86.16	104.00
25	P	158	PRO	CA-N-CD	-7.38	101.16	111.50
20	K	3741	C	N3-C2-O2	-7.38	116.74	121.90
20	K	2023	C	N1-C2-O2	-7.22	114.57	118.90
25	P	158	PRO	CA-CB-CG	-6.54	91.57	104.00
20	K	2708	U	C2-N1-C1'	6.54	125.55	117.70
20	K	1215	C	C2-N1-C1'	6.23	125.65	118.80
20	K	2258	C	C2-N1-C1'	6.23	125.65	118.80
20	K	2023	C	C2-N1-C1'	-6.08	112.11	118.80
7	7	161	ASN	N-CA-CB	-5.97	99.85	110.60
20	K	3741	C	N1-C2-O2	5.59	122.25	118.90
20	K	417	G	O4'-C1'-N9	5.53	112.62	108.20
20	K	2258	C	C6-N1-C2	-5.50	118.10	120.30
20	K	2806	A	O4'-C1'-N9	5.27	112.42	108.20
22	M	105	THR	CA-CB-CG2	5.21	119.70	112.40
55	v	81	C	C2-N1-C1'	5.21	124.53	118.80
1	1	332	PRO	N-CA-CB	-5.20	96.88	102.60
20	K	2023	C	C6-N1-C1'	5.16	126.99	120.80
7	7	162	PRO	N-CA-CB	-5.15	96.94	102.60
20	K	1552	G	O4'-C1'-N9	5.03	112.22	108.20
20	K	2694	G	N3-C4-C5	5.02	131.11	128.60
20	K	2258	C	N3-C2-O2	-5.01	118.39	121.90

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

5.3 Torsion angles

5.3.1 Protein backbone

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	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
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

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
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%)	19	45
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
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 (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%)	381 (98%)	7 (2%)	54 80
2	2	28/74 (38%)	27 (96%)	1 (4%)	30 61
3	3	59/59 (100%)	55 (93%)	4 (7%)	13 34
4	4	26/55 (47%)	24 (92%)	2 (8%)	10 28
5	5	157/249 (63%)	151 (96%)	6 (4%)	28 59
6	6	135/152 (89%)	133 (98%)	2 (2%)	60 84
7	7	161/164 (98%)	157 (98%)	4 (2%)	42 73
8	8	130/146 (89%)	127 (98%)	3 (2%)	45 75
9	9	35/526 (7%)	35 (100%)	0	100 100
10	A	190/199 (96%)	188 (99%)	2 (1%)	70 88
11	B	48/172 (28%)	46 (96%)	2 (4%)	25 55
12	C	302/347 (87%)	297 (98%)	5 (2%)	56 81
13	D	247/250 (99%)	242 (98%)	5 (2%)	50 78
14	E	197/251 (78%)	196 (100%)	1 (0%)	86 95
15	F	196/215 (91%)	195 (100%)	1 (0%)	86 95
16	G	200/272 (74%)	196 (98%)	4 (2%)	50 78
17	H	169/171 (99%)	164 (97%)	5 (3%)	36 67
18	I	175/181 (97%)	174 (99%)	1 (1%)	84 94
19	J	143/149 (96%)	140 (98%)	3 (2%)	48 77
21	L	175/176 (99%)	172 (98%)	3 (2%)	56 81
22	M	117/161 (73%)	115 (98%)	2 (2%)	56 81
23	N	171/172 (99%)	169 (99%)	2 (1%)	67 87
24	O	171/173 (99%)	166 (97%)	5 (3%)	37 68
25	P	160/163 (98%)	157 (98%)	3 (2%)	52 79
26	Q	164/164 (100%)	162 (99%)	2 (1%)	67 87
27	R	138/175 (79%)	132 (96%)	6 (4%)	25 54
28	S	157/157 (100%)	153 (98%)	4 (2%)	42 73
29	T	139/140 (99%)	139 (100%)	0	100 100
30	U	92/114 (81%)	85 (92%)	7 (8%)	11 29
31	V	101/107 (94%)	100 (99%)	1 (1%)	73 89
32	W	55/126 (44%)	54 (98%)	1 (2%)	54 80
33	X	106/134 (79%)	105 (99%)	1 (1%)	75 91

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
34	Y	124/135 (92%)	122 (98%)	2 (2%)	58 83
35	Z	117/118 (99%)	113 (97%)	4 (3%)	32 63
36	a	119/120 (99%)	119 (100%)	0	100 100
37	b	84/172 (49%)	83 (99%)	1 (1%)	67 87
38	c	84/98 (86%)	83 (99%)	1 (1%)	67 87
39	d	98/110 (89%)	97 (99%)	1 (1%)	73 89
40	e	114/121 (94%)	112 (98%)	2 (2%)	54 80
41	f	88/89 (99%)	87 (99%)	1 (1%)	70 88
42	g	98/99 (99%)	97 (99%)	1 (1%)	73 89
43	h	109/110 (99%)	108 (99%)	1 (1%)	75 91
44	i	86/89 (97%)	82 (95%)	4 (5%)	22 51
45	j	73/80 (91%)	73 (100%)	0	100 100
46	k	64/65 (98%)	62 (97%)	2 (3%)	35 66
47	l	47/48 (98%)	46 (98%)	1 (2%)	48 77
48	m	48/90 (53%)	47 (98%)	1 (2%)	48 77
49	n	24/24 (100%)	23 (96%)	1 (4%)	25 55
50	o	92/94 (98%)	91 (99%)	1 (1%)	70 88
51	p	74/75 (99%)	72 (97%)	2 (3%)	40 71
53	r	108/121 (89%)	105 (97%)	3 (3%)	38 69
56	w	342/348 (98%)	336 (98%)	6 (2%)	54 80
All	All	6725/8198 (82%)	6595 (98%)	130 (2%)	52 79

All (130) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	1	46	CYS
1	1	55	SER
1	1	143	MET
1	1	207	MET
1	1	259	GLN
1	1	332	PRO
1	1	343	HIS
2	2	88	HIS
3	3	1	MET
3	3	13	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	3	30	ARG
3	3	44	PHE
4	4	20	GLN
4	4	23	ASN
5	5	86	THR
5	5	132	PHE
5	5	158	PHE
5	5	198	GLU
5	5	211	TYR
5	5	234	ARG
6	6	51	SER
6	6	147	PHE
7	7	37	PHE
7	7	53	MET
7	7	109	ASN
7	7	185	LYS
8	8	38	THR
8	8	45	THR
8	8	124	ASP
10	A	111	THR
10	A	208	GLU
11	B	103	PHE
11	B	110	MET
12	C	3	CYS
12	C	69	THR
12	C	95	MET
12	C	122	TYR
12	C	179	ASP
13	D	115	MET
13	D	136	ASP
13	D	235	MET
13	D	259	ARG
13	D	262	LYS
14	E	239	GLU
15	F	35	LYS
16	G	126	ARG
16	G	161	GLN
16	G	173	LYS
16	G	284	ASP
17	H	1	MET
17	H	14	GLU
17	H	21	LYS

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
17	H	58	ASP
17	H	177	ASP
18	I	183	ASP
19	J	31	ASP
19	J	118	LYS
19	J	129	ASP
21	L	67	HIS
21	L	155	MET
21	L	163	LYS
22	M	103	LYS
22	M	131	GLN
23	N	20	ARG
23	N	187	SER
24	O	32	LYS
24	O	43	ILE
24	O	49	ARG
24	O	132	THR
24	O	178	ARG
25	P	57	CYS
25	P	104	LEU
25	P	144	CYS
26	Q	130	SER
26	Q	134	ARG
27	R	3	MET
27	R	76	MET
27	R	98	ARG
27	R	119	MET
27	R	148	ASP
27	R	151	ARG
28	S	23	ARG
28	S	77	ASN
28	S	135	SER
28	S	168	THR
30	U	18	LEU
30	U	20	LYS
30	U	25	CYS
30	U	38	ASN
30	U	65	ARG
30	U	69	LYS
30	U	95	ASN
31	V	100	ASP
32	W	63	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
33	X	85	SER
34	Y	46	SER
34	Y	74	TYR
35	Z	30	ASP
35	Z	34	SER
35	Z	59	LYS
35	Z	92	ASP
37	b	55	LYS
38	c	12	GLU
39	d	98	SER
40	e	53	ILE
40	e	86	GLU
41	f	19	ARG
42	g	73	HIS
43	h	27	GLU
44	i	29	ARG
44	i	32	ARG
44	i	46	GLU
44	i	99	LYS
46	k	29	LYS
46	k	30	ASP
47	l	5	LYS
48	m	57	ARG
49	n	10	MET
50	o	77	CYS
51	p	26	VAL
51	p	92	GLN
53	r	26	SER
53	r	58	LYS
53	r	103	HIS
56	w	216	MET
56	w	289	GLN
56	w	294	LYS
56	w	358	ARG
56	w	362	LYS
56	w	395	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
27	R	75	HIS
36	a	28	HIS

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
44	i	20	ASN

5.3.3 RNA (i)

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

All (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
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	71	C
20	K	73	A
20	K	91	G
20	K	98	A
20	K	109	G
20	K	110	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	157	U
20	K	159	C
20	K	173	C

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
20	K	179	G
20	K	195	C
20	K	197	A
20	K	200	U
20	K	209	U
20	K	210	C
20	K	219	G
20	K	224	U
20	K	233	U
20	K	234	G
20	K	238	C
20	K	246	G
20	K	262	G
20	K	265	C
20	K	266	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	325	U
20	K	334	A
20	K	340	C
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	414	C
20	K	440	U
20	K	446	C
20	K	449	C
20	K	450	G
20	K	452	A
20	K	453	G
20	K	464	G
20	K	467	U
20	K	472	C

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
20	K	481	G
20	K	481(A)	C
20	K	482	G
20	K	483	G
20	K	485	C
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	642	G
20	K	643	C
20	K	647	G
20	K	658	C
20	K	661	C
20	K	666	G
20	K	672	C
20	K	696	C
20	K	697	G
20	K	704	C
20	K	705	G
20	K	730	G
20	K	731	G
20	K	738	C
20	K	738(A)	C
20	K	750	U
20	K	758	G
20	K	915	A
20	K	917	A
20	K	923	C
20	K	925	C
20	K	926	G
20	K	928	C
20	K	929	A
20	K	932	A
20	K	933	G
20	K	935	A
20	K	935(A)	G
20	K	936	C

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
20	K	938	C
20	K	939	G
20	K	944	A
20	K	945	U
20	K	956	A
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	969	C
20	K	972	C
20	K	978	G
20	K	983	C
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	1184	A
20	K	1187	G
20	K	1193	C
20	K	1198	G
20	K	1210	C
20	K	1211	G
20	K	1212	G
20	K	1215	C
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	1275	G
20	K	1280	C
20	K	1284	G

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
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	1441	C
20	K	1446	C
20	K	1448	G
20	K	1456	C
20	K	1457	G
20	K	1478	C
20	K	1498	G
20	K	1502	G
20	K	1514	U
20	K	1523	A
20	K	1534	A
20	K	1535	C
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

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
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	1642	A
20	K	1654	G
20	K	1661	C
20	K	1676	C
20	K	1677	U
20	K	1680	G
20	K	1721	G
20	K	1731	C
20	K	1734	G
20	K	1742	A
20	K	1750	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	1781	U
20	K	1787	A
20	K	1804	A
20	K	1805	A
20	K	1834	U
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	1882	U

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
20	K	1892	A
20	K	1893	C
20	K	1897	A
20	K	1910	G
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	1957	U
20	K	1958	A
20	K	1961	G
20	K	1964	A
20	K	1965	G
20	K	1966	C
20	K	1968	G
20	K	1972	G
20	K	1977	C
20	K	1978	C
20	K	1979	A
20	K	1984	A
20	K	1987	C
20	K	1988	G
20	K	1990	A
20	K	1991	A
20	K	1992	U
20	K	1993	C
20	K	1999	A
20	K	2001	G
20	K	2002	A
20	K	2004	U
20	K	2007	G
20	K	2011	C
20	K	2020	U
20	K	2026	A
20	K	2046	G
20	K	2047	A
20	K	2048	U
20	K	2052	G

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
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	2093	G
20	K	2094	C
20	K	2095	A
20	K	2100	G
20	K	2101	A
20	K	2102	G
20	K	2104	A
20	K	2105	A
20	K	2106	G
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	2269	C
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	2364	G
20	K	2395	A
20	K	2398	U
20	K	2410	C
20	K	2417	A
20	K	2422	C
20	K	2424	G
20	K	2425	U
20	K	2441	C
20	K	2442	G
20	K	2447	U

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
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	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	2530	U
20	K	2544	G
20	K	2545	U
20	K	2546	G
20	K	2554	U
20	K	2560	C
20	K	2564	G
20	K	2566	G
20	K	2583	C
20	K	2587	A
20	K	2588	C
20	K	2611	A
20	K	2618	G
20	K	2620	G
20	K	2627	C
20	K	2640	G
20	K	2653	C
20	K	2662	G
20	K	2663	G
20	K	2669	C
20	K	2673	G
20	K	2674	A
20	K	2686	G
20	K	2687	U
20	K	2694	G
20	K	2695	A
20	K	2696	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
20	K	2705	G
20	K	2707	U
20	K	2708	U
20	K	2711	G
20	K	2725	A
20	K	2726	G
20	K	2740	U
20	K	2743	A
20	K	2752	G
20	K	2753	G
20	K	2754	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	2798	A
20	K	2826	U
20	K	2827	G
20	K	2842	G
20	K	2855	G
20	K	2875	C
20	K	3604	A
20	K	3615	G
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	3713	U
20	K	3743	G
20	K	3748	A
20	K	3753	G
20	K	3760	A
20	K	3764	U

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
20	K	3766	A
20	K	3772	U
20	K	3773	U
20	K	3774	A
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	3876	A
20	K	3877	A
20	K	3878	C
20	K	3879	G
20	K	3889	G
20	K	3897	G
20	K	3901	A
20	K	3905	A
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	3939	G
20	K	3942	A
20	K	3943	A
20	K	3946	G
20	K	4066	U
20	K	4073	A
20	K	4076	G
20	K	4084	G
20	K	4109	G
20	K	4119	C
20	K	4120	U
20	K	4122	G

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
20	K	4127	A
20	K	4128	A
20	K	4148	C
20	K	4161	G
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	4201	G
20	K	4203	A
20	K	4225	G
20	K	4229	U
20	K	4233	A
20	K	4251	A
20	K	4254	G
20	K	4265	U
20	K	4266	G
20	K	4268	A
20	K	4271	A
20	K	4273	A
20	K	4280	A
20	K	4281	A
20	K	4291	G
20	K	4304	A
20	K	4305	G
20	K	4314	C
20	K	4318	C
20	K	4319	C
20	K	4329	G
20	K	4330	G
20	K	4339	A
20	K	4349	C
20	K	4355	G
20	K	4360	U
20	K	4373	G
20	K	4376	A
20	K	4377	G
20	K	4378	A
20	K	4379	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
20	K	4387	C
20	K	4394	A
20	K	4395	U
20	K	4398	C
20	K	4419	U
20	K	4420	U
20	K	4422	A
20	K	4440	G
20	K	4443	C
20	K	4448	G
20	K	4449	A
20	K	4464	A
20	K	4475	G
20	K	4500	U
20	K	4512	U
20	K	4513	A
20	K	4519	C
20	K	4522	G
20	K	4524	G
20	K	4548	A
20	K	4549	G
20	K	4550	G
20	K	4560	C
20	K	4567	G
20	K	4570	G
20	K	4573	G
20	K	4574	U
20	K	4584	A
20	K	4585	U
20	K	4590	A
20	K	4614	G
20	K	4627	U
20	K	4636	U
20	K	4637	G
20	K	4656	A
20	K	4661	G
20	K	4670	C
20	K	4672	A
20	K	4687	A
20	K	4700	A
20	K	4708	A
20	K	4709	U

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
20	K	4736	C
20	K	4745	G
20	K	4747	C
20	K	4751	G
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	4897	G
20	K	4903	G
20	K	4910	A
20	K	4912	G
20	K	4915	G
20	K	4916	G
20	K	4921	C
20	K	4922	C
20	K	4925	U
20	K	4926	C
20	K	4928	C
20	K	4943	A
20	K	4944	C
20	K	4947	U
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	4965	U
20	K	4966	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
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	5055	G
20	K	5061	A
20	K	5062	G
20	K	5069	U
52	q	8	U
52	q	9	A
52	q	20	U
52	q	20(A)	U
52	q	21	A
52	q	58	A
52	q	75	C
52	q	76	A
54	u	7	G
54	u	22	A
54	u	53	U
54	u	54	A
54	u	64	G
54	u	100	A
54	u	110	G
54	u	120	U
55	v	2	G
55	v	3	A
55	v	21	C
55	v	34	U
55	v	35	C
55	v	38	U
55	v	52	A
55	v	59	A
55	v	62	A
55	v	63	U

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
55	v	81	C
55	v	82	A
55	v	84	A
55	v	85	U
55	v	86	U
55	v	103	A
55	v	105	C
55	v	106	G
55	v	109	C
55	v	110	U
55	v	111	U
55	v	114	G
55	v	124	U
55	v	125	C
55	v	126	C
55	v	153	C

All (55) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
20	K	12	A
20	K	125	C
20	K	245	C
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	968	C
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

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
20	K	1445	U
20	K	1455	G
20	K	1477	C
20	K	1590	C
20	K	1633	G
20	K	1764	G
20	K	1990	A
20	K	1992	U
20	K	2046	G
20	K	2089	G
20	K	2103	A
20	K	2104	A
20	K	2258	C
20	K	2266	C
20	K	2489	C
20	K	2502	A
20	K	2543	A
20	K	2639	U
20	K	2695	A
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
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 oligosaccharides in this entry.

5.6 Ligand geometry

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

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	41.92
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
1	K	4101:C	O3'	4107:G	P	17.26
1	K	4777:C	O3'	4859:C	P	16.79
1	K	3948:C	O3'	4065:G	P	16.70
1	K	1406(C):G	O3'	1411:C	P	15.26
1	K	760:G	O3'	904:C	P	14.87
1	K	1364:U	O3'	1368:A	P	14.56
1	K	5022:U	O3'	5028:G	P	14.04
1	K	2901:G	O3'	3597:G	P	13.24
1	K	182:G	O3'	189:G	P	13.19
1	K	523:C	O3'	638:G	P	13.14

Continued on next page...

Continued from previous page...

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	K	1696:C	O3'	1720:C	P	11.90
1	K	1100:U	O3'	1168:G	P	9.37
1	K	1180:C	O3'	1183:C	P	9.00
1	K	4729:A	O3'	4735:G	P	8.48
1	q	16:C	O3'	18:G	P	7.27
1	K	512:U	O3'	515:C	P	6.48
1	K	500:G	O3'	504:G	P	6.38
1	K	4740:G	O3'	4743:G	P	5.38
1	K	4899:G	O3'	4902:C	P	4.37

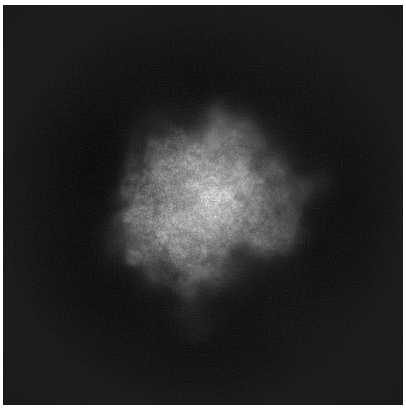
6 Map visualisation

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.

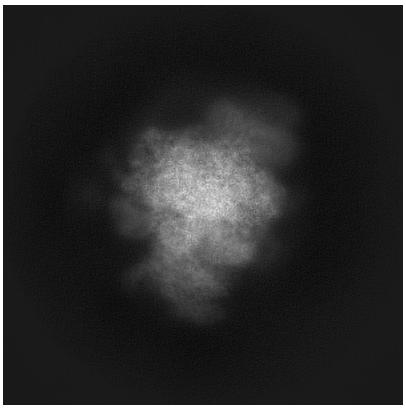
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

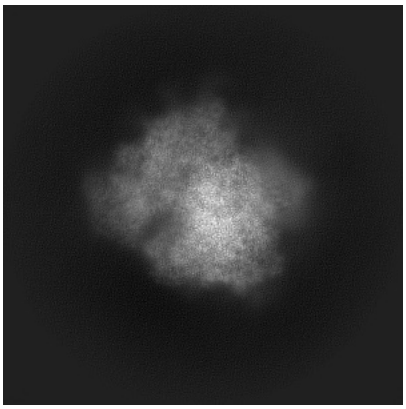
6.1.1 Primary map



X

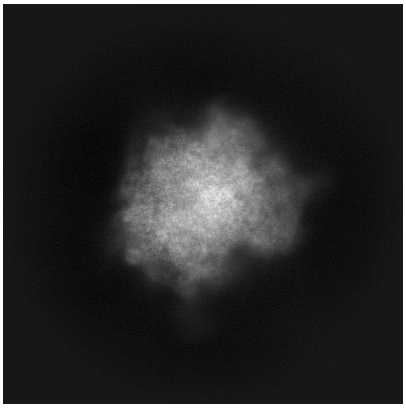


Y

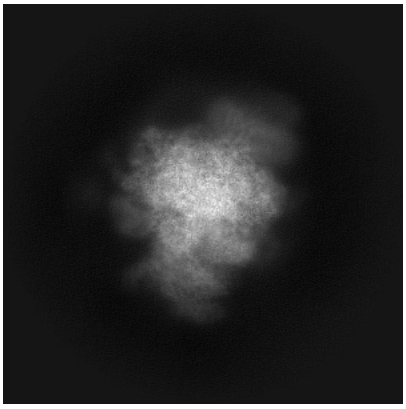


Z

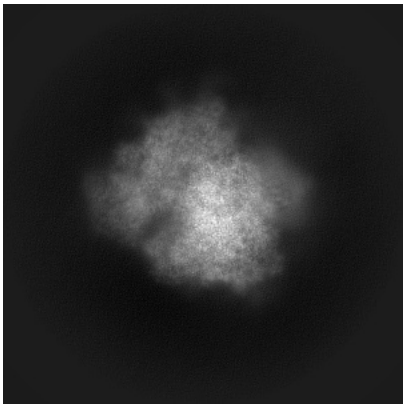
6.1.2 Raw map



X



Y

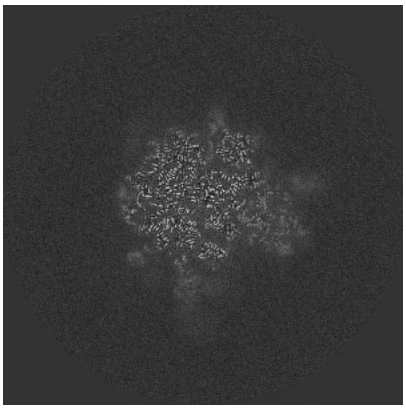


Z

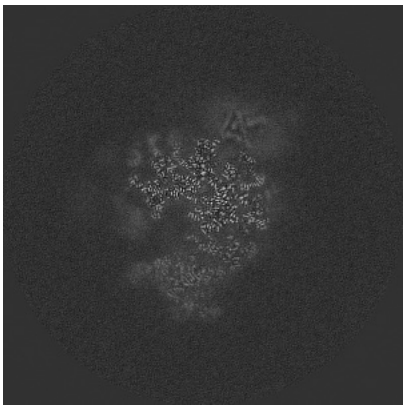
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

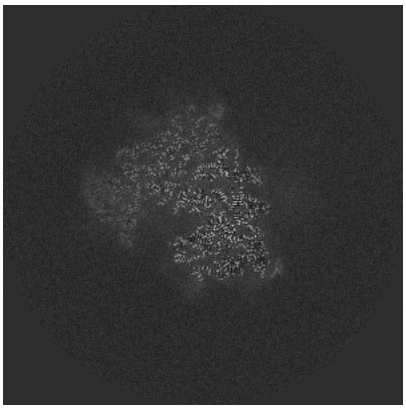
6.2.1 Primary map



X Index: 210

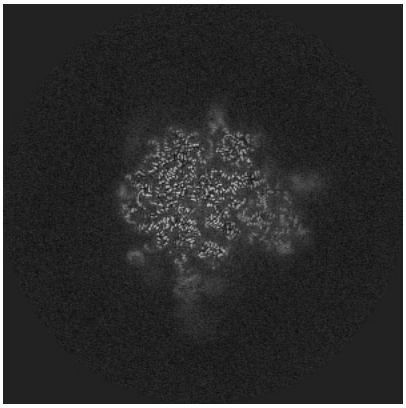


Y Index: 210

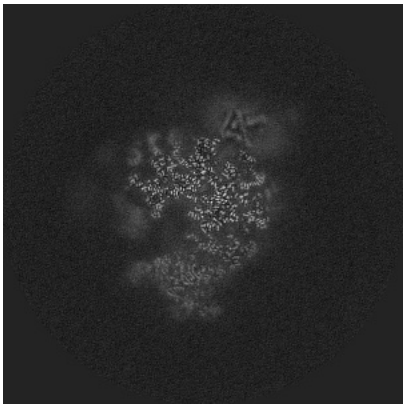


Z Index: 210

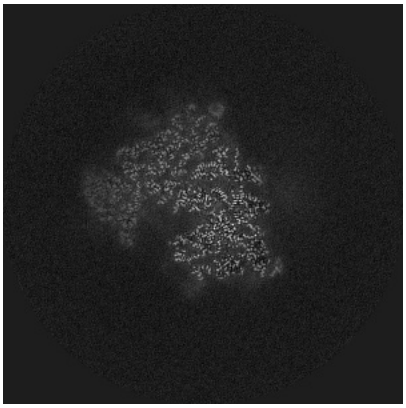
6.2.2 Raw map



X Index: 210



Y Index: 210

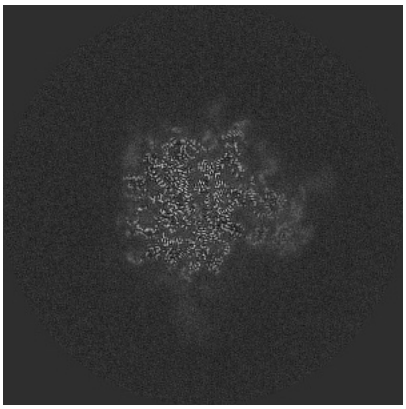


Z Index: 210

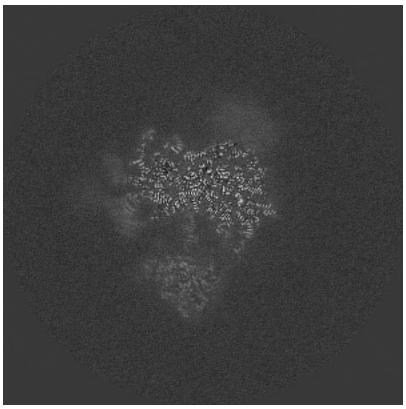
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

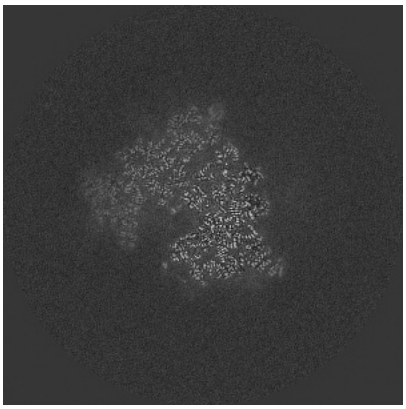
6.3.1 Primary map



X Index: 220

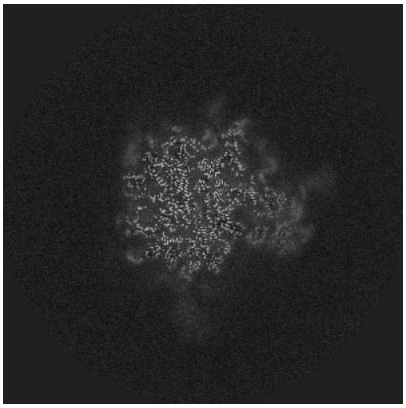


Y Index: 195

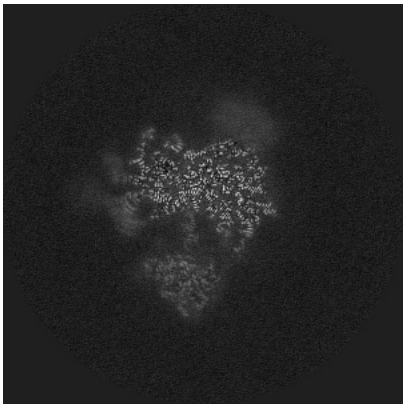


Z Index: 207

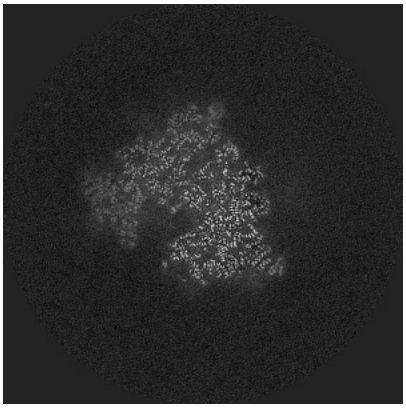
6.3.2 Raw map



X Index: 220



Y Index: 195

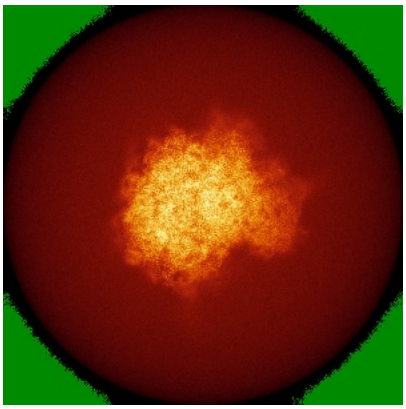


Z Index: 207

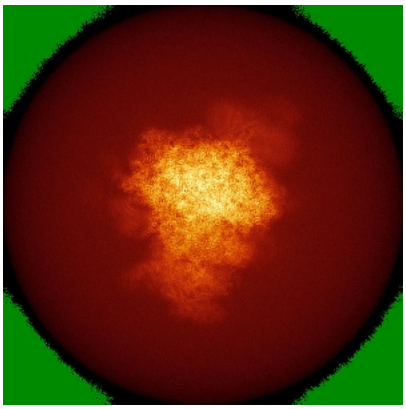
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) (i)

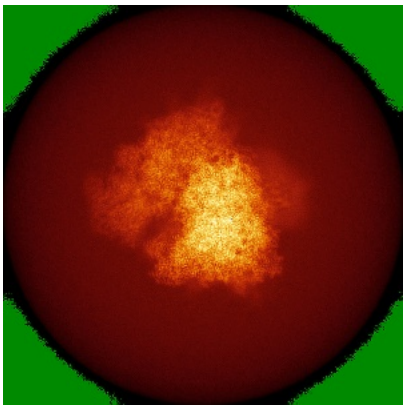
6.4.1 Primary map



X

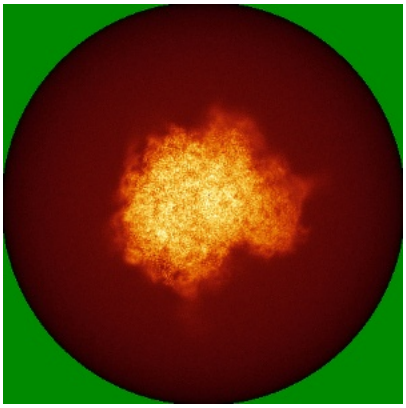


Y

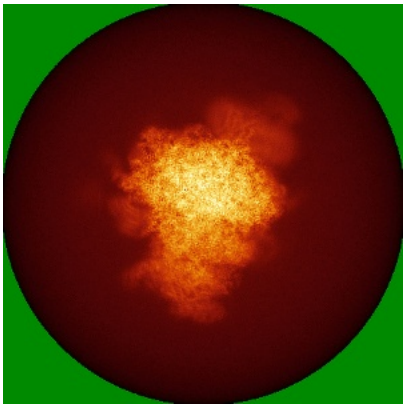


Z

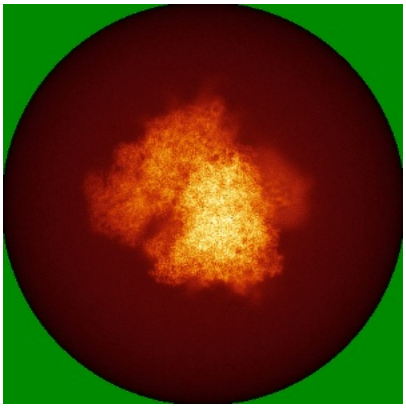
6.4.2 Raw map



X



Y



Z

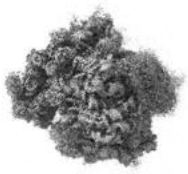
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views (i)

6.5.1 Primary map

X

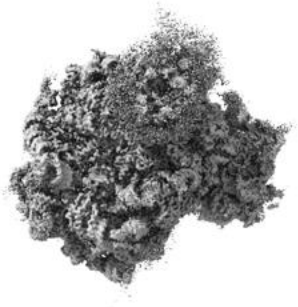
Y



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.

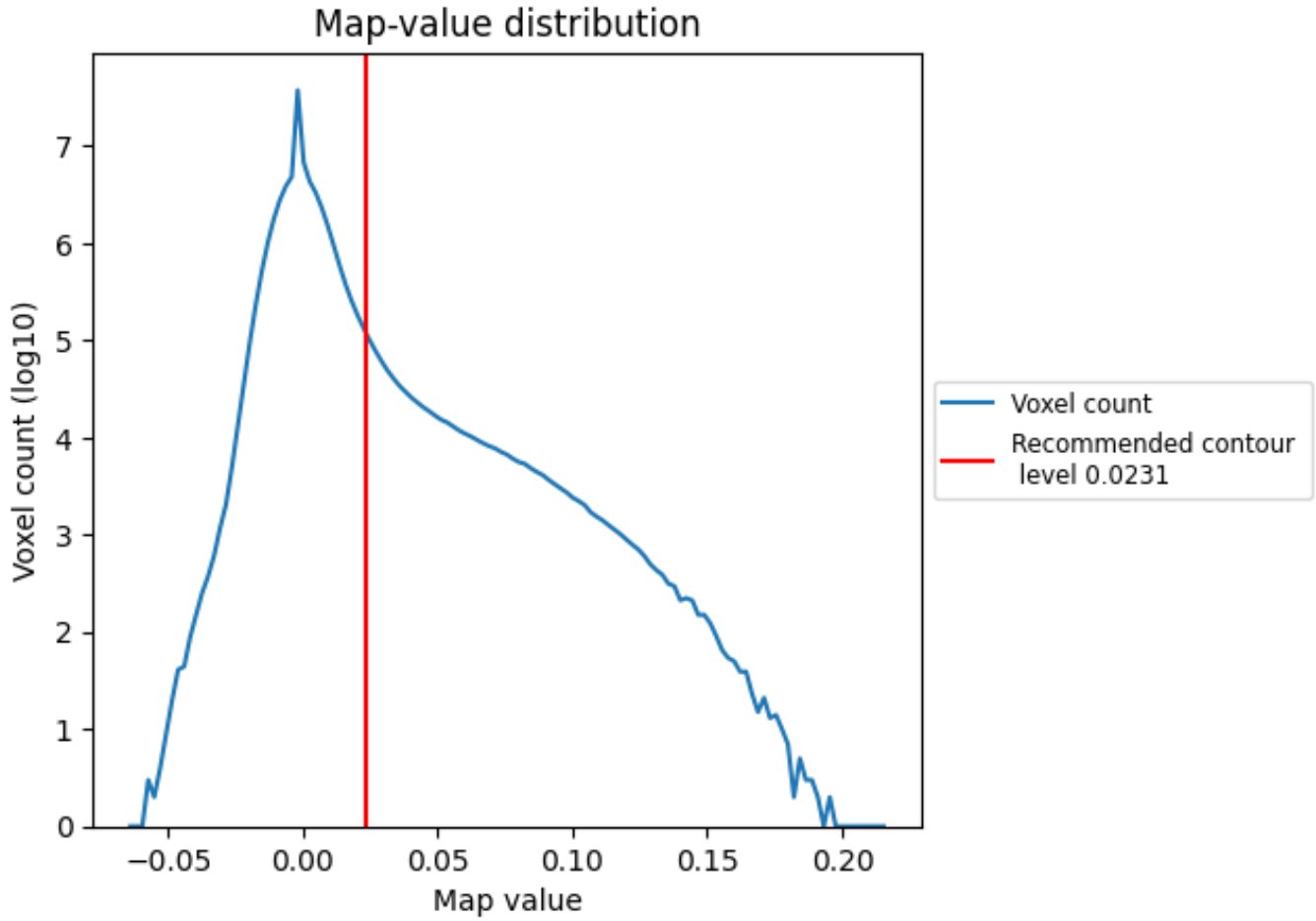
6.6 Mask visualisation (i)

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

7 Map analysis

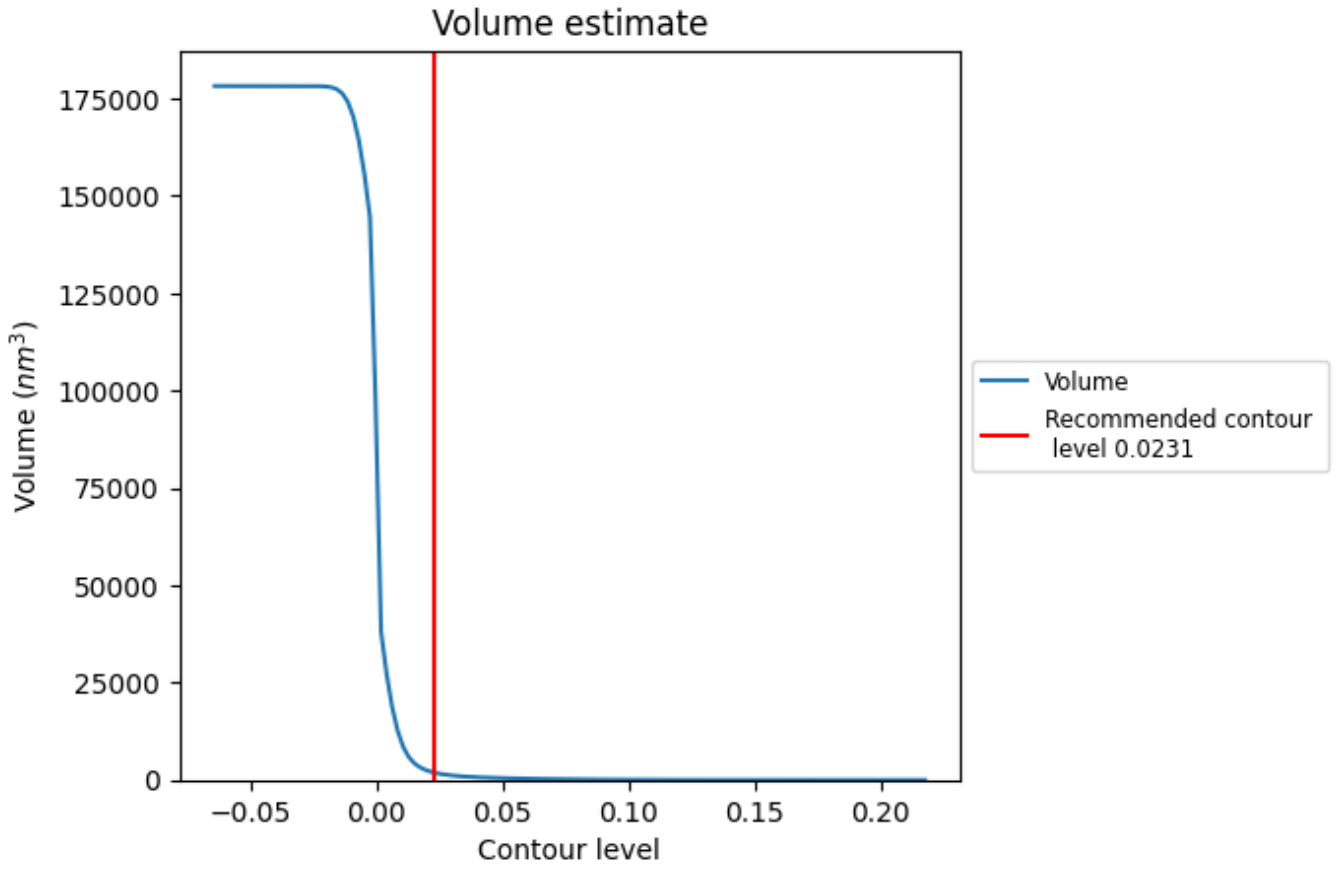
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

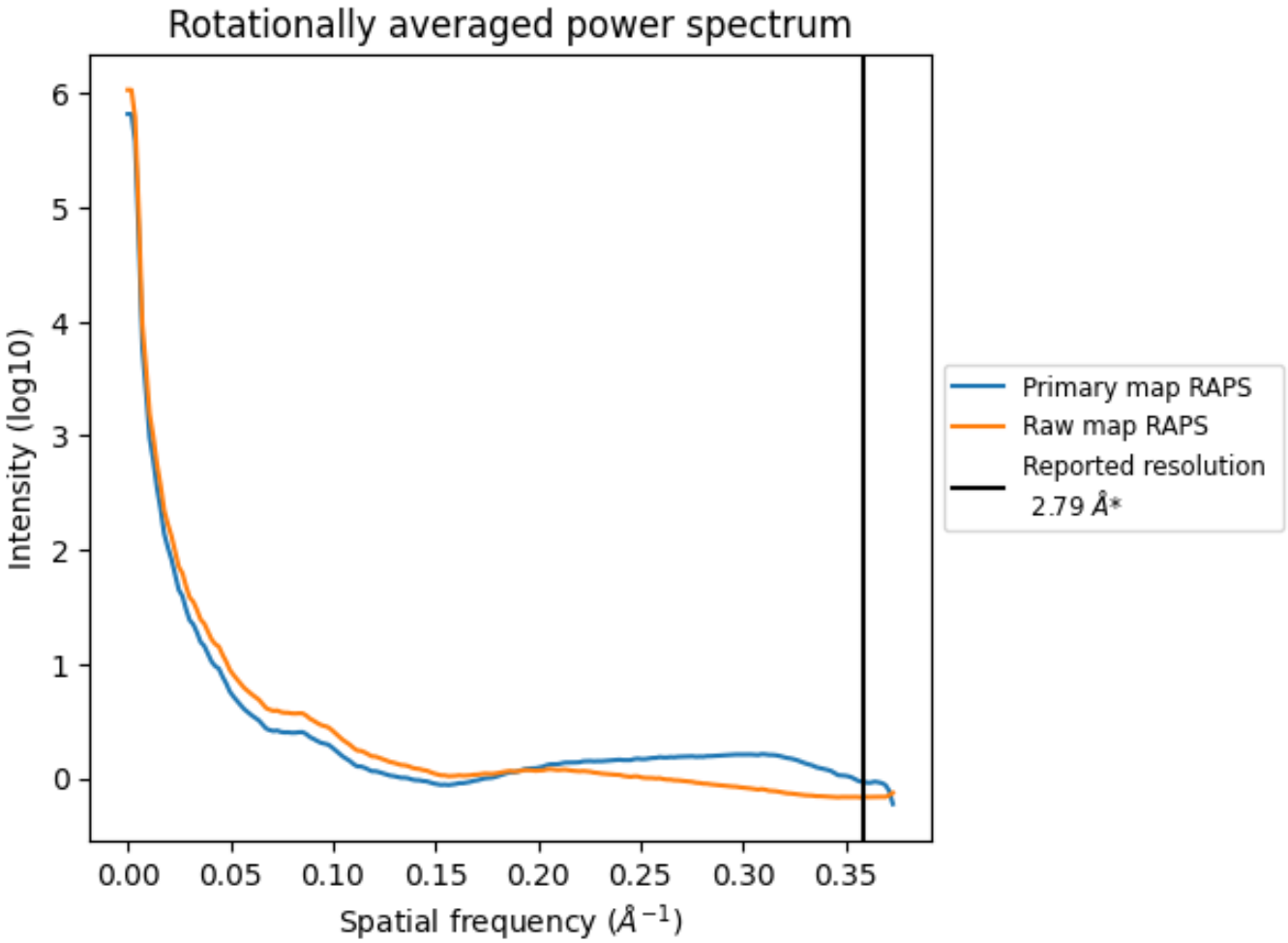
7.2 Volume estimate



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 (i)

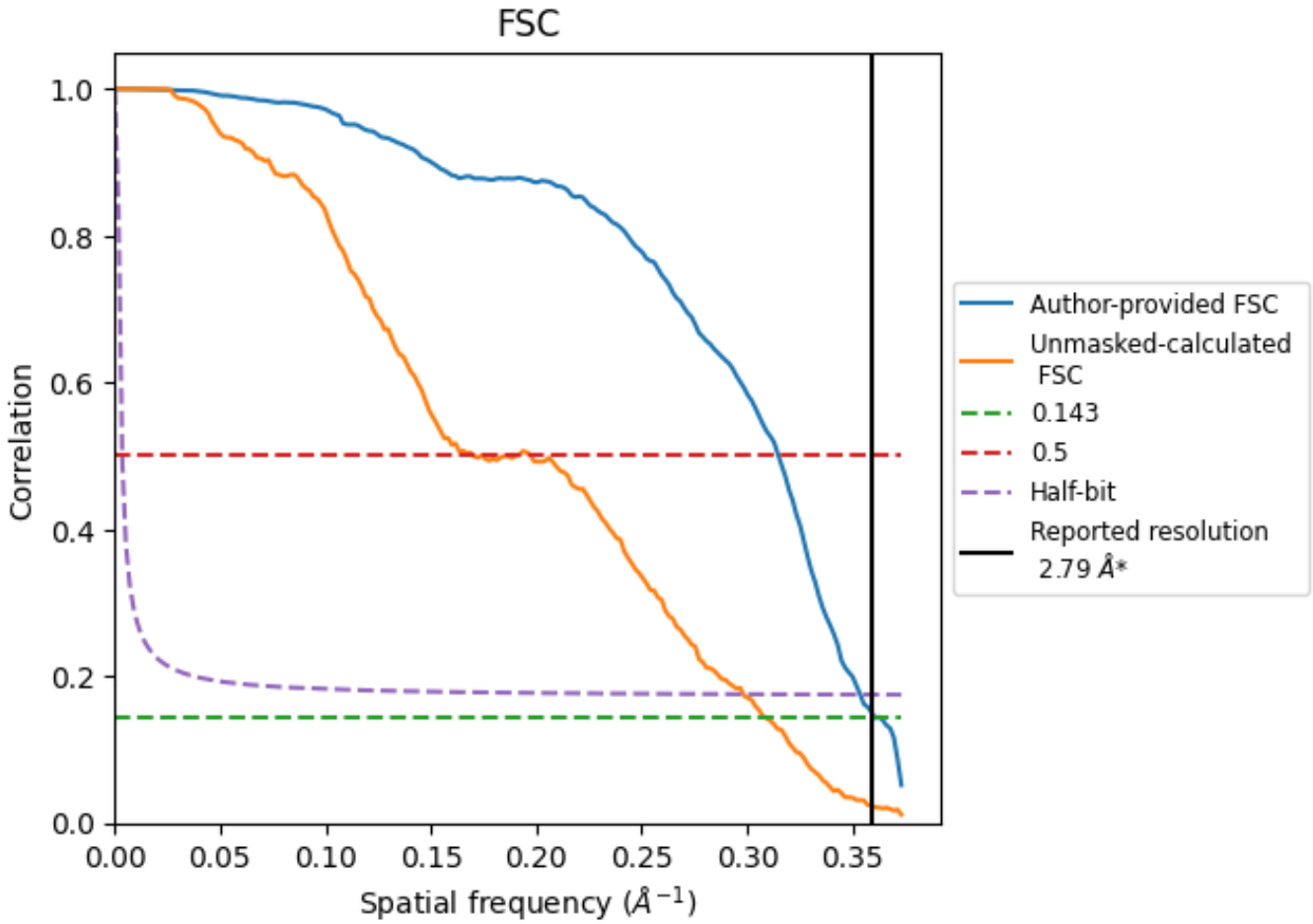


*Reported resolution corresponds to spatial frequency of 0.359 Å^{-1}

8 Fourier-Shell correlation

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



*Reported resolution corresponds to spatial frequency of 0.359 Å^{-1}

8.2 Resolution estimates (i)

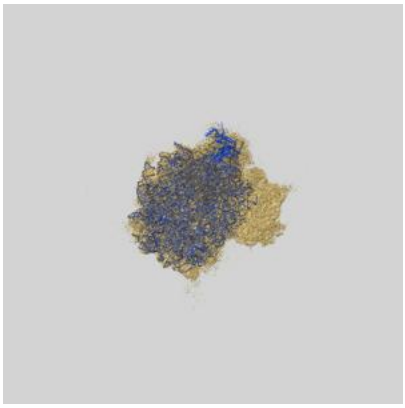
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.79	-	-
Author-provided FSC curve	2.77	3.18	2.83
Unmasked-calculated*	3.24	5.87	3.35

*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 %

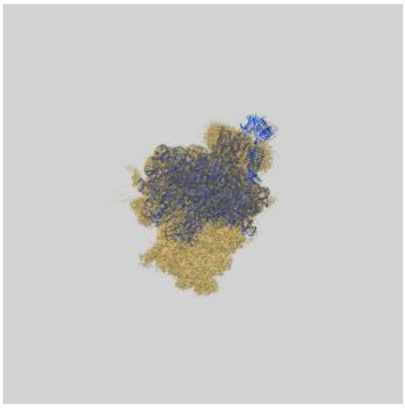
9 Map-model fit

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 19.

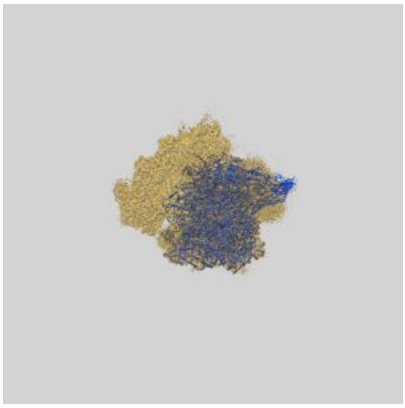
9.1 Map-model overlay



X



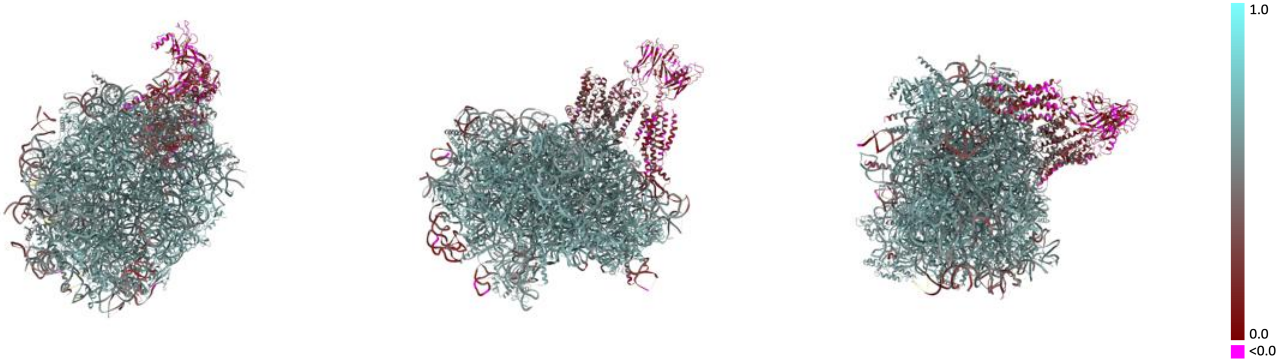
Y



Z

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.

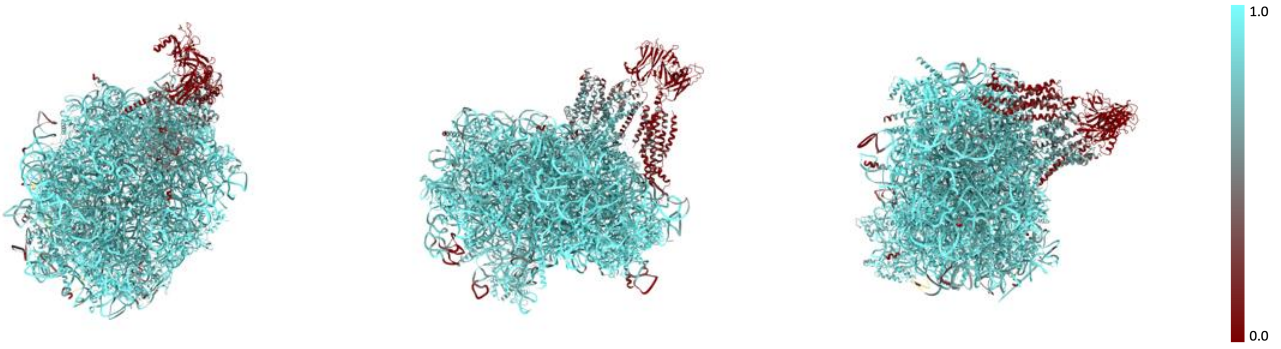
9.2 Q-score mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

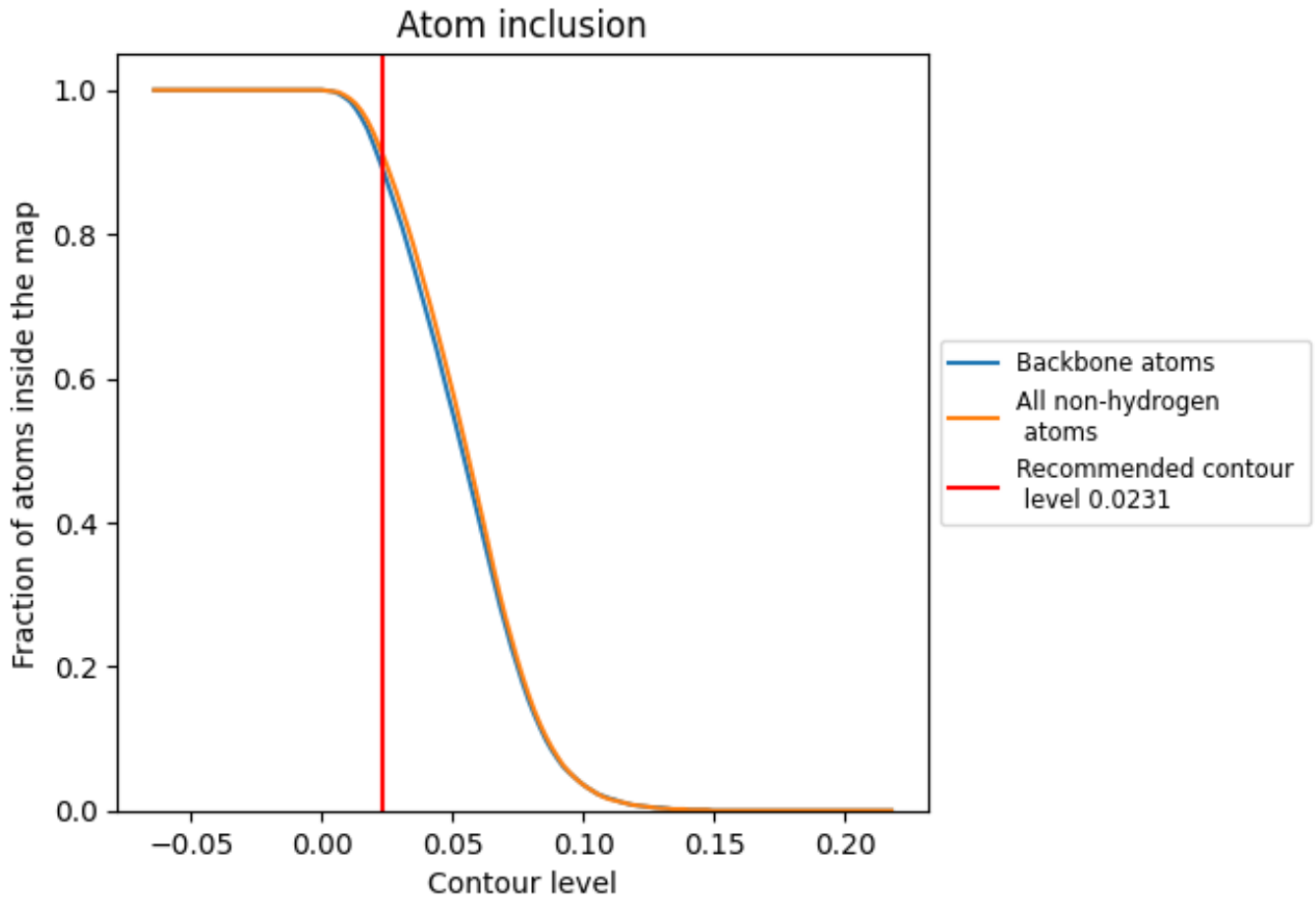
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (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

Continued on next page...

Continued from previous page...

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