



wwPDB EM Validation Summary Report ⓘ

Feb 9, 2026 – 06:12 am GMT

PDB ID : 9QLO / pdb_00009qlo
EMDB ID : EMD-53230
Title : NMT1-NAC bound human RNC with full length ARF1 - State 1
Authors : Denk, T.; Berninghausen, O.; Beckmann, R.
Deposited on : 2025-03-21
Resolution : 2.47 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

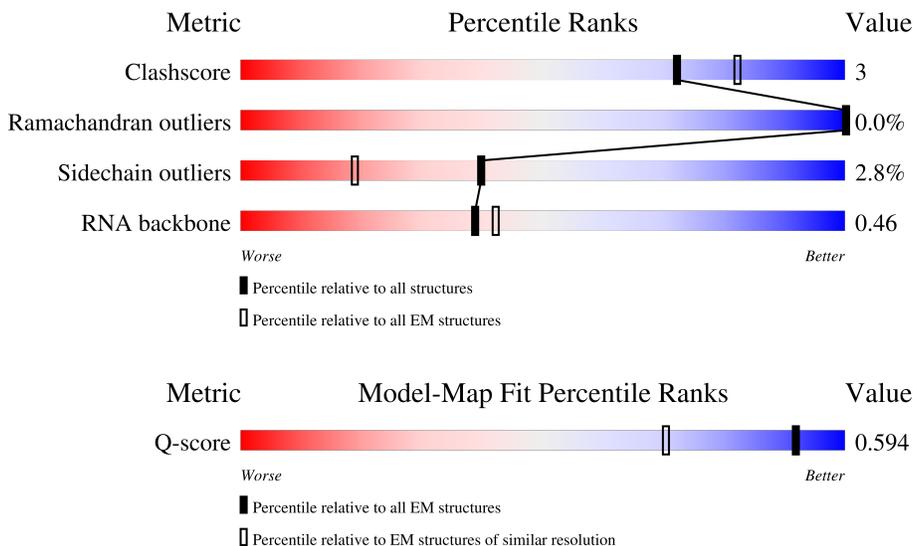
EMDB validation analysis : 0.0.1.dev131
Mogul : 1.8.4, CSD as541be (2020)
MolProbity : 4-5-2 with Phenix2.0
buster-report : 1.1.7 (2018)
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.48

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 2.47 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



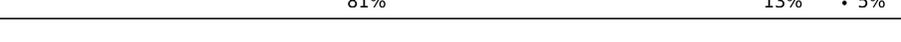
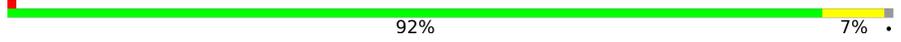
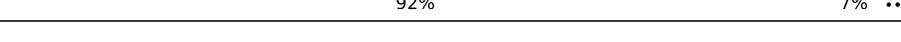
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
RNA backbone	6643	2191	-
Q-score	-	25397	6086 (1.98 - 2.97)

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

Mol	Chain	Length	Quality of chain
1	CM	952	
2	CP	75	
3	CR	437	

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Mol	Chain	Length	Quality of chain
4	CZ	217	
5	L5	5070	
6	L7	121	
7	L8	157	
8	LA	257	
9	LB	403	
10	LC	427	
11	LD	297	
12	LE	288	
13	LF	248	
14	LG	266	
15	LH	192	
16	LI	214	
17	LJ	178	
18	LL	211	
19	LM	215	
20	LN	204	
21	LO	203	
22	LP	184	
23	LQ	188	
24	LR	196	
25	LS	176	
26	LT	160	
27	LU	128	
28	LV	140	

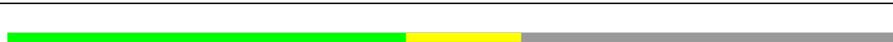
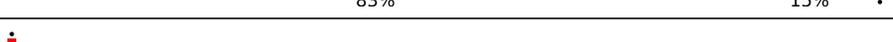
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Mol	Chain	Length	Quality of chain
29	LW	157	69% 27%
30	LX	156	70% 23%
31	LY	145	77% 16% 8%
32	LZ	136	92% 7%
33	La	148	92% 7%
34	Lb	159	44% 53%
35	Lc	115	77% 8% 16%
36	Ld	125	78% 8% 14%
37	Le	135	80% 14% 5%
38	Lf	110	87% 12%
39	Lg	117	89% 9%
40	Lh	123	89% 10%
41	Li	105	91% 6%
42	Lj	97	84% 5% 11%
43	Lk	70	81% 16% ..
44	Ll	51	78% 20%
45	Lm	128	40% 59%
46	Ln	25	80% 16%
47	Lo	106	92% 7% ..
48	Lp	92	89% 10%
49	Lr	137	84% 7% 9%
50	Ls	317	8% 52% 15% 33%
51	Lt	165	73% 23% ..
52	NA	215	18% 25% 8% 66%
53	NB	162	44% 69% 12% 18%

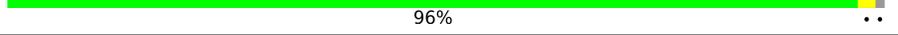
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Mol	Chain	Length	Quality of chain
54	NM	496	
55	S2	1869	
56	SA	295	
57	SB	264	
58	SC	293	
59	SD	243	
60	SE	263	
61	SF	204	
62	SG	249	
63	SH	194	
64	SI	208	
65	SJ	194	
66	SK	165	
67	SL	158	
68	SM	132	
69	SN	151	
70	SO	151	
71	SP	145	
72	SQ	146	
73	SR	135	
74	SS	152	
75	ST	145	
76	SU	119	
77	SV	83	
78	SW	130	

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Mol	Chain	Length	Quality of chain
79	SX	143	 86% 12% ..
80	SY	133	 81% 10% • 8%
81	SZ	125	 53% 7% 40%
82	Sa	115	 74% 12% 14%
83	Sb	84	 96% ..
84	Sc	69	 75% 16% 9%
85	Sd	56	 84% 9% • 5%
86	Se	133	 37% .. 59%
87	Sf	156	 34% 6% • 60%
88	Sg	317	 83% 14% •

2 Entry composition i

There are 92 unique types of molecules in this entry. The entry contains 223461 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a RNA chain called full length ARF1-V5-hCMV staller mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	CM	12	247	111	37	87	12	0	0

- Molecule 2 is a RNA chain called prolyl-tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	CP	75	1602	713	284	530	75	0	0

- Molecule 3 is a protein called Eukaryotic peptide chain release factor subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	CR	414	3269	2080	557	621	11	0	0

- Molecule 4 is a protein called ADP-ribosylation factor 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	CZ	205	1488	943	248	289	8	0	0

There are 42 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
CZ	1	GLN	-	expression tag	UNP P84077
CZ	4	SER	ILE	conflict	UNP P84077
CZ	6	SER	ALA	conflict	UNP P84077
CZ	7	LYS	ASN	conflict	UNP P84077
CZ	8	PRO	LEU	conflict	UNP P84077
CZ	9	ARG	PHE	conflict	UNP P84077
CZ	182	GLY	-	expression tag	UNP P84077
CZ	183	LYS	-	expression tag	UNP P84077
CZ	184	PRO	-	expression tag	UNP P84077

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Chain	Residue	Modelled	Actual	Comment	Reference
CZ	185	ILE	-	expression tag	UNP P84077
CZ	186	PRO	-	expression tag	UNP P84077
CZ	187	ASN	-	expression tag	UNP P84077
CZ	188	PRO	-	expression tag	UNP P84077
CZ	189	LEU	-	expression tag	UNP P84077
CZ	190	LEU	-	expression tag	UNP P84077
CZ	191	GLY	-	expression tag	UNP P84077
CZ	192	LEU	-	expression tag	UNP P84077
CZ	193	ASP	-	expression tag	UNP P84077
CZ	194	SER	-	expression tag	UNP P84077
CZ	195	THR	-	expression tag	UNP P84077
CZ	196	MET	-	expression tag	UNP P84077
CZ	197	GLU	-	expression tag	UNP P84077
CZ	198	PRO	-	expression tag	UNP P84077
CZ	199	LEU	-	expression tag	UNP P84077
CZ	200	VAL	-	expression tag	UNP P84077
CZ	201	LEU	-	expression tag	UNP P84077
CZ	202	SER	-	expression tag	UNP P84077
CZ	203	ALA	-	expression tag	UNP P84077
CZ	204	LYS	-	expression tag	UNP P84077
CZ	205	LYS	-	expression tag	UNP P84077
CZ	206	LEU	-	expression tag	UNP P84077
CZ	207	SER	-	expression tag	UNP P84077
CZ	208	SER	-	expression tag	UNP P84077
CZ	209	LEU	-	expression tag	UNP P84077
CZ	210	LEU	-	expression tag	UNP P84077
CZ	211	THR	-	expression tag	UNP P84077
CZ	212	CYS	-	expression tag	UNP P84077
CZ	213	LYS	-	expression tag	UNP P84077
CZ	214	TYR	-	expression tag	UNP P84077
CZ	215	ILE	-	expression tag	UNP P84077
CZ	216	PRO	-	expression tag	UNP P84077
CZ	217	PRO	-	expression tag	UNP P84077

- Molecule 5 is a RNA chain called 28S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
5	L5	3648	78199	34823	14307	25422	3647	0	0

- Molecule 6 is a RNA chain called 5S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
6	L7	120	2558	1141	456	842	119	0	0

- Molecule 7 is a RNA chain called 5.8S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
7	L8	156	3314	1480	585	1094	155	0	0

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	LB	395	3183	2027	597	545	14	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	LC	364	2884	1814	576	479	15	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	LD	293	2361	1496	430	421	14	0	0

- Molecule 12 is a protein called Large ribosomal subunit protein eL6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	LE	219	1754	1129	334	287	4	0	0

- Molecule 13 is a protein called Large ribosomal subunit protein uL30.

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
14	LG	229	Total	C	N	O	S	0	0
			1818	1157	351	306	4		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
15	LH	190	Total	C	N	O	S	0	0
			1510	950	282	272	6		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
16	LI	207	Total	C	N	O	S	0	0
			1666	1059	323	270	14		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
17	LJ	169	Total	C	N	O	S	0	0
			1329	841	250	232	6		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
18	LL	205	Total	C	N	O	S	0	0
			1630	1020	340	266	4		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
19	LM	139	Total	C	N	O	S	0	0
			1122	720	216	179	7		

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
21	LO	200	1633	1053	318	257	5	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
22	LP	153	1234	771	240	214	9	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
23	LQ	187	1502	939	313	245	5	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
24	LR	176	1452	898	318	227	9	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
25	LS	175	1452	925	283	234	10	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
26	LT	159	1282	813	250	213	6	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
27	LU	101	Total	C	N	O	S	0	0
			806	520	141	143	2		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
28	LV	131	Total	C	N	O	S	0	0
			971	613	183	170	5		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
29	LW	115	Total	C	N	O	S	0	0
			808	506	160	139	3		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
30	LX	120	Total	C	N	O	S	0	0
			981	627	184	169	1		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
31	LY	134	Total	C	N	O	S	0	0
			1111	697	225	186	3		

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
33	La	147	Total	C	N	O	S	0	0
			1154	731	236	184	3		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
34	Lb	75	Total	C	N	O	S	0	0
			590	367	123	97	3		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
35	Lc	97	Total	C	N	O	S	0	0
			742	473	130	133	6		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
36	Ld	107	Total	C	N	O	S	0	0
			874	554	171	147	2		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
37	Le	128	Total	C	N	O	S	0	0
			1049	664	215	165	5		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
38	Lf	109	Total	C	N	O	S	0	0
			872	552	173	144	3		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
39	Lg	114	Total	C	N	O	S	0	0
			889	557	184	142	6		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
40	Lh	121	Total	C	N	O	S	0	0
			1006	635	203	167	1		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
41	Li	102	Total	C	N	O	S	0	0
			813	510	176	123	4		

- Molecule 42 is a protein called Large ribosomal subunit protein eL37.

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
43	Lk	69	Total	C	N	O	S	0	0
			542	350	100	91	1		

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
45	Lm	52	Total	C	N	O	S	0	0
			425	264	90	65	6		

- Molecule 46 is a protein called 60S ribosomal protein L41.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	Ln	24	Total	C	N	O	S	0	0
			230	139	62	26	3		

- Molecule 47 is a protein called 60S ribosomal protein L36a.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	Lo	105	Total	C	N	O	S	0	0
			862	542	175	139	6		

- Molecule 48 is a protein called 60S ribosomal protein L37a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
48	Lp	91	696	440	135	114	7	0	0

- Molecule 49 is a protein called 60S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
49	Lr	125	997	618	207	168	4	0	0

- Molecule 50 is a protein called 60S acidic ribosomal protein P0.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
50	Ls	212	1640	1042	284	305	9	0	0

- Molecule 51 is a protein called Large ribosomal subunit protein uL11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
51	Lt	160	1208	749	226	229	4	0	0

- Molecule 52 is a protein called Nascent polypeptide-associated complex subunit alpha.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
52	NA	73	573	361	105	106	1	0	0

- Molecule 53 is a protein called Isoform 2 of Transcription factor BTF3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
53	NB	133	1026	634	187	202	3	0	0

- Molecule 54 is a protein called Glycylpeptide N-tetradecanoyltransferase 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
54	NM	380	3122	2024	527	555	16	3	0

- Molecule 55 is a RNA chain called 18S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
55	S2	1713	36562	16320	6564	11966	1712	0	0

- Molecule 56 is a protein called 40S ribosomal protein SA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
56	SA	216	1671	1068	297	298	8	0	0

- Molecule 57 is a protein called 40S ribosomal protein S3a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
57	SB	213	1718	1092	308	304	14	0	0

- Molecule 58 is a protein called 40S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
58	SC	219	1661	1076	284	291	10	0	0

- Molecule 59 is a protein called 40S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
59	SD	223	1594	1023	291	273	7	0	0

- Molecule 60 is a protein called Small ribosomal subunit protein eS4, X isoform.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
60	SE	262	1972	1270	370	324	8	0	0

- Molecule 61 is a protein called 40S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
61	SF	181	1403	879	269	248	7	0	0

- Molecule 62 is a protein called 40S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
62	SG	231	1634	1026	332	269	7	0	0

- Molecule 63 is a protein called 40S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
63	SH	183	1274	819	242	213		0	0

- Molecule 64 is a protein called 40S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
64	SI	206	1574	989	308	272	5	0	0

- Molecule 65 is a protein called 40S ribosomal protein S9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
65	SJ	179	1431	915	290	224	2	0	0

- Molecule 66 is a protein called 40S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
66	SK	96	726	479	127	115	5	0	0

- Molecule 67 is a protein called 40S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
67	SL	144	1143	730	213	194	6	0	0

- Molecule 68 is a protein called 40S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
68	SM	122	950	596	168	177	9	0	0

- Molecule 69 is a protein called 40S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
69	SN	150	1182	758	226	197	1	0	0

- Molecule 70 is a protein called 40S ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
70	SO	134	969	596	194	173	6	0	0

- Molecule 71 is a protein called 40S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
71	SP	129	990	626	190	168	6	0	0

- Molecule 72 is a protein called 40S ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
72	SQ	142	1075	689	204	179	3	0	0

- Molecule 73 is a protein called 40S ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
73	SR	131	942	600	179	159	4	0	0

- Molecule 74 is a protein called 40S ribosomal protein S18.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
74	SS	141	1130	712	232	185	1	0	0

- Molecule 75 is a protein called 40S ribosomal protein S19.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
75	ST	143	1081	679	210	189	3	0	0

- Molecule 76 is a protein called 40S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
76	SU	101	713	447	137	125	4	0	0

- Molecule 77 is a protein called 40S ribosomal protein S21.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
77	SV	83	618	385	115	113	5	0	0

- Molecule 78 is a protein called 40S ribosomal protein S15a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
78	SW	129	1026	655	193	172	6	0	0

- Molecule 79 is a protein called 40S ribosomal protein S23.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
79	SX	141	1078	682	212	181	3	0	0

- Molecule 80 is a protein called 40S ribosomal protein S24.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
80	SY	123	927	588	183	152	4	0	0

- Molecule 81 is a protein called 40S ribosomal protein S25.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
81	SZ	75	559	361	105	92	1	0	0

- Molecule 82 is a protein called 40S ribosomal protein S26.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
82	Sa	99	781	487	165	124	5	0	0

- Molecule 83 is a protein called 40S ribosomal protein S27.

Mol	Chain	Residues	Atoms					AltConf	Trace
83	Sb	83	Total	C	N	O	S	0	0
			618	386	118	107	7		

- Molecule 84 is a protein called 40S ribosomal protein S28.

Mol	Chain	Residues	Atoms					AltConf	Trace
84	Sc	63	Total	C	N	O	S	0	0
			472	289	92	89	2		

- Molecule 85 is a protein called 40S ribosomal protein S29.

Mol	Chain	Residues	Atoms					AltConf	Trace
85	Sd	53	Total	C	N	O	S	0	0
			433	271	87	70	5		

- Molecule 86 is a protein called Ubiquitin-like FUBI-ribosomal protein eS30 fusion protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
86	Se	55	Total	C	N	O	S	0	0
			416	254	93	68	1		

- Molecule 87 is a protein called Ubiquitin.

Mol	Chain	Residues	Atoms					AltConf	Trace
87	Sf	63	Total	C	N	O	S	0	0
			515	324	98	86	7		

- Molecule 88 is a protein called Receptor of activated protein C kinase 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
88	Sg	308	Total	C	N	O	S	0	0
			2180	1393	381	395	11		

- Molecule 89 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

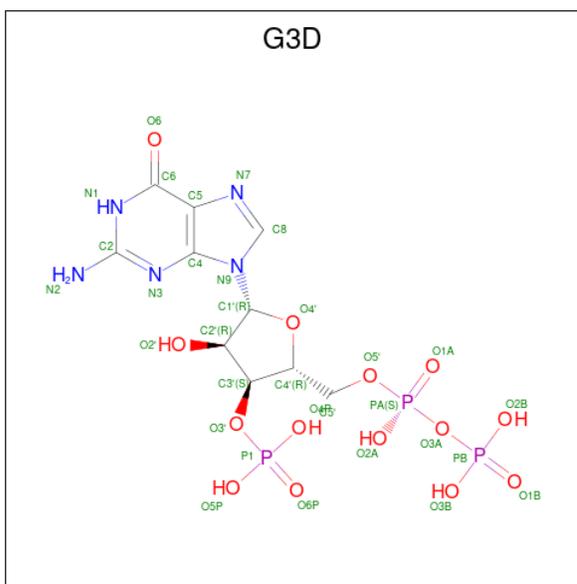
Mol	Chain	Residues	Atoms		AltConf
89	CM	1	Total	Mg	0
			1	1	
89	L5	126	Total	Mg	0
			126	126	
89	L7	3	Total	Mg	0
			3	3	

Continued on next page...

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Mol	Chain	Residues	Atoms		AltConf
89	L8	3	Total	Mg	0
			3	3	
89	LA	1	Total	Mg	0
			1	1	
89	LC	1	Total	Mg	0
			1	1	
89	LI	1	Total	Mg	0
			1	1	
89	LN	1	Total	Mg	0
			1	1	
89	LP	1	Total	Mg	0
			1	1	
89	LV	1	Total	Mg	0
			1	1	
89	S2	52	Total	Mg	0
			52	52	

- Molecule 90 is GUANOSINE-3'-MONOPHOSPHATE-5'-DIPHOSPHATE (CCD ID: G3D) (formula: C₁₀H₁₆N₅O₁₄P₃).



Mol	Chain	Residues	Atoms				AltConf	
90	CZ	1	Total	C	N	O	P	0
			32	10	5	14	3	

- Molecule 91 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
91	Lg	1	Total 1	Zn 1	0
91	Lj	1	Total 1	Zn 1	0
91	Lm	1	Total 1	Zn 1	0
91	Lo	1	Total 1	Zn 1	0
91	Lp	1	Total 1	Zn 1	0
91	Sa	1	Total 1	Zn 1	0
91	Sd	1	Total 1	Zn 1	0
91	Sf	1	Total 1	Zn 1	0

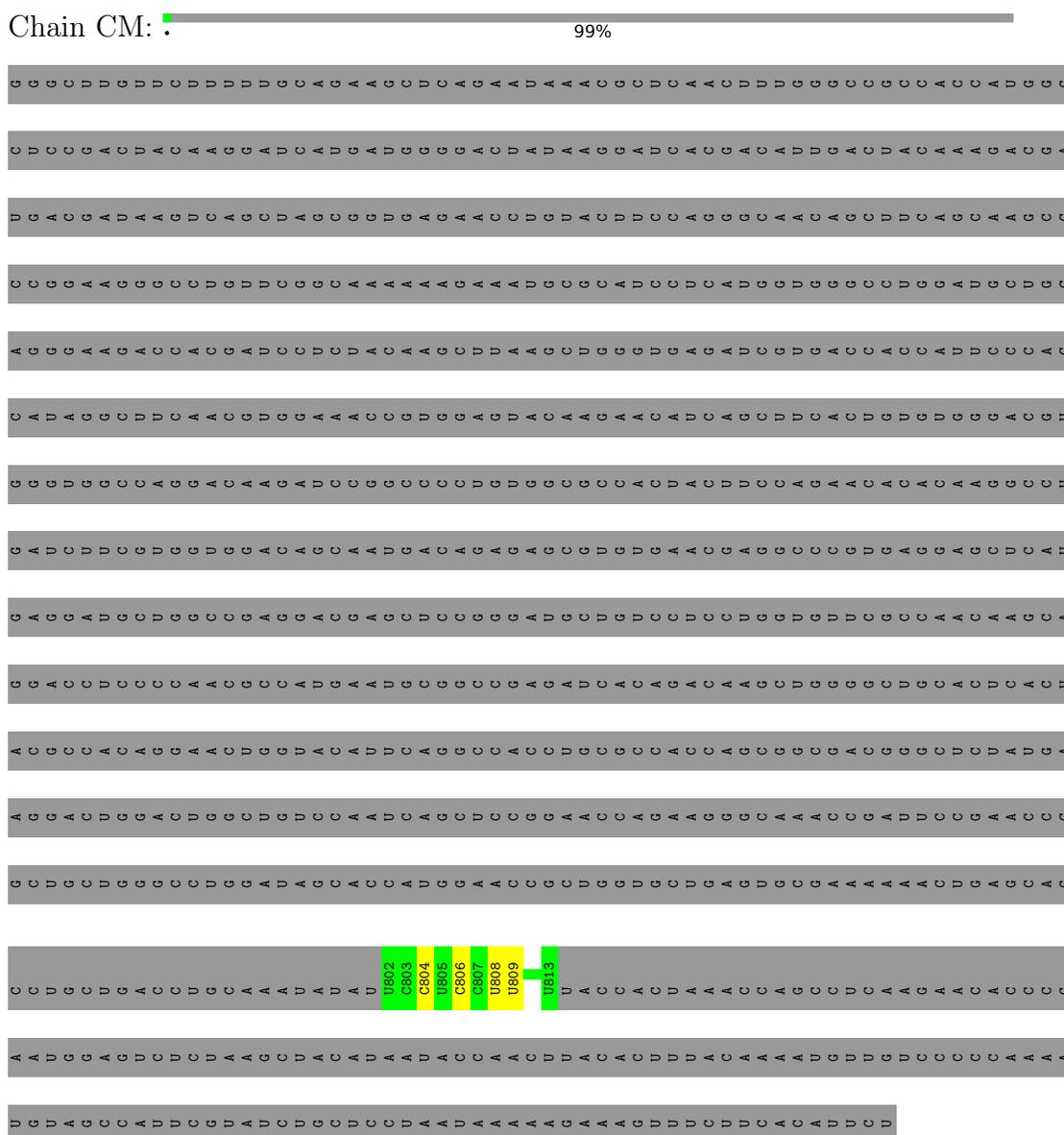
- Molecule 92 is water.

Mol	Chain	Residues	Atoms		AltConf
92	L5	2	Total 2	O 2	0
92	L7	1	Total 1	O 1	0
92	LI	1	Total 1	O 1	0
92	LN	1	Total 1	O 1	0
92	La	1	Total 1	O 1	0
92	Li	1	Total 1	O 1	0
92	Lp	1	Total 1	O 1	0
92	S2	3	Total 3	O 3	0

3 Residue-property plots

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

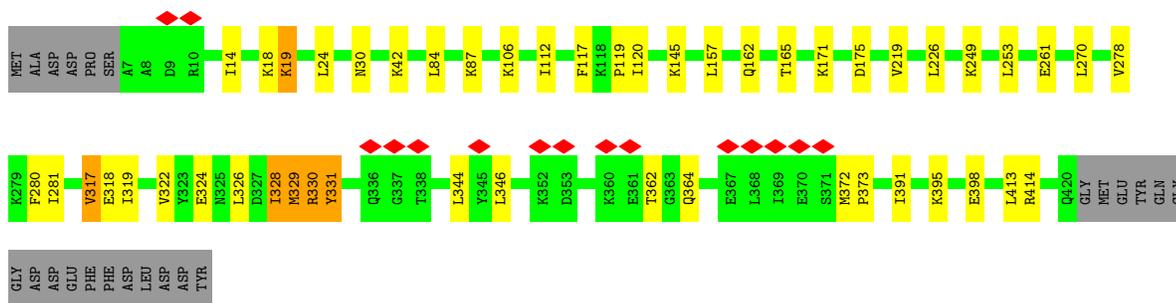
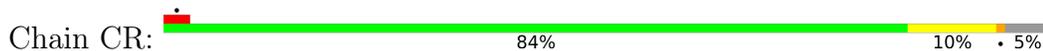
- Molecule 1: full length ARF1-V5-hCMV staller mRNA



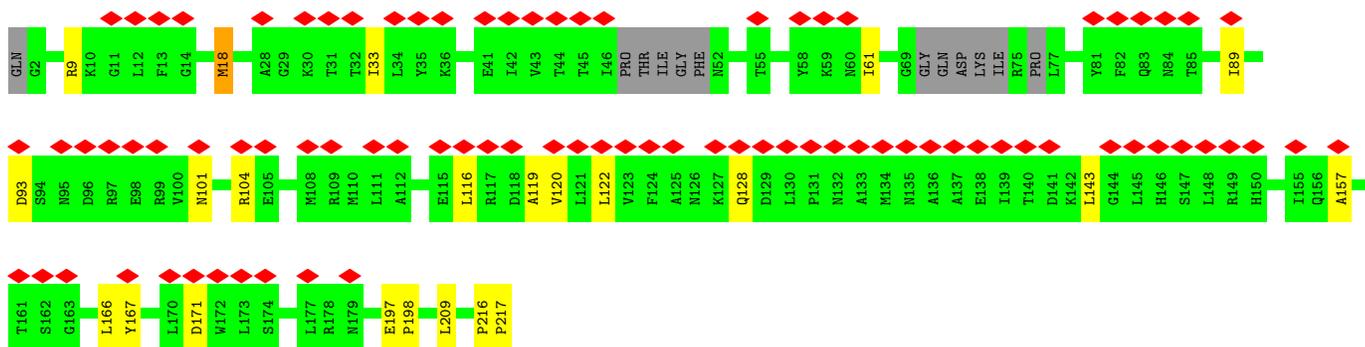
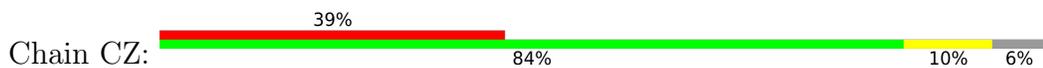
- Molecule 2: prolyl-tRNA



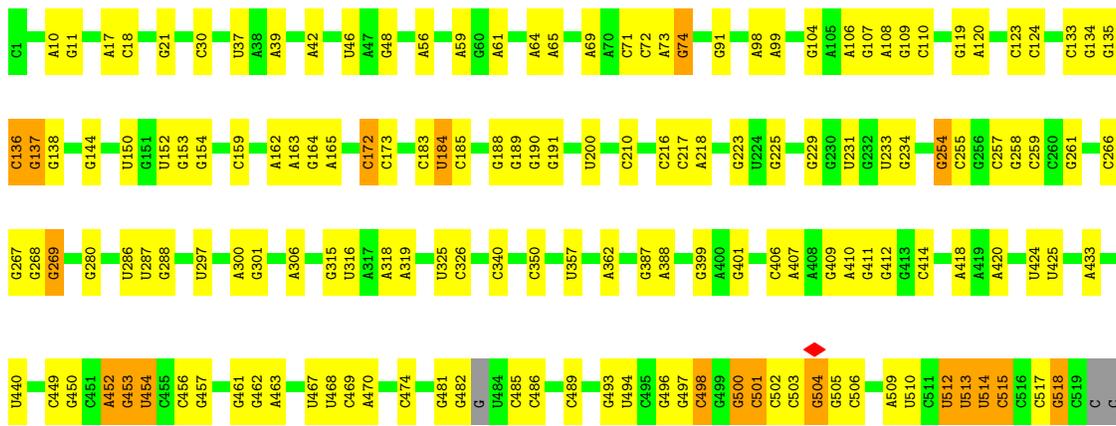
• Molecule 3: Eukaryotic peptide chain release factor subunit 1



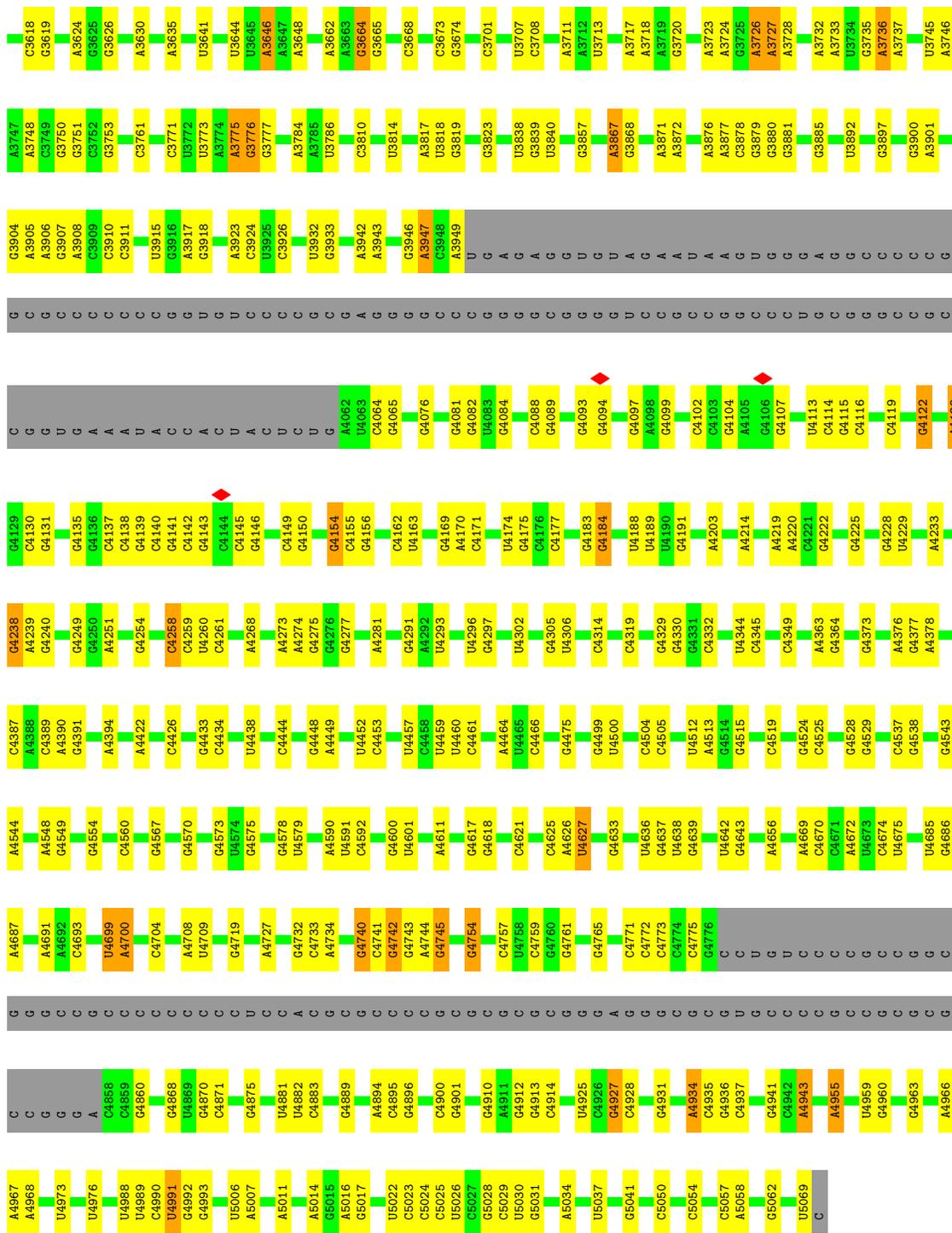
• Molecule 4: ADP-ribosylation factor 1



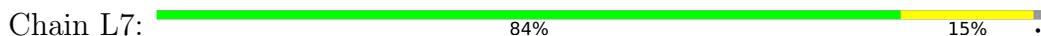
• Molecule 5: 28S rRNA



G1819	G1760	A1765	A1766	A1767	G1769	U1781	A1782	A1788	G1855	G1936	G1940	A1941	A1942	A1943	G1948	G1952	G1961	A1962	G1965	G1969	A1970	G1971	G1972	A1973	U1974	G1975	G1976	U1980	G1981	G1982	A1983	A1984	G1985	U1986	G1987	C1994	G1995	C1996	U1997	G2000	G2001	A2002	G2003	U2004	G2007
C1478	C1479	C1480	C1483	G1493	A1497	C1498	C1501	G1502	A1503	G1504	U1514	A1537	A1538	G1539	U1538	G1539	A1547	G1552	A1553	A1558	G1559	A1564	A1565	A1566	G1574	G1577	U1578	C1590	U1591	U1596	G1604	G1605	G1612	A1613	G1624	A1625	G1625	C1646	A1631	A1632	G1633	A1634	G1646	C1647	C1649
C1641	A1642	C1645	A1646	G1654	C1661	C1662	C1663	C1676	U1677	G1685	G1688	G1697	G1698	G1700	A1701	C1702	G1705	A1706	C1707	G1715	A1719	C1720	U1725	U1726	C1732	G1733	G1734	G1740	G1741	A1742	G1750	A1751	G1752	G1753	U1754	C1755	U1756	U1757	G1758						
G1769	A1765	A1766	A1767	G1769	U1781	A1782	A1788	G1855	G1936	G1940	A1941	A1942	A1943	G1948	G1952	G1961	A1962	G1965	G1969	A1970	G1971	G1972	A1973	U1974	G1975	G1976	U1980	G1981	G1982	A1983	A1984	G1985	U1986	G1987	C1994	G1995	C1996	U1997	G2000	G2001	A2002	G2003	U2004	G2007	
C1478	C1479	C1480	C1483	G1493	A1497	C1498	C1501	G1502	A1503	G1504	U1514	A1537	A1538	G1539	U1538	G1539	A1547	G1552	A1553	A1558	G1559	A1564	A1565	A1566	G1574	G1577	U1578	C1590	U1591	U1596	G1604	G1605	G1612	A1613	G1624	A1625	G1625	C1646	A1631	A1632	G1633	A1634	G1646	C1647	C1649
C1641	A1642	C1645	A1646	G1654	C1661	C1662	C1663	C1676	U1677	G1685	G1688	G1697	G1698	G1700	A1701	C1702	G1705	A1706	C1707	G1715	A1719	C1720	U1725	U1726	C1732	G1733	G1734	G1740	G1741	A1742	G1750	A1751	G1752	G1753	U1754	C1755	U1756	U1757	G1758						
G1769	A1765	A1766	A1767	G1769	U1781	A1782	A1788	G1855	G1936	G1940	A1941	A1942	A1943	G1948	G1952	G1961	A1962	G1965	G1969	A1970	G1971	G1972	A1973	U1974	G1975	G1976	U1980	G1981	G1982	A1983	A1984	G1985	U1986	G1987	C1994	G1995	C1996	U1997	G2000	G2001	A2002	G2003	U2004	G2007	



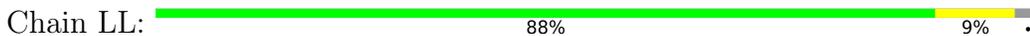
• Molecule 6: 5S rRNA



• Molecule 7: 5.8S rRNA



• Molecule 18: 60S ribosomal protein L13



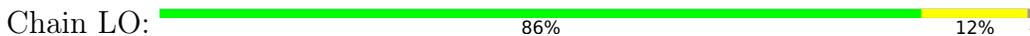
• Molecule 19: 60S ribosomal protein L14



• Molecule 20: 60S ribosomal protein L15



• Molecule 21: 60S ribosomal protein L13a



• Molecule 22: 60S ribosomal protein L17



• Molecule 23: 60S ribosomal protein L18



- Molecule 37: 60S ribosomal protein L32

Chain Le:  80% 14% 5%



- Molecule 38: 60S ribosomal protein L35a

Chain Lf:  87% 12%



- Molecule 39: 60S ribosomal protein L34

Chain Lg:  89% 9%



- Molecule 40: 60S ribosomal protein L35

Chain Lh:  89% 10%



- Molecule 41: 60S ribosomal protein L36

Chain Li:  91% 6%



- Molecule 42: Large ribosomal subunit protein eL37

Chain Lj:  84% 5% 11%

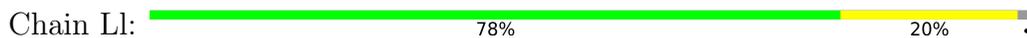


- Molecule 43: 60S ribosomal protein L38

Chain Lk:  81% 16% ..



• Molecule 44: 60S ribosomal protein L39



• Molecule 45: Ubiquitin-60S ribosomal protein L40



• Molecule 46: 60S ribosomal protein L41



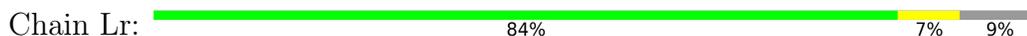
• Molecule 47: 60S ribosomal protein L36a



• Molecule 48: 60S ribosomal protein L37a

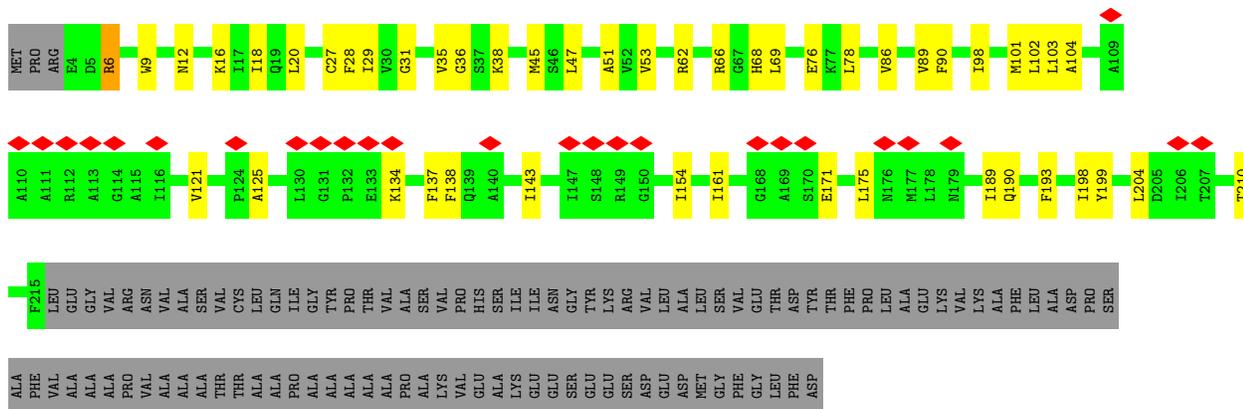


• Molecule 49: 60S ribosomal protein L28

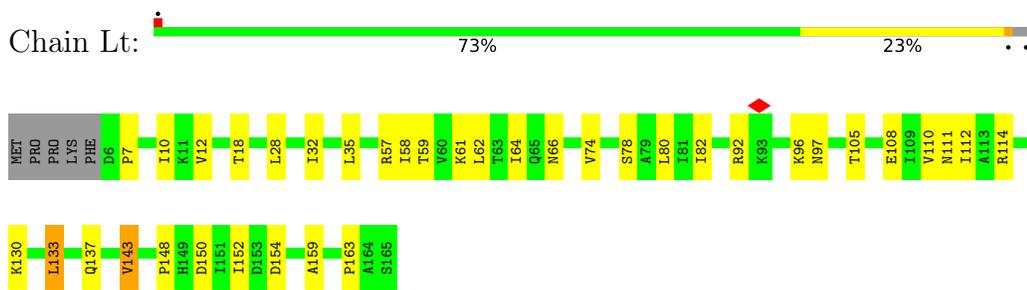


• Molecule 50: 60S acidic ribosomal protein P0

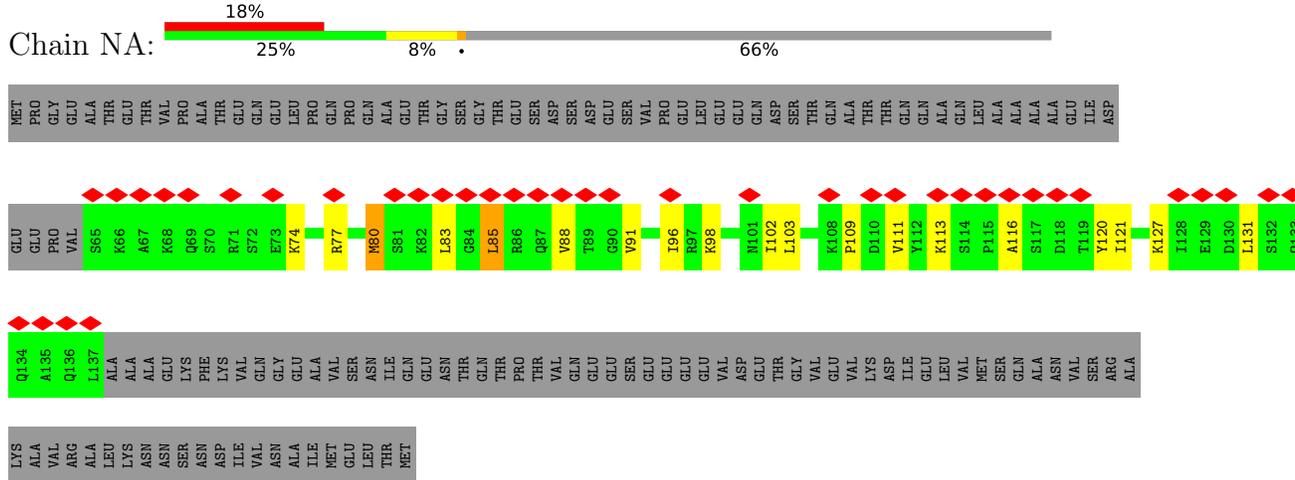




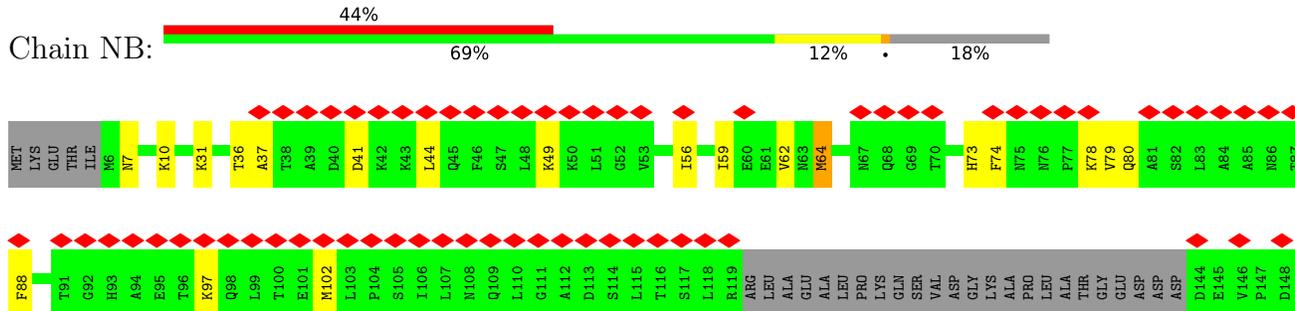
• Molecule 51: Large ribosomal subunit protein uL11

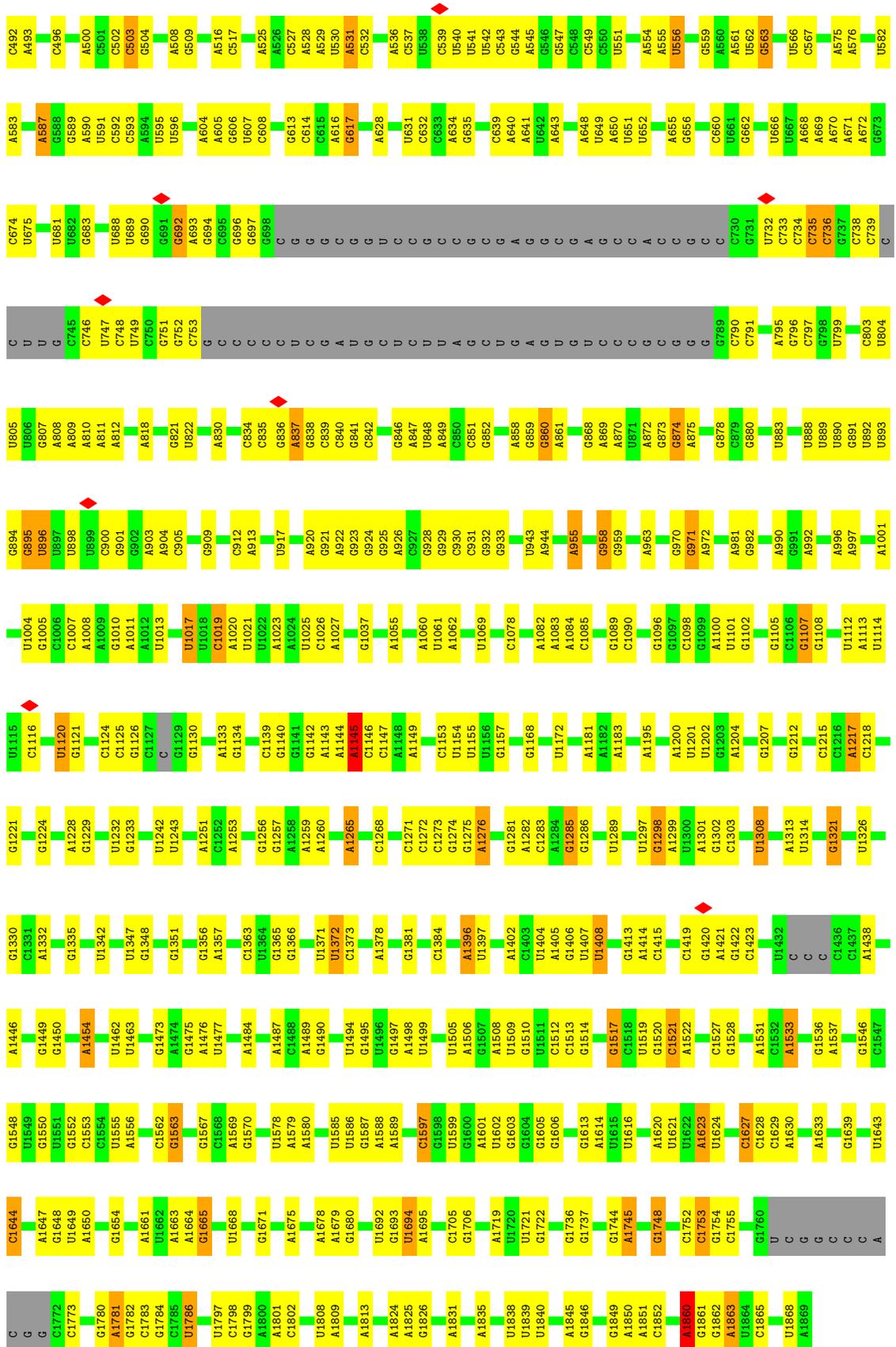


• Molecule 52: Nascent polypeptide-associated complex subunit alpha

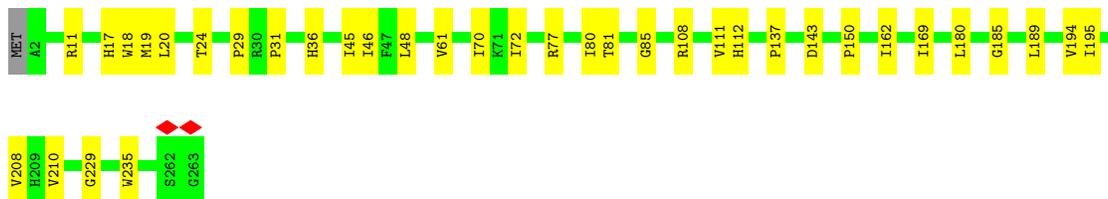


• Molecule 53: Isoform 2 of Transcription factor BTF3





• Molecule 56: 40S ribosomal protein SA



- Molecule 61: 40S ribosomal protein S5



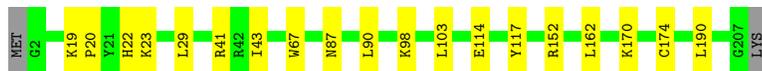
- Molecule 62: 40S ribosomal protein S6



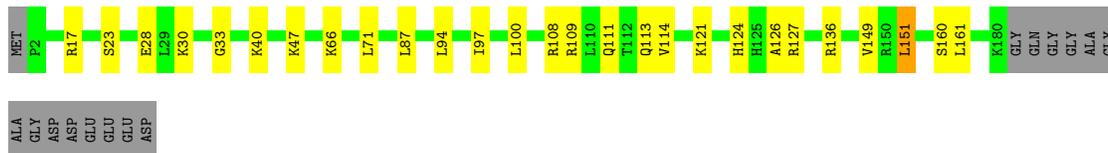
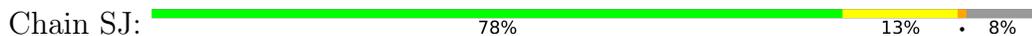
- Molecule 63: 40S ribosomal protein S7



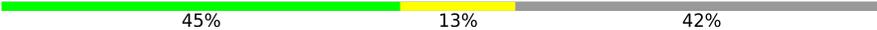
- Molecule 64: 40S ribosomal protein S8

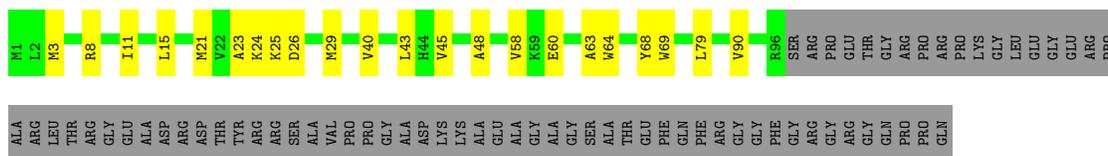


- Molecule 65: 40S ribosomal protein S9



- Molecule 66: 40S ribosomal protein S10

Chain SK:  45% 13% 42%



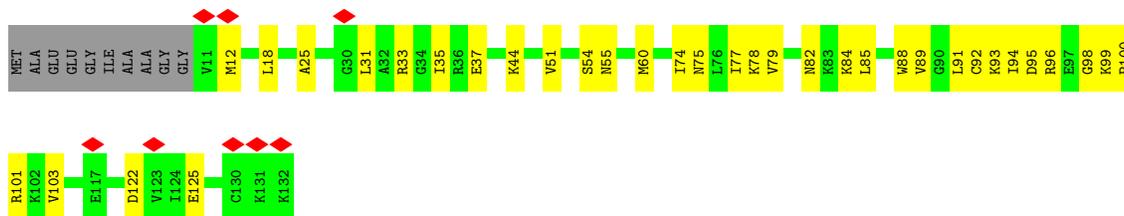
• Molecule 67: 40S ribosomal protein S11

Chain SL:  81% 10% 9%



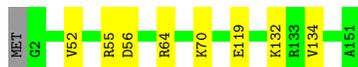
• Molecule 68: 40S ribosomal protein S12

Chain SM:  6% 66% 27% 8%



• Molecule 69: 40S ribosomal protein S13

Chain SN:  94% 5%



• Molecule 70: 40S ribosomal protein S14

Chain SO:  78% 11% 11%



• Molecule 71: 40S ribosomal protein S15

Chain SP:  76% 12% 11%



• Molecule 72: 40S ribosomal protein S16

Chain SQ:  81% 15%



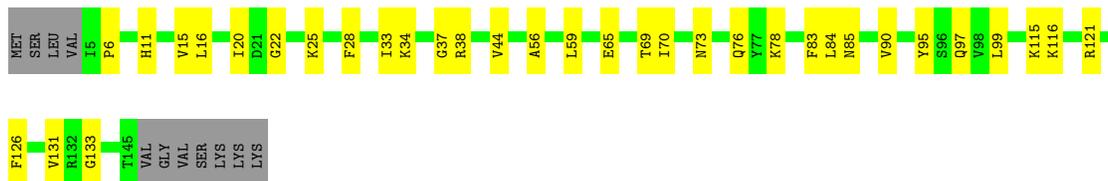
- Molecule 73: 40S ribosomal protein S17

Chain SR:  85% 11%



- Molecule 74: 40S ribosomal protein S18

Chain SS:  70% 22% 7%



- Molecule 75: 40S ribosomal protein S19

Chain ST:  83% 15%



- Molecule 76: 40S ribosomal protein S20

Chain SU:  75% 10% 15%



- Molecule 77: 40S ribosomal protein S21

Chain SV:  88% 11%



- Molecule 78: 40S ribosomal protein S15a

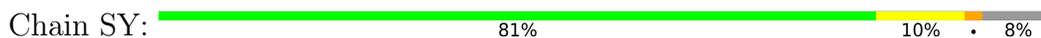
Chain SW:  89% 10%



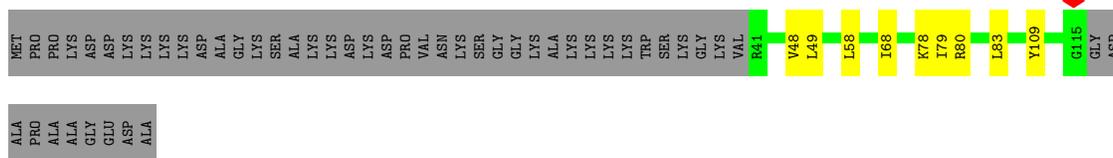
• Molecule 79: 40S ribosomal protein S23



• Molecule 80: 40S ribosomal protein S24



• Molecule 81: 40S ribosomal protein S25



• Molecule 82: 40S ribosomal protein S26



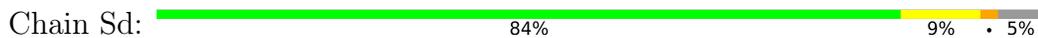
• Molecule 83: 40S ribosomal protein S27



• Molecule 84: 40S ribosomal protein S28



• Molecule 85: 40S ribosomal protein S29



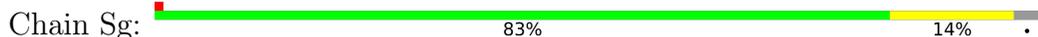
- Molecule 86: Ubiquitin-like FUBI-ribosomal protein eS30 fusion protein



- Molecule 87: Ubiquitin



- Molecule 88: Receptor of activated protein C kinase 1



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	62249	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	40	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	3500	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	6.597	Depositor
Minimum map value	-3.195	Depositor
Average map value	0.008	Depositor
Map value standard deviation	0.142	Depositor
Recommended contour level	0.1	Depositor
Map size (Å)	465.28, 465.28, 465.28	wwPDB
Map dimensions	640, 640, 640	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.727, 0.727, 0.727	Depositor

5 Model quality i

5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: MG, ZN, G3D, LYO

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	CM	0.23	0/273	0.43	0/421
2	CP	0.20	0/1789	0.45	0/2788
3	CR	0.20	0/3311	0.49	3/4452 (0.1%)
4	CZ	0.23	0/1508	0.56	1/2050 (0.0%)
5	L5	0.21	0/87471	0.37	1/136443 (0.0%)
6	L7	0.20	0/2858	0.34	0/4455
7	L8	0.21	0/3701	0.35	0/5766
8	LA	0.25	0/1936	0.59	0/2596
9	LB	0.23	0/3251	0.52	0/4352
10	LC	0.21	0/2938	0.49	0/3947
11	LD	0.21	0/2407	0.53	0/3227
12	LE	0.24	0/1788	0.59	1/2399 (0.0%)
13	LF	0.22	0/1905	0.51	0/2539
14	LG	0.23	0/1849	0.57	0/2496
15	LH	0.20	0/1529	0.50	0/2058
16	LI	0.21	0/1705	0.52	0/2277
17	LJ	0.21	0/1352	0.54	0/1813
18	LL	0.20	0/1661	0.47	0/2229
19	LM	0.18	0/1145	0.43	0/1536
20	LN	0.21	0/1746	0.45	0/2338
21	LO	0.22	0/1665	0.47	0/2229
22	LP	0.24	0/1260	0.54	1/1692 (0.1%)
23	LQ	0.20	0/1526	0.46	0/2038
24	LR	0.19	0/1468	0.44	0/1945
25	LS	0.20	0/1492	0.42	0/2003
26	LT	0.19	0/1310	0.50	0/1752
27	LU	0.24	0/820	0.62	1/1102 (0.1%)
28	LV	0.21	0/985	0.48	0/1323
29	LW	0.19	0/820	0.43	0/1104
30	LX	0.25	0/998	0.54	0/1341
31	LY	0.22	0/1128	0.47	0/1500
32	LZ	0.20	0/1130	0.48	0/1507

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
33	La	0.20	0/1183	0.43	0/1582
34	Lb	0.22	0/600	0.51	0/796
35	Lc	0.19	0/752	0.41	0/1011
36	Ld	0.19	0/889	0.42	0/1198
37	Le	0.22	0/1067	0.52	0/1425
38	Lf	0.23	0/891	0.54	0/1194
39	Lg	0.20	0/899	0.48	0/1200
40	Lh	0.17	0/1014	0.39	0/1340
41	Li	0.16	0/824	0.39	0/1093
42	Lj	0.23	0/720	0.52	0/952
43	Lk	0.24	0/548	0.51	0/730
44	Ll	0.22	0/454	0.45	0/599
45	Lm	0.18	0/431	0.42	0/570
46	Ln	0.26	0/231	0.54	0/294
47	Lo	0.18	0/876	0.45	0/1156
48	Lp	0.20	0/706	0.52	0/939
49	Lr	0.23	0/1012	0.52	0/1358
50	Ls	0.27	0/1666	0.69	1/2250 (0.0%)
51	Lt	0.27	0/1224	0.77	2/1651 (0.1%)
52	NA	0.25	0/578	0.69	2/771 (0.3%)
53	NB	0.26	0/1035	0.65	0/1389
54	NM	0.24	0/3211	0.64	4/4365 (0.1%)
55	S2	0.22	0/40882	0.41	3/63715 (0.0%)
56	SA	0.24	0/1708	0.55	0/2324
57	SB	0.18	0/1745	0.46	0/2337
58	SC	0.20	0/1697	0.46	0/2301
59	SD	0.19	0/1620	0.47	0/2198
60	SE	0.19	0/2014	0.51	0/2726
61	SF	0.22	0/1423	0.60	5/1913 (0.3%)
62	SG	0.20	0/1657	0.51	0/2247
63	SH	0.19	0/1295	0.46	0/1763
64	SI	0.19	0/1603	0.46	0/2161
65	SJ	0.19	0/1456	0.46	0/1957
66	SK	0.22	0/750	0.52	0/1026
67	SL	0.21	0/1163	0.47	0/1562
68	SM	0.32	0/960	0.76	2/1286 (0.2%)
69	SN	0.21	0/1206	0.46	0/1626
70	SO	0.22	0/982	0.59	1/1320 (0.1%)
71	SP	0.18	0/1010	0.51	0/1362
72	SQ	0.20	0/1093	0.57	0/1470
73	SR	0.21	0/955	0.57	0/1294
74	SS	0.25	0/1148	0.67	0/1542
75	ST	0.17	0/1100	0.39	0/1479

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
76	SU	0.18	0/722	0.49	0/983
77	SV	0.17	0/625	0.39	0/837
78	SW	0.21	0/1043	0.47	0/1396
79	SX	0.22	0/1096	0.57	0/1467
80	SY	0.20	0/944	0.56	0/1271
81	SZ	0.23	0/565	0.58	0/764
82	Sa	0.22	0/794	0.51	0/1065
83	Sb	0.23	0/632	0.56	0/851
84	Sc	0.22	0/474	0.63	0/638
85	Sd	0.20	0/443	0.51	0/589
86	Se	0.19	0/420	0.51	0/554
87	Sf	0.26	0/525	0.66	1/695 (0.1%)
88	Sg	0.22	0/2235	0.61	0/3068
All	All	0.22	0/239521	0.44	29/351368 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
4	CZ	0	1
14	LG	0	1
18	LL	0	1
23	LQ	0	1
38	Lf	0	1
50	Ls	0	1
51	Lt	0	1
62	SG	0	1
72	SQ	0	1
74	SS	0	1
88	Sg	0	1
All	All	0	11

There are no bond length outliers.

The worst 5 of 29 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
55	S2	1145	A	O4'-C1'-N9	9.72	123.08	108.50
61	SF	88	MET	CA-CB-CG	6.76	127.62	114.10
54	NM	435	MET	CA-CB-CG	6.36	126.82	114.10
61	SF	88	MET	CB-CG-SD	6.33	131.71	112.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
61	SF	88	MET	CG-SD-CE	-6.00	87.69	100.90

There are no chirality outliers.

5 of 11 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
4	CZ	9	ARG	Peptide
14	LG	164	ILE	Peptide
18	LL	47	ALA	Peptide
23	LQ	94	GLU	Peptide
38	Lf	103	VAL	Peptide

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	CM	247	0	128	1	0
2	CP	1602	0	809	2	0
3	CR	3269	0	3312	27	0
4	CZ	1488	0	1379	12	0
5	L5	78199	0	39524	278	0
6	L7	2558	0	1296	2	0
7	L8	3314	0	1683	16	0
8	LA	1898	0	1993	26	0
9	LB	3183	0	3316	22	0
10	LC	2884	0	3050	18	0
11	LD	2361	0	2378	13	0
12	LE	1754	0	1899	18	0
13	LF	1870	0	1996	15	0
14	LG	1818	0	1911	10	0
15	LH	1510	0	1579	15	0
16	LI	1666	0	1711	14	0
17	LJ	1329	0	1348	13	0
18	LL	1630	0	1715	14	0
19	LM	1122	0	1174	7	0
20	LN	1701	0	1749	13	0
21	LO	1633	0	1771	14	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
22	LP	1234	0	1254	17	0
23	LQ	1502	0	1616	7	0
24	LR	1452	0	1580	7	0
25	LS	1452	0	1490	13	0
26	LT	1282	0	1336	10	0
27	LU	806	0	826	6	0
28	LV	971	0	1024	6	0
29	LW	808	0	726	4	0
30	LX	981	0	1055	6	0
31	LY	1111	0	1194	14	0
32	LZ	1107	0	1182	5	0
33	La	1154	0	1198	5	0
34	Lb	590	0	613	3	0
35	Lc	742	0	774	4	0
36	Ld	874	0	918	4	0
37	Le	1049	0	1136	10	0
38	Lf	872	0	901	7	0
39	Lg	889	0	968	5	0
40	Lh	1006	0	1132	7	0
41	Li	813	0	887	1	0
42	Lj	705	0	737	4	0
43	Lk	542	0	590	6	0
44	Ll	444	0	483	6	0
45	Lm	425	0	461	0	0
46	Ln	230	0	276	3	0
47	Lo	862	0	929	3	0
48	Lp	696	0	744	6	0
49	Lr	997	0	1054	4	0
50	Ls	1640	0	1687	27	0
51	Lt	1208	0	1257	23	0
52	NA	573	0	620	13	0
53	NB	1026	0	1046	14	0
54	NM	3122	0	3103	47	0
55	S2	36562	0	18471	174	0
56	SA	1671	0	1672	22	0
57	SB	1718	0	1786	15	0
58	SC	1661	0	1710	15	0
59	SD	1594	0	1568	21	0
60	SE	1972	0	2012	16	0
61	SF	1403	0	1421	19	0
62	SG	1634	0	1568	12	0
63	SH	1274	0	1196	9	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
64	SI	1574	0	1540	10	0
65	SJ	1431	0	1497	14	0
66	SK	726	0	674	12	0
67	SL	1143	0	1177	8	0
68	SM	950	0	987	21	0
69	SN	1182	0	1249	3	0
70	SO	969	0	982	9	0
71	SP	990	0	974	12	0
72	SQ	1075	0	1110	14	0
73	SR	942	0	913	8	0
74	SS	1130	0	1167	18	0
75	ST	1081	0	1093	12	0
76	SU	713	0	692	7	0
77	SV	618	0	617	6	0
78	SW	1026	0	1072	8	0
79	SX	1078	0	1130	9	0
80	SY	927	0	914	6	0
81	SZ	559	0	594	5	0
82	Sa	781	0	831	9	0
83	Sb	618	0	604	1	0
84	Sc	472	0	484	7	0
85	Sd	433	0	415	6	0
86	Se	416	0	439	6	0
87	Sf	515	0	521	6	0
88	Sg	2180	0	1968	24	0
89	CM	1	0	0	0	0
89	L5	126	0	0	0	0
89	L7	3	0	0	0	0
89	L8	3	0	0	0	0
89	LA	1	0	0	0	0
89	LC	1	0	0	0	0
89	LI	1	0	0	0	0
89	LN	1	0	0	0	0
89	LP	1	0	0	0	0
89	LV	1	0	0	0	0
89	S2	52	0	0	0	0
90	CZ	32	0	10	0	0
91	Lg	1	0	0	0	0
91	Lj	1	0	0	0	0
91	Lm	1	0	0	0	0
91	Lo	1	0	0	0	0
91	Lp	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
91	Sa	1	0	0	0	0
91	Sd	1	0	0	0	0
91	Sf	1	0	0	0	0
92	L5	2	0	0	0	0
92	L7	1	0	0	0	0
92	LI	1	0	0	0	0
92	LN	1	0	0	0	0
92	La	1	0	0	0	0
92	Li	1	0	0	0	0
92	Lp	1	0	0	0	0
92	S2	3	0	0	0	0
All	All	223461	0	165576	1224	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 3.

The worst 5 of 1224 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
69:SN:52:VAL:O	69:SN:56:ASP:HB2	1.78	0.84
5:L5:3751:G:H21	5:L5:3775:A:H8	1.24	0.83
5:L5:4745:G:H1	5:L5:4955:A:H61	1.33	0.77
5:L5:1443:A:H62	5:L5:2104:G:N2	1.82	0.76
5:L5:1443:A:N6	5:L5:2103:G:C6	2.52	0.76

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
3	CR	411/437 (94%)	399 (97%)	12 (3%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
4	CZ	198/217 (91%)	191 (96%)	7 (4%)	0	100	100
8	LA	246/257 (96%)	229 (93%)	17 (7%)	0	100	100
9	LB	393/403 (98%)	375 (95%)	18 (5%)	0	100	100
10	LC	362/427 (85%)	341 (94%)	20 (6%)	1 (0%)	37	54
11	LD	291/297 (98%)	273 (94%)	18 (6%)	0	100	100
12	LE	213/288 (74%)	191 (90%)	22 (10%)	0	100	100
13	LF	223/248 (90%)	213 (96%)	10 (4%)	0	100	100
14	LG	225/266 (85%)	214 (95%)	11 (5%)	0	100	100
15	LH	188/192 (98%)	178 (95%)	10 (5%)	0	100	100
16	LI	203/214 (95%)	192 (95%)	11 (5%)	0	100	100
17	LJ	167/178 (94%)	162 (97%)	5 (3%)	0	100	100
18	LL	203/211 (96%)	191 (94%)	12 (6%)	0	100	100
19	LM	137/215 (64%)	132 (96%)	5 (4%)	0	100	100
20	LN	201/204 (98%)	194 (96%)	7 (4%)	0	100	100
21	LO	198/203 (98%)	195 (98%)	3 (2%)	0	100	100
22	LP	151/184 (82%)	141 (93%)	9 (6%)	1 (1%)	19	32
23	LQ	185/188 (98%)	179 (97%)	6 (3%)	0	100	100
24	LR	174/196 (89%)	173 (99%)	1 (1%)	0	100	100
25	LS	173/176 (98%)	163 (94%)	10 (6%)	0	100	100
26	LT	157/160 (98%)	148 (94%)	8 (5%)	1 (1%)	22	36
27	LU	99/128 (77%)	94 (95%)	5 (5%)	0	100	100
28	LV	129/140 (92%)	120 (93%)	9 (7%)	0	100	100
29	LW	111/157 (71%)	104 (94%)	7 (6%)	0	100	100
30	LX	118/156 (76%)	115 (98%)	3 (2%)	0	100	100
31	LY	132/145 (91%)	128 (97%)	4 (3%)	0	100	100
32	LZ	133/136 (98%)	126 (95%)	7 (5%)	0	100	100
33	La	145/148 (98%)	134 (92%)	11 (8%)	0	100	100
34	Lb	73/159 (46%)	71 (97%)	2 (3%)	0	100	100
35	Lc	95/115 (83%)	91 (96%)	4 (4%)	0	100	100
36	Ld	105/125 (84%)	103 (98%)	2 (2%)	0	100	100
37	Le	126/135 (93%)	124 (98%)	2 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
38	Lf	107/110 (97%)	102 (95%)	5 (5%)	0	100	100
39	Lg	112/117 (96%)	105 (94%)	7 (6%)	0	100	100
40	Lh	119/123 (97%)	117 (98%)	2 (2%)	0	100	100
41	Li	100/105 (95%)	96 (96%)	4 (4%)	0	100	100
42	Lj	84/97 (87%)	81 (96%)	3 (4%)	0	100	100
43	Lk	67/70 (96%)	63 (94%)	4 (6%)	0	100	100
44	Ll	48/51 (94%)	46 (96%)	2 (4%)	0	100	100
45	Lm	50/128 (39%)	50 (100%)	0	0	100	100
46	Ln	22/25 (88%)	22 (100%)	0	0	100	100
47	Lo	103/106 (97%)	98 (95%)	5 (5%)	0	100	100
48	Lp	89/92 (97%)	85 (96%)	4 (4%)	0	100	100
49	Lr	123/137 (90%)	116 (94%)	7 (6%)	0	100	100
50	Ls	210/317 (66%)	201 (96%)	9 (4%)	0	100	100
51	Lt	158/165 (96%)	153 (97%)	5 (3%)	0	100	100
52	NA	71/215 (33%)	69 (97%)	2 (3%)	0	100	100
53	NB	129/162 (80%)	129 (100%)	0	0	100	100
54	NM	381/496 (77%)	363 (95%)	18 (5%)	0	100	100
56	SA	214/295 (72%)	202 (94%)	11 (5%)	1 (0%)	25	41
57	SB	211/264 (80%)	206 (98%)	5 (2%)	0	100	100
58	SC	217/293 (74%)	209 (96%)	8 (4%)	0	100	100
59	SD	219/243 (90%)	207 (94%)	12 (6%)	0	100	100
60	SE	260/263 (99%)	252 (97%)	8 (3%)	0	100	100
61	SF	177/204 (87%)	167 (94%)	9 (5%)	1 (1%)	22	36
62	SG	229/249 (92%)	210 (92%)	19 (8%)	0	100	100
63	SH	179/194 (92%)	167 (93%)	12 (7%)	0	100	100
64	SI	204/208 (98%)	198 (97%)	6 (3%)	0	100	100
65	SJ	177/194 (91%)	173 (98%)	4 (2%)	0	100	100
66	SK	94/165 (57%)	89 (95%)	5 (5%)	0	100	100
67	SL	140/158 (89%)	132 (94%)	8 (6%)	0	100	100
68	SM	120/132 (91%)	114 (95%)	6 (5%)	0	100	100
69	SN	148/151 (98%)	143 (97%)	5 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
70	SO	132/151 (87%)	117 (89%)	15 (11%)	0	100	100
71	SP	127/145 (88%)	121 (95%)	6 (5%)	0	100	100
72	SQ	140/146 (96%)	131 (94%)	9 (6%)	0	100	100
73	SR	129/135 (96%)	115 (89%)	14 (11%)	0	100	100
74	SS	139/152 (91%)	120 (86%)	19 (14%)	0	100	100
75	ST	141/145 (97%)	137 (97%)	4 (3%)	0	100	100
76	SU	99/119 (83%)	92 (93%)	7 (7%)	0	100	100
77	SV	81/83 (98%)	77 (95%)	4 (5%)	0	100	100
78	SW	127/130 (98%)	122 (96%)	5 (4%)	0	100	100
79	SX	139/143 (97%)	130 (94%)	8 (6%)	1 (1%)	19	32
80	SY	121/133 (91%)	116 (96%)	5 (4%)	0	100	100
81	SZ	73/125 (58%)	67 (92%)	6 (8%)	0	100	100
82	Sa	97/115 (84%)	89 (92%)	8 (8%)	0	100	100
83	Sb	81/84 (96%)	72 (89%)	9 (11%)	0	100	100
84	Sc	61/69 (88%)	52 (85%)	9 (15%)	0	100	100
85	Sd	51/56 (91%)	50 (98%)	1 (2%)	0	100	100
86	Se	53/133 (40%)	50 (94%)	3 (6%)	0	100	100
87	Sf	61/156 (39%)	55 (90%)	6 (10%)	0	100	100
88	Sg	304/317 (96%)	273 (90%)	31 (10%)	0	100	100
All	All	12683/14771 (86%)	12035 (95%)	642 (5%)	6 (0%)	100	100

5 of 6 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
56	SA	196	GLU
61	SF	80	GLY
10	LC	186	SER
22	LP	20	SER
26	LT	139	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	
3	CR	356/375 (95%)	345 (97%)	11 (3%)	35	59
4	CZ	142/189 (75%)	139 (98%)	3 (2%)	48	72
8	LA	190/199 (96%)	180 (95%)	10 (5%)	19	36
9	LB	343/349 (98%)	337 (98%)	6 (2%)	56	77
10	LC	299/348 (86%)	293 (98%)	6 (2%)	50	73
11	LD	241/250 (96%)	239 (99%)	2 (1%)	79	90
12	LE	191/252 (76%)	180 (94%)	11 (6%)	17	32
13	LF	194/215 (90%)	193 (100%)	1 (0%)	86	94
14	LG	188/223 (84%)	182 (97%)	6 (3%)	34	57
15	LH	167/171 (98%)	161 (96%)	6 (4%)	30	53
16	LI	174/181 (96%)	173 (99%)	1 (1%)	84	93
17	LJ	136/149 (91%)	133 (98%)	3 (2%)	47	70
18	LL	164/177 (93%)	161 (98%)	3 (2%)	54	76
19	LM	114/161 (71%)	110 (96%)	4 (4%)	31	54
20	LN	171/172 (99%)	165 (96%)	6 (4%)	31	54
21	LO	170/174 (98%)	165 (97%)	5 (3%)	37	61
22	LP	132/163 (81%)	129 (98%)	3 (2%)	45	69
23	LQ	161/165 (98%)	158 (98%)	3 (2%)	52	74
24	LR	150/175 (86%)	149 (99%)	1 (1%)	81	92
25	LS	156/157 (99%)	151 (97%)	5 (3%)	34	57
26	LT	135/140 (96%)	133 (98%)	2 (2%)	60	80
27	LU	86/115 (75%)	83 (96%)	3 (4%)	31	54
28	LV	99/107 (92%)	98 (99%)	1 (1%)	73	87
29	LW	61/126 (48%)	59 (97%)	2 (3%)	33	56
30	LX	107/133 (80%)	104 (97%)	3 (3%)	38	63
31	LY	123/135 (91%)	120 (98%)	3 (2%)	44	68
32	LZ	117/118 (99%)	116 (99%)	1 (1%)	75	89
33	La	118/121 (98%)	114 (97%)	4 (3%)	32	55
34	Lb	59/126 (47%)	57 (97%)	2 (3%)	32	55
35	Lc	79/97 (81%)	76 (96%)	3 (4%)	28	50

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
36	Ld	94/110 (86%)	91 (97%)	3 (3%)	34	57
37	Le	113/121 (93%)	109 (96%)	4 (4%)	31	54
38	Lf	87/89 (98%)	85 (98%)	2 (2%)	45	69
39	Lg	93/100 (93%)	91 (98%)	2 (2%)	47	70
40	Lh	108/110 (98%)	105 (97%)	3 (3%)	38	63
41	Li	81/89 (91%)	76 (94%)	5 (6%)	15	29
42	Lj	73/80 (91%)	73 (100%)	0	100	100
43	Lk	57/65 (88%)	54 (95%)	3 (5%)	19	36
44	Ll	47/48 (98%)	45 (96%)	2 (4%)	25	45
45	Lm	47/116 (40%)	46 (98%)	1 (2%)	48	72
46	Ln	23/24 (96%)	23 (100%)	0	100	100
47	Lo	93/94 (99%)	88 (95%)	5 (5%)	18	35
48	Lp	71/75 (95%)	69 (97%)	2 (3%)	38	63
49	Lr	107/121 (88%)	104 (97%)	3 (3%)	38	63
50	Ls	180/258 (70%)	176 (98%)	4 (2%)	47	70
51	Lt	132/137 (96%)	126 (96%)	6 (4%)	23	43
52	NA	64/183 (35%)	62 (97%)	2 (3%)	35	59
53	NB	113/136 (83%)	108 (96%)	5 (4%)	24	44
54	NM	345/443 (78%)	336 (97%)	9 (3%)	41	65
56	SA	170/243 (70%)	166 (98%)	4 (2%)	44	68
57	SB	191/231 (83%)	188 (98%)	3 (2%)	58	79
58	SC	175/225 (78%)	168 (96%)	7 (4%)	27	48
59	SD	148/202 (73%)	147 (99%)	1 (1%)	81	92
60	SE	196/225 (87%)	190 (97%)	6 (3%)	35	59
61	SF	142/170 (84%)	138 (97%)	4 (3%)	38	63
62	SG	138/218 (63%)	134 (97%)	4 (3%)	37	61
63	SH	109/174 (63%)	108 (99%)	1 (1%)	75	89
64	SI	149/180 (83%)	147 (99%)	2 (1%)	65	83
65	SJ	143/168 (85%)	136 (95%)	7 (5%)	21	39
66	SK	65/136 (48%)	60 (92%)	5 (8%)	10	20
67	SL	121/142 (85%)	118 (98%)	3 (2%)	42	67

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
68	SM	104/108 (96%)	102 (98%)	2 (2%)	52	74
69	SN	123/131 (94%)	120 (98%)	3 (2%)	44	68
70	SO	95/119 (80%)	94 (99%)	1 (1%)	70	86
71	SP	98/130 (75%)	94 (96%)	4 (4%)	26	47
72	SQ	103/121 (85%)	99 (96%)	4 (4%)	27	49
73	SR	84/122 (69%)	80 (95%)	4 (5%)	21	40
74	SS	112/132 (85%)	108 (96%)	4 (4%)	30	53
75	ST	105/115 (91%)	103 (98%)	2 (2%)	52	74
76	SU	68/107 (64%)	65 (96%)	3 (4%)	24	44
77	SV	62/67 (92%)	59 (95%)	3 (5%)	21	40
78	SW	110/113 (97%)	107 (97%)	3 (3%)	40	64
79	SX	109/115 (95%)	106 (97%)	3 (3%)	38	63
80	SY	86/115 (75%)	79 (92%)	7 (8%)	9	18
81	SZ	56/103 (54%)	55 (98%)	1 (2%)	54	76
82	Sa	83/98 (85%)	80 (96%)	3 (4%)	30	53
83	Sb	65/76 (86%)	64 (98%)	1 (2%)	60	80
84	Sc	51/62 (82%)	50 (98%)	1 (2%)	50	73
85	Sd	44/49 (90%)	43 (98%)	1 (2%)	45	69
86	Se	39/104 (38%)	37 (95%)	2 (5%)	20	38
87	Sf	56/140 (40%)	54 (96%)	2 (4%)	30	53
88	Sg	201/275 (73%)	195 (97%)	6 (3%)	36	60
All	All	10352/12578 (82%)	10064 (97%)	288 (3%)	40	63

5 of 288 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
69	SN	132	LYS
88	Sg	174	VAL
72	SQ	15	ARG
78	SW	74	VAL
26	LT	72	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 93 such sidechains are listed below:

Mol	Chain	Res	Type
47	Lo	102	GLN
61	SF	110	GLN
50	Ls	159	GLN
56	SA	33	GLN
64	SI	52	ASN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	CM	11/952 (1%)	3 (27%)	0
2	CP	74/75 (98%)	23 (31%)	2 (2%)
5	L5	3633/5070 (71%)	749 (20%)	16 (0%)
55	S2	1704/1869 (91%)	465 (27%)	19 (1%)
6	L7	119/121 (98%)	14 (11%)	0
7	L8	155/157 (98%)	28 (18%)	1 (0%)
All	All	5696/8244 (69%)	1282 (22%)	38 (0%)

5 of 1282 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	CM	804	C
1	CM	806	C
1	CM	809	U
2	CP	2	G
2	CP	4	U

5 of 38 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
55	S2	1060	A
55	S2	1601	A
55	S2	1120	U
55	S2	1519	U
55	S2	1860	A

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

1 non-standard protein/DNA/RNA residue is modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The

Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	LYO	CR	63	3	7,9,10	0.77	0	6,10,12	1.10	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	LYO	CR	63	3	-	4/8/9/11	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	CR	63	LYO	N-CA-CB-CG
3	CR	63	LYO	C-CA-CB-CG
3	CR	63	LYO	CA-CB-CG-OG
3	CR	63	LYO	CA-CB-CG-CD

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 200 ligands modelled in this entry, 199 are monoatomic - leaving 1 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and

the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
90	G3D	CZ	301	-	28,34,34	3.43	13 (46%)	36,54,54	1.30	6 (16%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
90	G3D	CZ	301	-	-	1/17/37/37	0/3/3/3

The worst 5 of 13 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
90	CZ	301	G3D	C3'-C4'	-8.01	1.31	1.52
90	CZ	301	G3D	O4'-C4'	7.80	1.62	1.45
90	CZ	301	G3D	O4'-C1'	-7.24	1.31	1.41
90	CZ	301	G3D	C2-N3	5.58	1.46	1.33
90	CZ	301	G3D	C4-N3	5.01	1.49	1.37

The worst 5 of 6 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
90	CZ	301	G3D	C5-C6-N1	3.36	119.89	113.95
90	CZ	301	G3D	C8-N7-C5	3.15	108.99	102.99
90	CZ	301	G3D	C2-N1-C6	-2.90	119.75	125.10
90	CZ	301	G3D	PA-O3A-PB	-2.27	125.04	132.83
90	CZ	301	G3D	O6-C6-C5	-2.20	120.08	124.37

There are no chirality outliers.

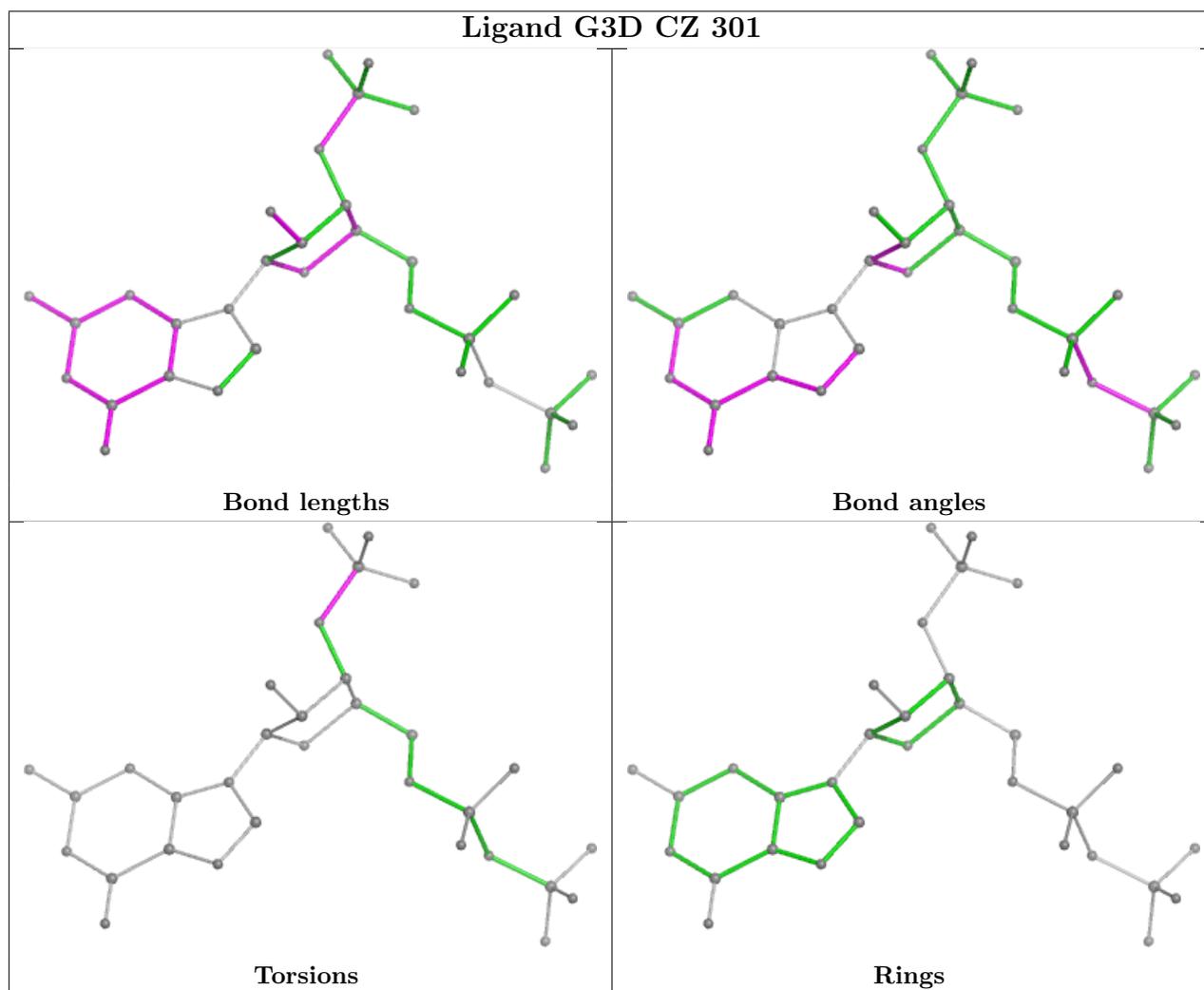
All (1) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
90	CZ	301	G3D	C3'-O3'-P1-O5P

There are no ring outliers.

No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



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

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

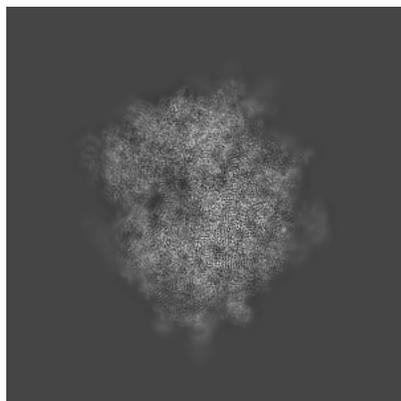
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-53230. These allow visual inspection of the internal detail of the map and identification of artifacts.

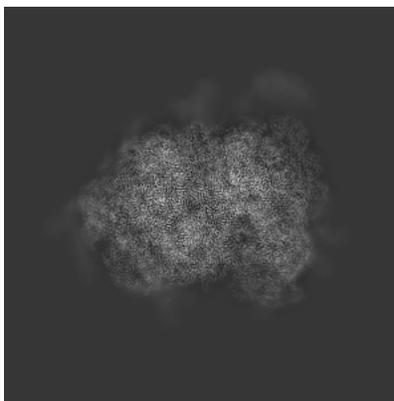
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

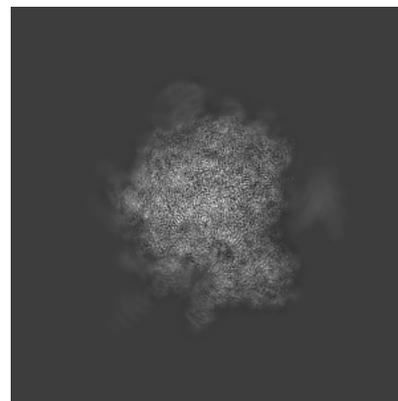
6.1.1 Primary map



X

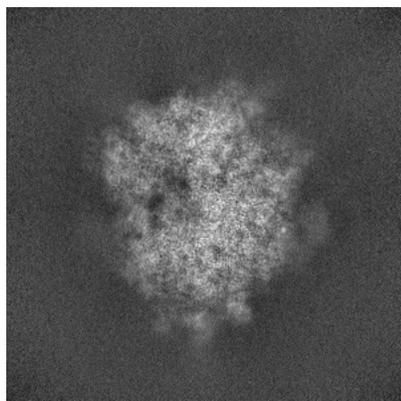


Y

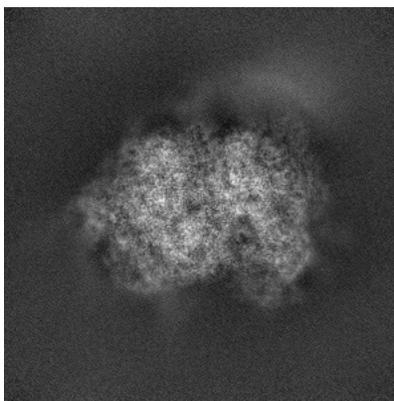


Z

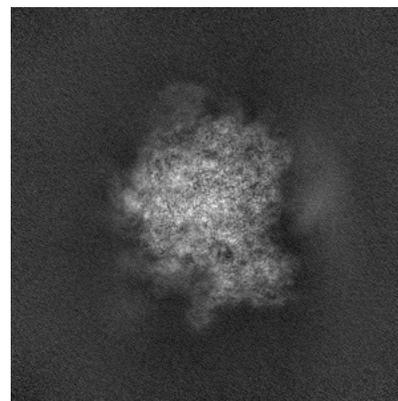
6.1.2 Raw map



X



Y

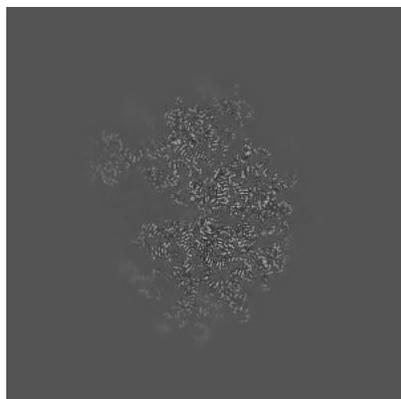


Z

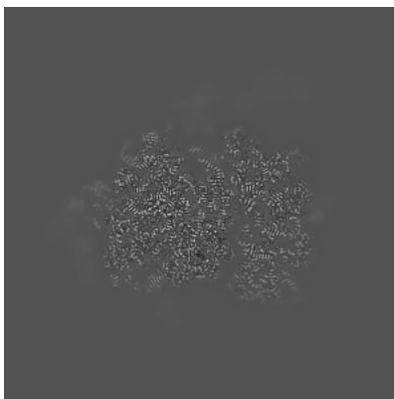
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

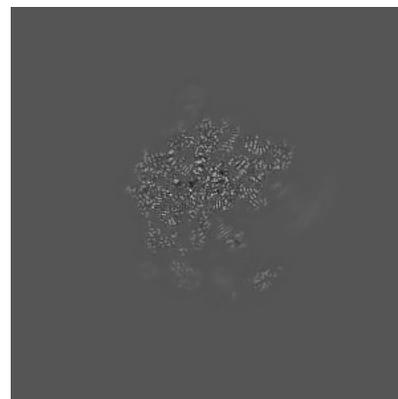
6.2.1 Primary map



X Index: 320

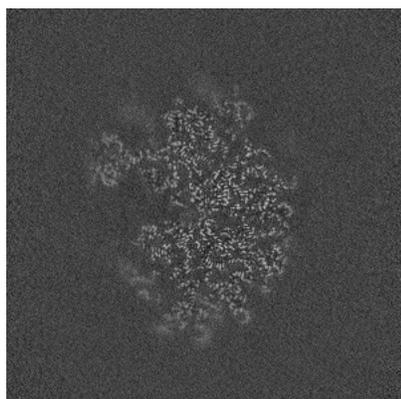


Y Index: 320

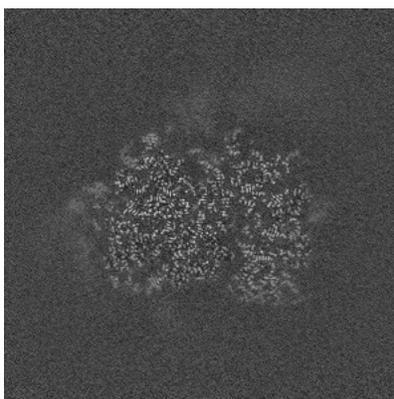


Z Index: 320

6.2.2 Raw map



X Index: 320



Y Index: 320

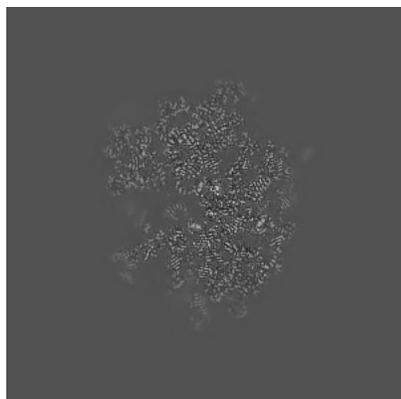


Z Index: 320

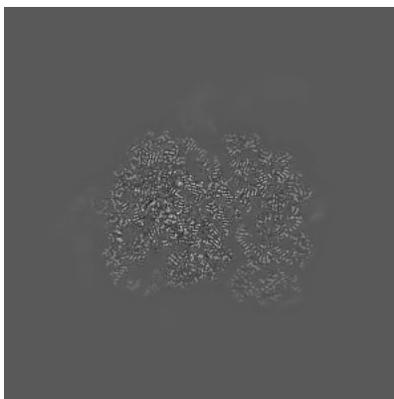
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

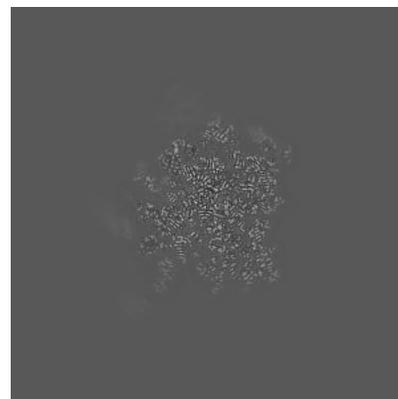
6.3.1 Primary map



X Index: 344

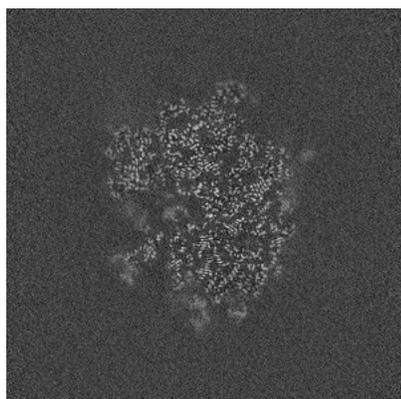


Y Index: 328

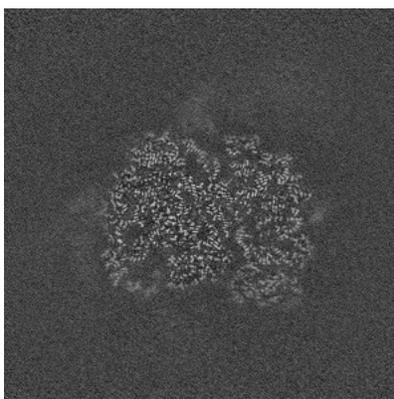


Z Index: 257

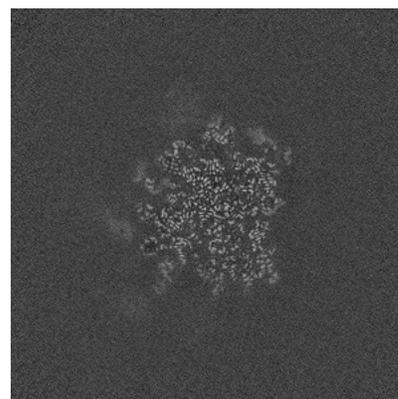
6.3.2 Raw map



X Index: 345



Y Index: 328

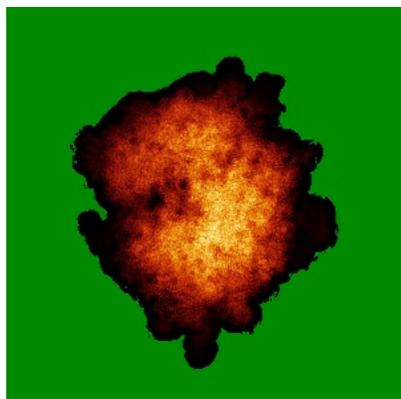


Z Index: 257

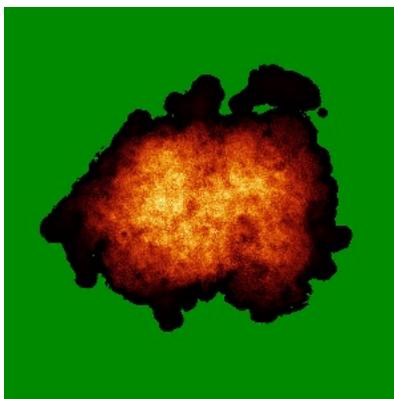
The images above show the largest variance slices of the map in three orthogonal directions.

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

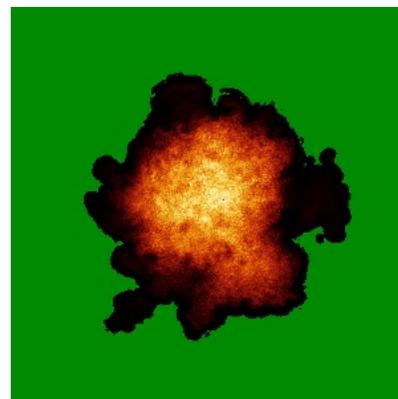
6.4.1 Primary map



X

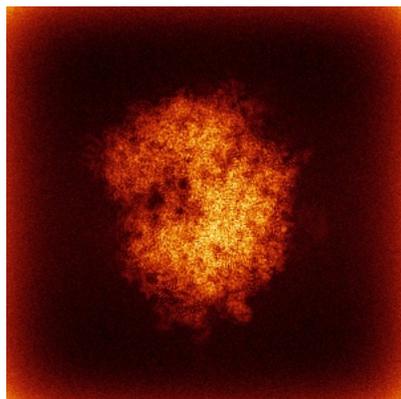


Y

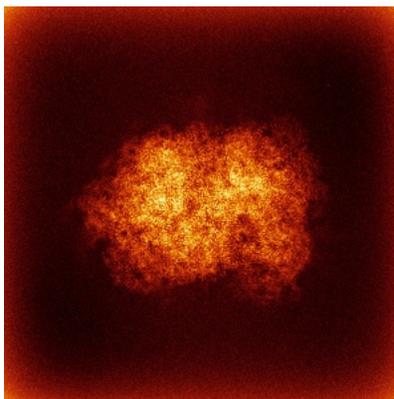


Z

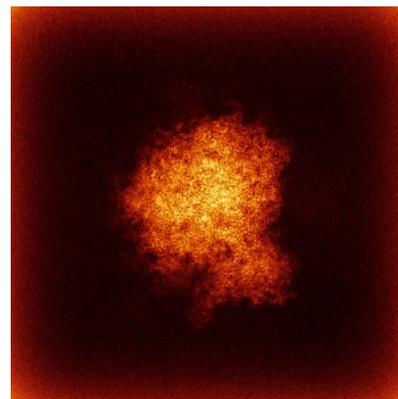
6.4.2 Raw map



X



Y

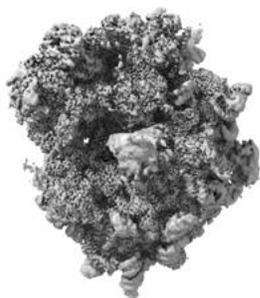


Z

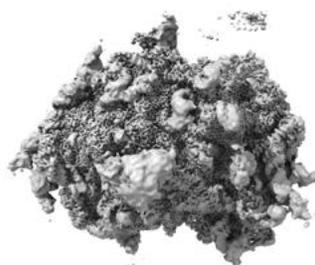
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



X



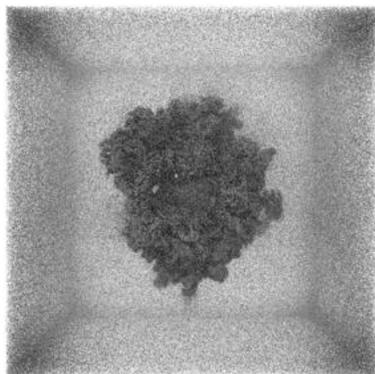
Y



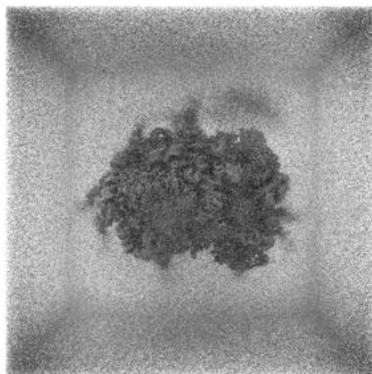
Z

The images above show the 3D surface view of the map at the recommended contour level 0.1. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

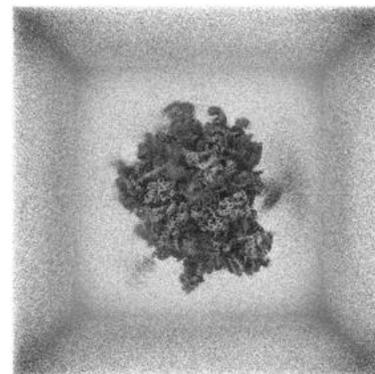
6.5.2 Raw map



X



Y



Z

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

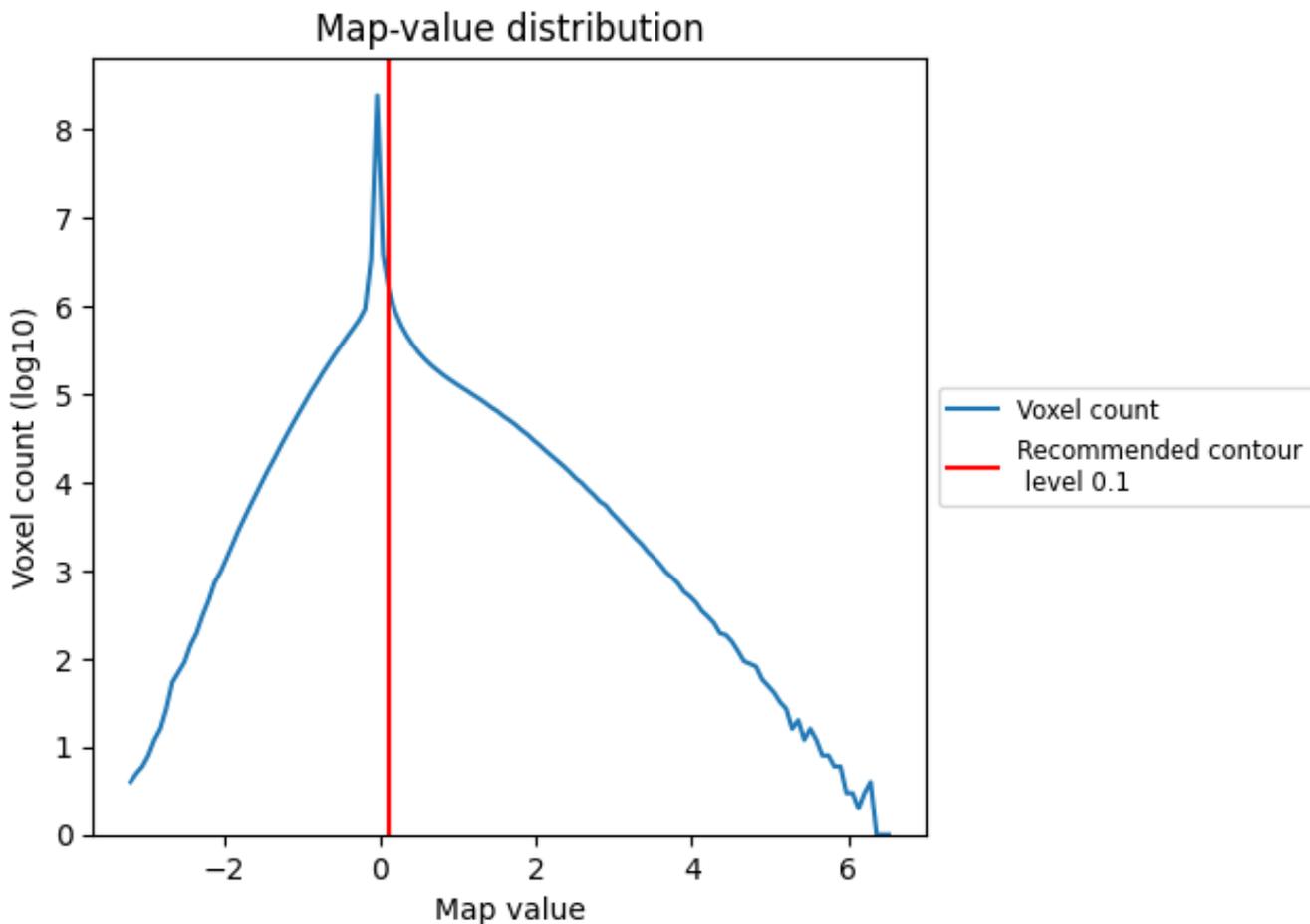
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

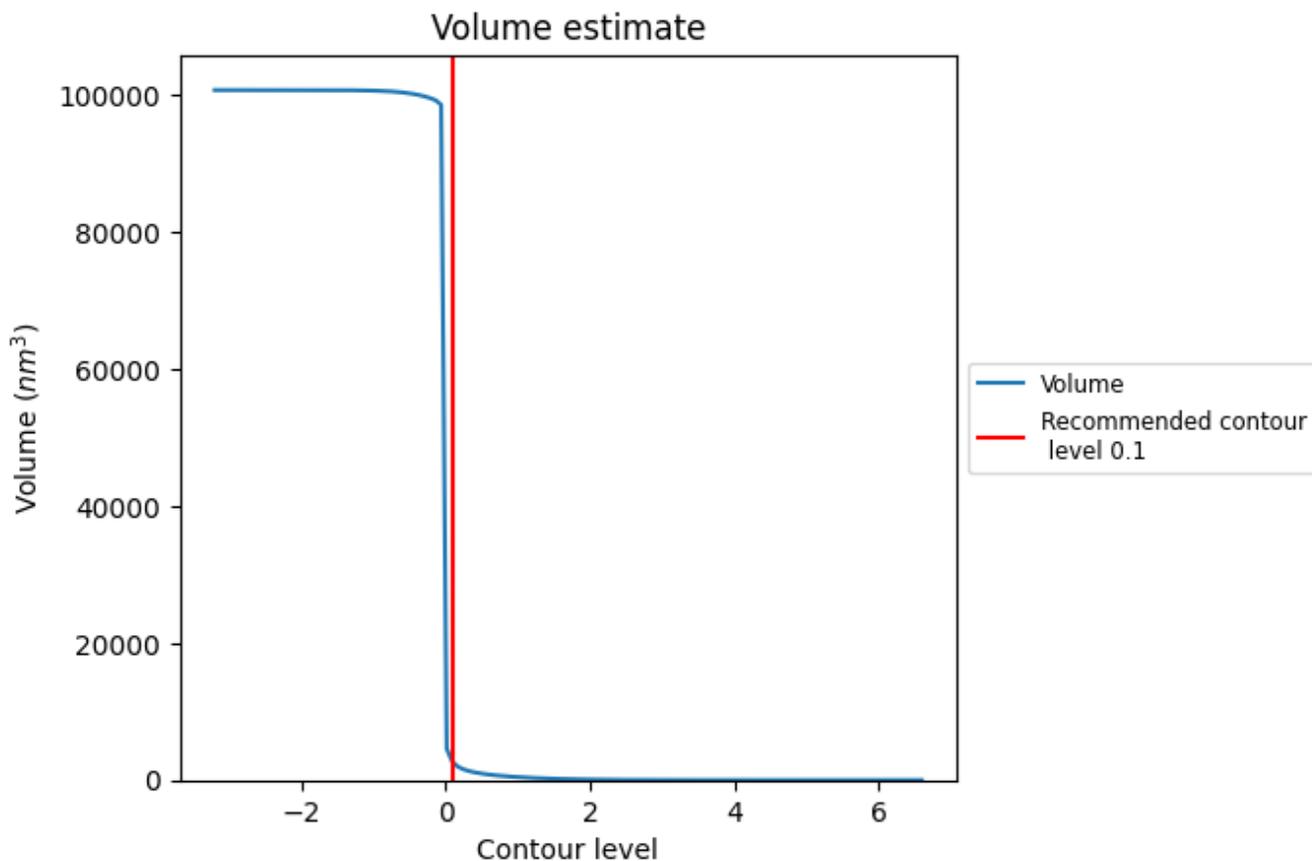
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

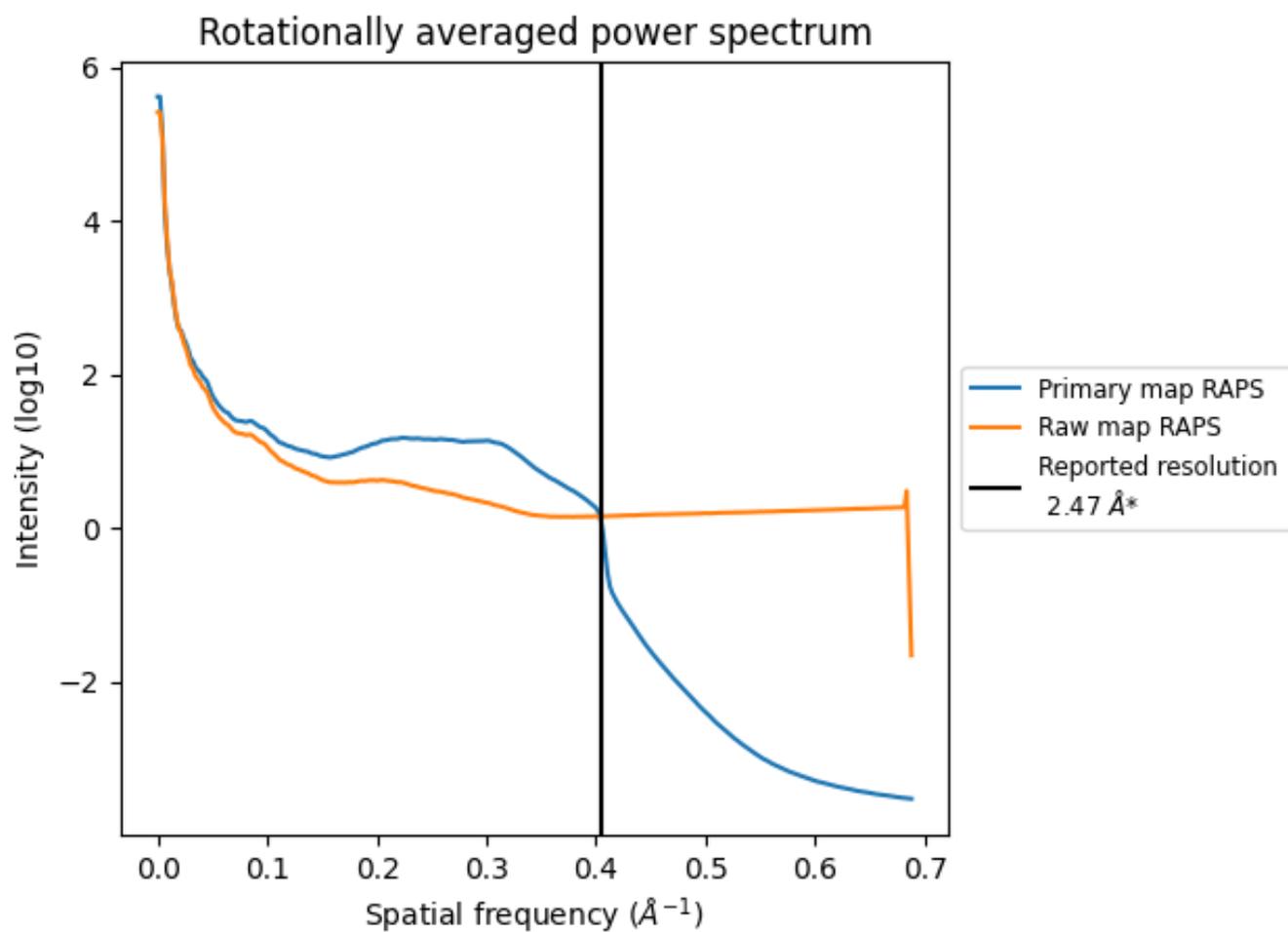
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 2645 nm^3 ; this corresponds to an approximate mass of 2389 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

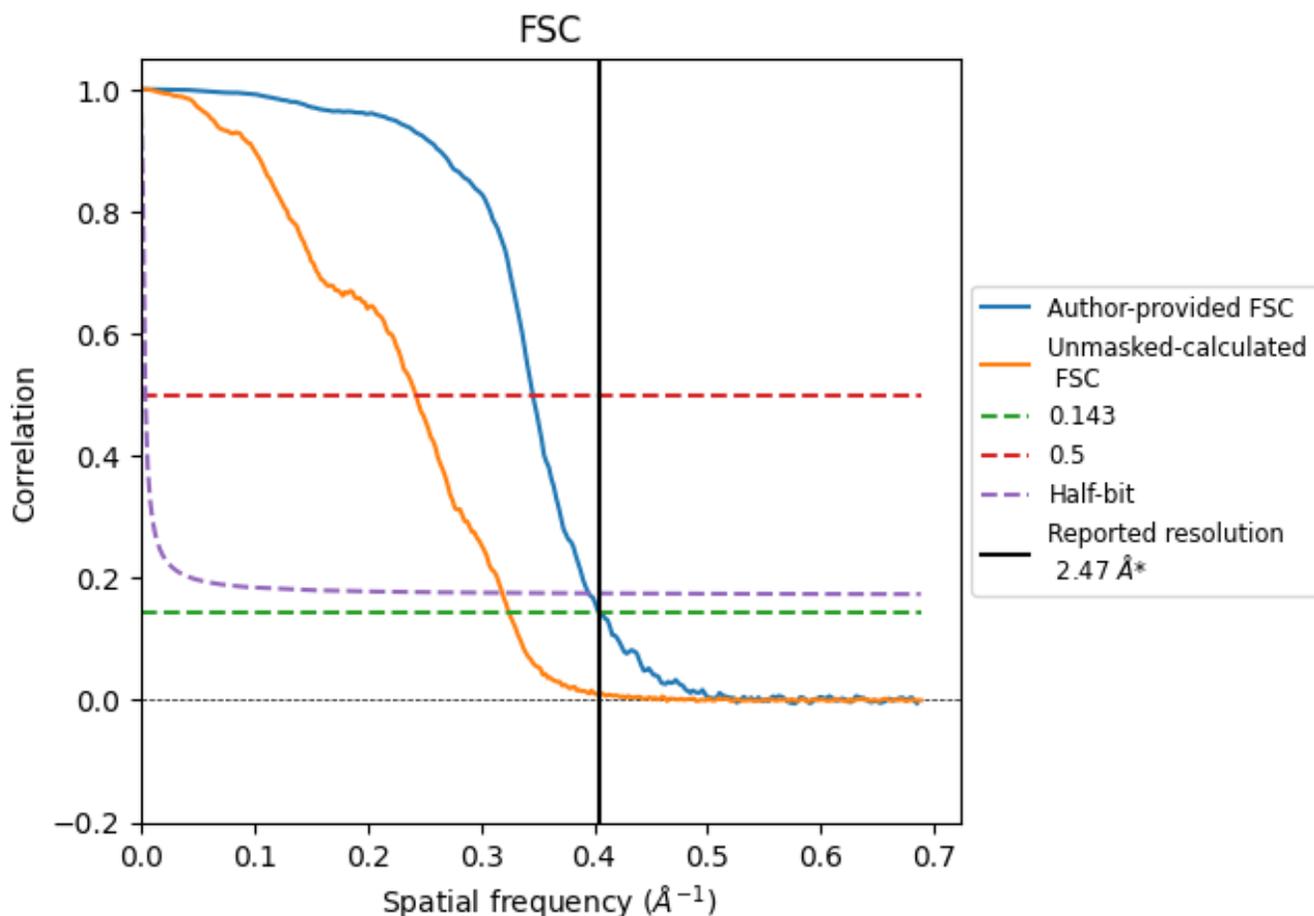


*Reported resolution corresponds to spatial frequency of 0.405 Å⁻¹

8 Fourier-Shell correlation [i](#)

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

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.405 Å⁻¹

8.2 Resolution estimates [i](#)

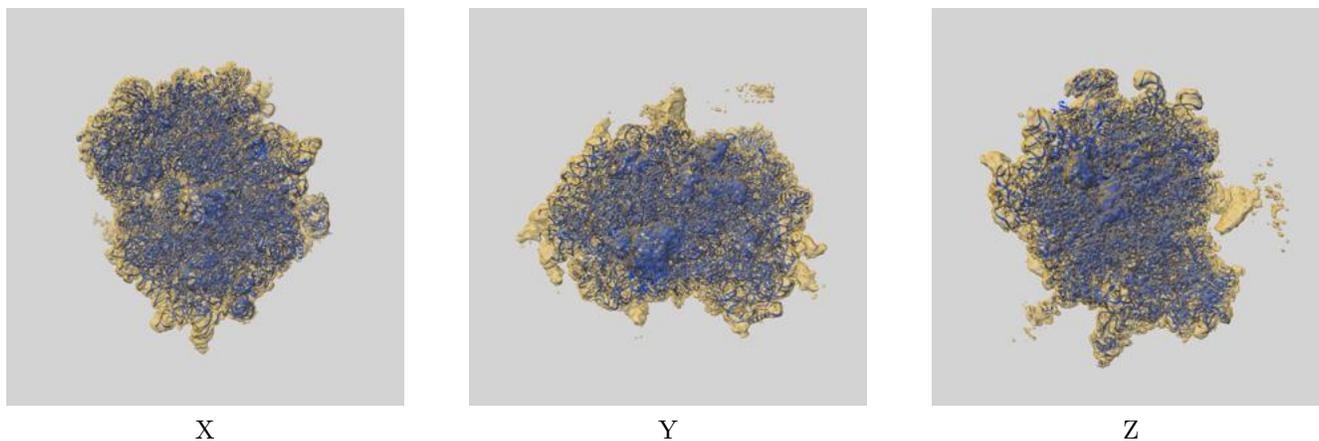
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.47	-	-
Author-provided FSC curve	2.47	2.89	2.53
Unmasked-calculated*	3.08	4.12	3.14

*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 3.08 differs from the reported value 2.47 by more than 10 %

9 Map-model fit [i](#)

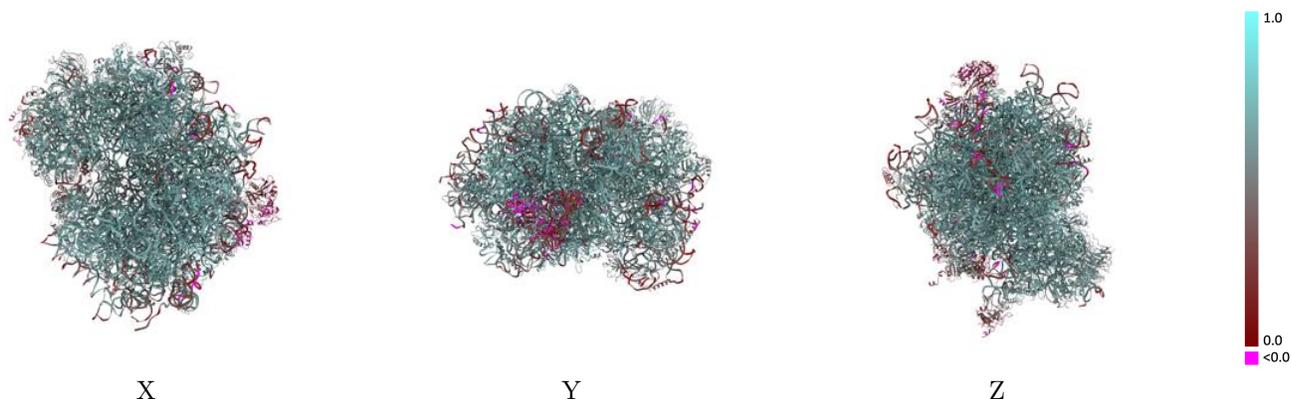
This section contains information regarding the fit between EMDB map EMD-53230 and PDB model 9QLO. Per-residue inclusion information can be found in section 3 on page 23.

9.1 Map-model overlay [i](#)



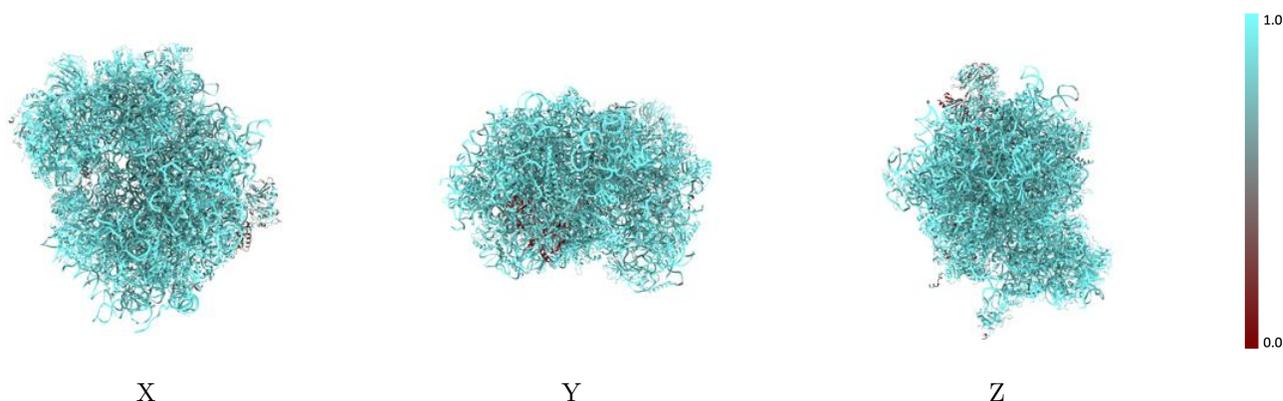
The images above show the 3D surface view of the map at the recommended contour level 0.1 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



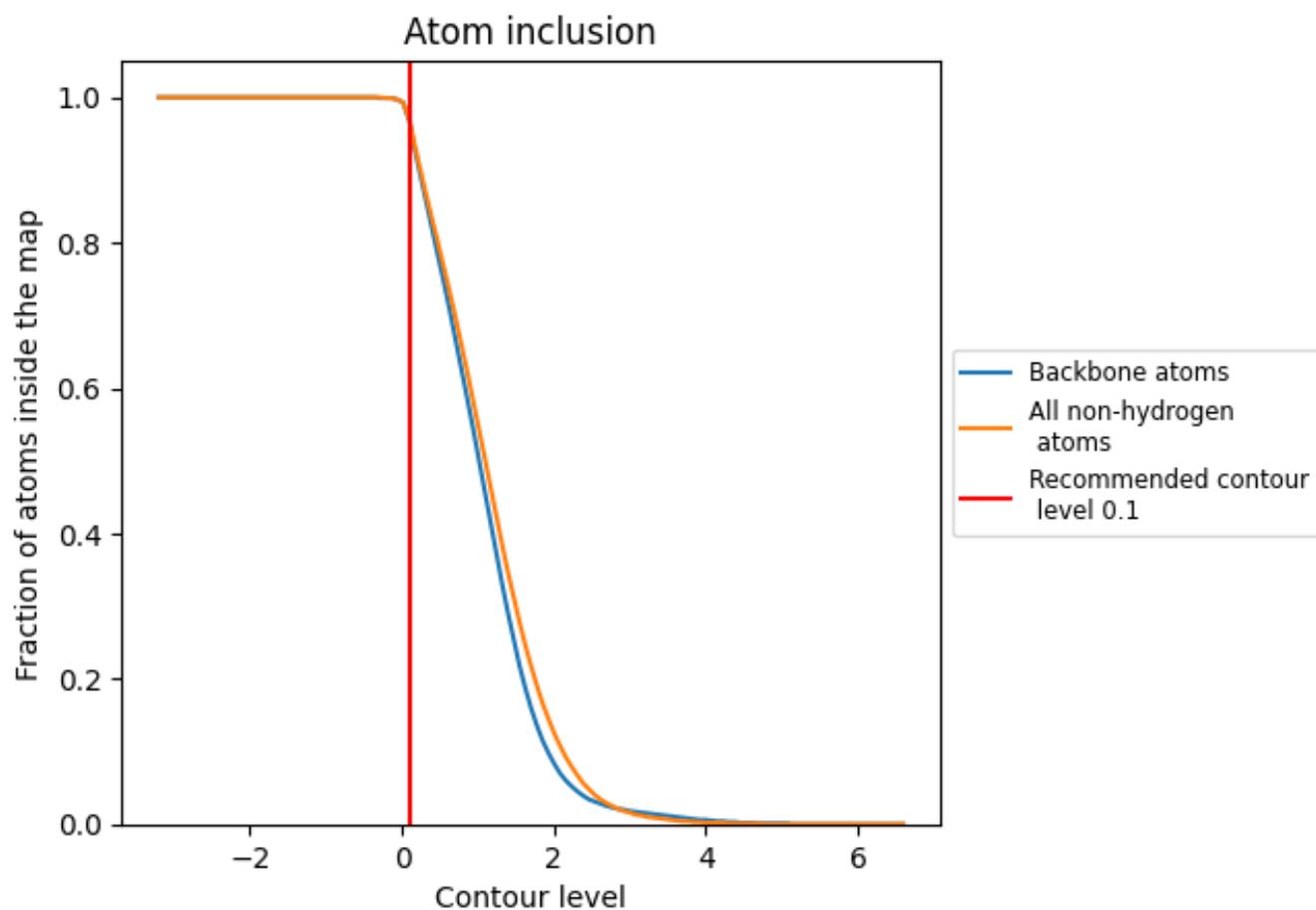
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.1).

9.4 Atom inclusion [i](#)



At the recommended contour level, 97% of all backbone atoms, 97% 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 (0.1) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9700	 0.5940
CM	 0.9720	 0.5780
CP	 0.9660	 0.5530
CR	 0.9030	 0.4990
CZ	 0.5220	 0.1290
L5	 0.9850	 0.6080
L7	 0.9960	 0.6570
L8	 0.9840	 0.6260
LA	 0.9900	 0.6850
LB	 0.9890	 0.6660
LC	 0.9880	 0.6640
LD	 0.9850	 0.6170
LE	 0.9800	 0.6070
LF	 0.9850	 0.6700
LG	 0.9720	 0.6070
LH	 0.9860	 0.6330
LI	 0.9810	 0.6400
LJ	 0.9810	 0.6030
LL	 0.9820	 0.6380
LM	 0.9910	 0.6420
LN	 0.9980	 0.6940
LO	 0.9910	 0.6750
LP	 0.9920	 0.6740
LQ	 0.9910	 0.6820
LR	 0.9880	 0.6510
LS	 0.9910	 0.6690
LT	 0.9780	 0.6350
LU	 0.9770	 0.5510
LV	 0.9920	 0.6690
LW	 0.9450	 0.5130
LX	 0.9820	 0.6480
LY	 0.9870	 0.6460
LZ	 0.9900	 0.6420
La	 0.9950	 0.6820
Lb	 0.9530	 0.5950



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Chain	Atom inclusion	Q-score
Lc	0.9790	0.6510
Ld	0.9950	0.6580
Le	0.9970	0.6870
Lf	0.9870	0.6760
Lg	0.9860	0.6540
Lh	0.9940	0.6450
Li	0.9850	0.6310
Lj	0.9930	0.6810
Lk	0.9530	0.5790
Ll	0.9860	0.6630
Lm	0.9780	0.6560
Ln	1.0000	0.6850
Lo	0.9870	0.6570
Lp	0.9930	0.6860
Lr	0.9900	0.6550
Ls	0.8090	0.2980
Lt	0.9210	0.3330
NA	0.3870	0.1240
NB	0.4150	0.2020
NM	0.7560	0.1650
S2	0.9810	0.5890
SA	0.9870	0.6360
SB	0.9820	0.6330
SC	0.9890	0.6460
SD	0.9890	0.5940
SE	0.9840	0.6070
SF	0.9740	0.6010
SG	0.9800	0.5360
SH	0.9820	0.5630
SI	0.9890	0.6250
SJ	0.9890	0.6140
SK	0.9860	0.5680
SL	0.9870	0.6540
SM	0.8390	0.2780
SN	0.9900	0.6570
SO	0.9900	0.6500
SP	0.9870	0.5790
SQ	0.9720	0.6100
SR	0.9610	0.5630
SS	0.9760	0.5840
ST	0.9760	0.6040
SU	0.9660	0.5490

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Chain	Atom inclusion	Q-score
SV	 0.9880	 0.6370
SW	 0.9910	 0.6660
SX	 0.9880	 0.6410
SY	 0.9900	 0.5790
SZ	 0.9760	 0.5700
Sa	 0.9790	 0.6330
Sb	 0.9700	 0.5920
Sc	 0.9300	 0.5470
Sd	 0.9860	 0.6300
Se	 0.9800	 0.5910
Sf	 0.8310	 0.2870
Sg	 0.9620	 0.5250