



wwPDB EM Validation Summary Report ⓘ

Mar 5, 2026 – 04:15 AM UTC

PDB ID : 8YOP / pdb_00008yop
EMDB ID : EMD-39456
Title : Cryo-EM structure of the human 80S ribosome with 4 um Tigecycline
Authors : Li, X.; Wang, M.; Denk, T.; Cheng, J.
Deposited on : 2024-03-13
Resolution : 2.20 Å(reported)
Based on initial model : 6Z6M

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

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

A user guide is available at

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

The types of validation reports are described at

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

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

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

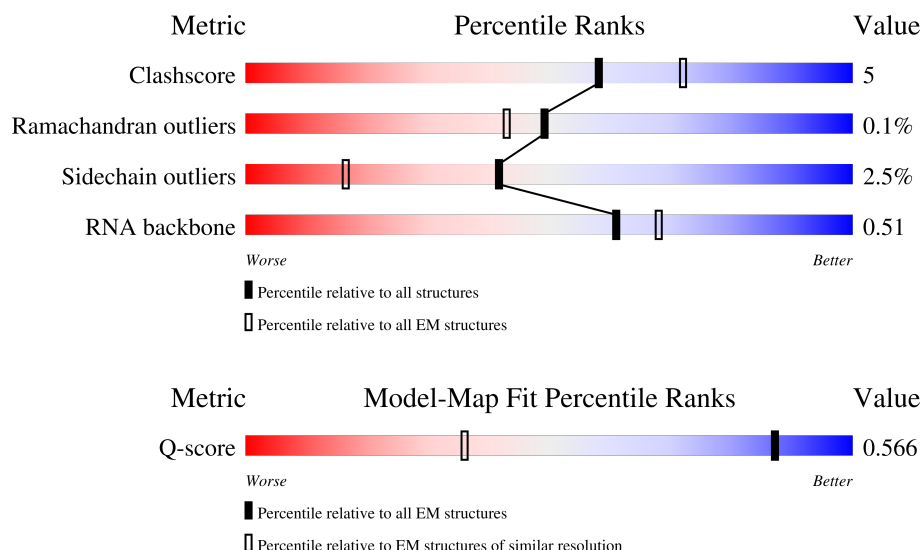
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 2.20 Å.

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



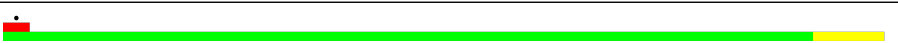
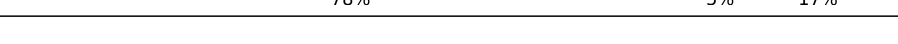
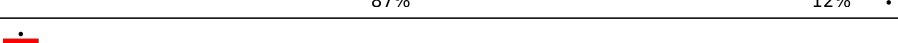
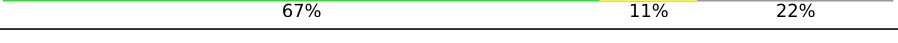
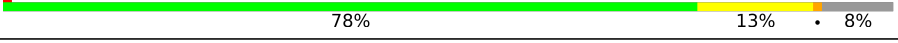
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
RNA backbone	8273	3508	-
Q-score	-	25397	3184 (1.71 - 2.70)

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	L5	5070	
2	L7	121	
3	L8	157	

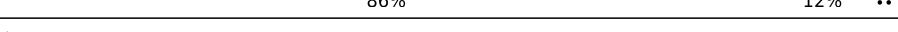
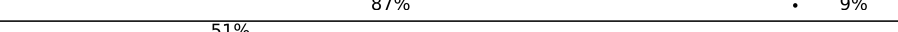
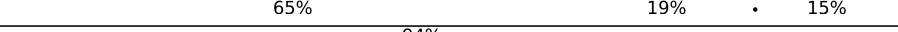
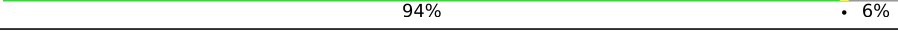
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Mol	Chain	Length	Quality of chain
4	LA	257	
5	LB	403	
6	LC	427	
7	LD	297	
8	LE	288	
9	LF	248	
10	LG	266	
11	LH	192	
12	LI	214	
13	LJ	178	
14	LL	211	
15	LM	215	
16	LN	204	
17	LO	203	
18	LP	184	
19	LQ	188	
20	LR	196	
21	LS	176	
22	LT	160	
23	LU	128	
24	LV	140	
25	LW	157	
26	LX	156	
27	LY	145	
28	LZ	136	

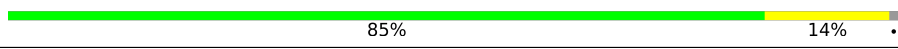
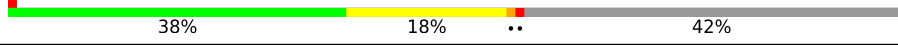
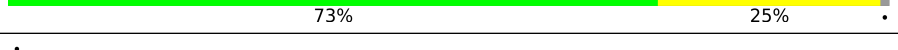
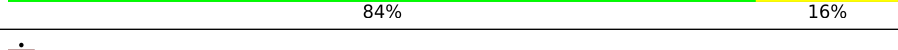
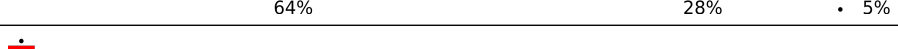
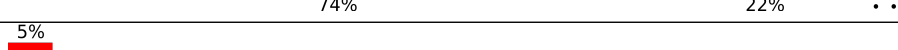
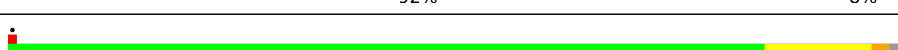
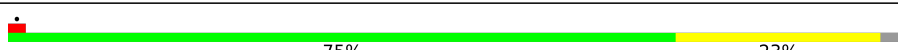
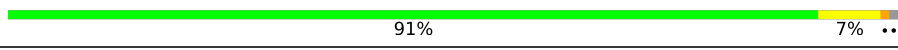
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Mol	Chain	Length	Quality of chain
29	La	148	
30	Lb	159	
31	Lc	115	
32	Ld	125	
33	Le	135	
34	Lf	110	
35	Lg	117	
36	Lh	123	
37	Li	105	
38	Lj	97	
39	Lk	70	
40	Ll	51	
41	Lm	128	
42	Ln	25	
43	Lo	106	
44	Lp	92	
45	Lr	137	
46	Ls	317	
47	Lt	165	
48	Lz	217	
49	S2	1869	
50	SA	295	
51	SB	264	
52	SD	243	
53	SE	263	

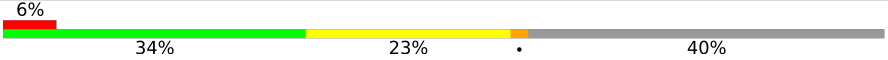
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Mol	Chain	Length	Quality of chain
54	SF	204	
55	SH	194	
56	SI	208	
57	SK	165	
58	SL	158	
59	SP	145	
60	SQ	146	
61	SR	135	
62	SS	152	
63	ST	145	
64	SU	119	
65	SV	83	
66	SX	143	
67	Sa	115	
68	Sc	69	
69	Sd	56	
70	Sg	317	
71	SC	293	
72	SG	249	
73	SJ	194	
74	SM	132	
75	SN	151	
76	SO	151	
77	SW	130	
78	SY	133	

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Mol	Chain	Length	Quality of chain
79	SZ	125	
80	Sb	84	
81	Se	59	
82	Sf	156	

2 Entry composition [i](#)

There are 84 unique types of molecules in this entry. The entry contains 218499 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a RNA chain called 28S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	L5	3771	Total	C	N	O	P	0	0
			80096	35636	14582	26108	3770		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
L5	2113	C	G	conflict	GB 86475748

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

Mol	Chain	Residues	Atoms					AltConf	Trace
2	L7	120	Total	C	N	O	P	0	0
			2561	1141	456	844	120		

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

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

- Molecule 4 is a protein called 60S ribosomal protein L8.

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

- Molecule 5 is a protein called 60S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	LB	402	Total	C	N	O	S	0	0
			3238	2060	608	556	14		

- Molecule 6 is a protein called 60S ribosomal protein L4.

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

- Molecule 7 is a protein called 60S ribosomal protein L5.

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

- Molecule 8 is a protein called 60S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	LE	221	Total	C	N	O	S	0	0
			1774	1142	336	292	4		

- Molecule 9 is a protein called 60S ribosomal protein L7.

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

- Molecule 10 is a protein called 60S ribosomal protein L7a.

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

- Molecule 11 is a protein called 60S ribosomal protein L9.

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

- Molecule 12 is a protein called Large ribosomal subunit protein uL16.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	LI	202	Total	C	N	O	S	0	0
			1639	1041	316	269	13		

- Molecule 13 is a protein called 60S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	LJ	176	Total	C	N	O	S	0	0
			1410	888	263	253	6		

- Molecule 14 is a protein called 60S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	LL	210	Total	C	N	O	S	0	0
			1701	1064	352	281	4		

- Molecule 15 is a protein called 60S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	LM	139	Total	C	N	O	S	0	0
			1138	730	218	183	7		

- Molecule 16 is a protein called 60S ribosomal protein L15.

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

- Molecule 17 is a protein called 60S ribosomal protein L13a.

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

- Molecule 18 is a protein called 60S ribosomal protein L17.

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

- Molecule 19 is a protein called 60S ribosomal protein L18.

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

- Molecule 20 is a protein called 60S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	LR	187	Total	C	N	O	S	0	0
			1566	971	336	250	9		

- Molecule 21 is a protein called 60S ribosomal protein L18a.

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

- Molecule 22 is a protein called 60S ribosomal protein L21.

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

- Molecule 23 is a protein called 60S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	LU	100	Total	C	N	O	S	0	0
			816	524	142	148	2		

- Molecule 24 is a protein called 60S ribosomal protein L23.

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

- Molecule 25 is a protein called 60S ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	LW	124	Total	C	N	O	S	0	0
			1015	634	207	170	4		

- Molecule 26 is a protein called 60S ribosomal protein L23a.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	LX	120	Total	C	N	O	S	0	0
			985	630	185	169	1		

- Molecule 27 is a protein called 60S ribosomal protein L26.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	LY	133	Total	C	N	O	S	0	0
			1106	694	224	185	3		

- Molecule 28 is a protein called 60S ribosomal protein L27.

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

- Molecule 29 is a protein called 60S ribosomal protein L27a.

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

- Molecule 30 is a protein called 60S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	Lb	109	Total	C	N	O	S	0	0
			882	549	192	137	4		

- Molecule 31 is a protein called 60S ribosomal protein L30.

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

- Molecule 32 is a protein called 60S ribosomal protein L31.

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

- Molecule 33 is a protein called 60S ribosomal protein L32.

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

- Molecule 34 is a protein called 60S ribosomal protein L35a.

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

- Molecule 35 is a protein called 60S ribosomal protein L34.

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

- Molecule 36 is a protein called 60S ribosomal protein L35.

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

- Molecule 37 is a protein called 60S ribosomal protein L36.

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

- Molecule 38 is a protein called 60S ribosomal protein L37.

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

- Molecule 39 is a protein called 60S ribosomal protein L38.

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

- Molecule 40 is a protein called 60S ribosomal protein L39.

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

- Molecule 41 is a protein called Ubiquitin-60S ribosomal protein L40.

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

- Molecule 42 is a protein called 60S ribosomal protein L41.

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

- Molecule 43 is a protein called 60S ribosomal protein L36a.

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

- Molecule 44 is a protein called 60S ribosomal protein L37a.

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

- Molecule 45 is a protein called 60S ribosomal protein L28.

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

- Molecule 46 is a protein called Large ribosomal subunit protein uL10.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	Ls	196	Total	C	N	O	S	0	0
			1496	952	259	276	9		

- Molecule 47 is a protein called 60S ribosomal protein L12.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	Lt	141	Total	C	N	O	S	0	0
			1046	652	191	199	4		

- Molecule 48 is a protein called 60S ribosomal protein L10a.

Mol	Chain	Residues	Atoms				AltConf	Trace
48	Lz	205	Total	C	N	O	0	0
			1018	607	205	206		

- Molecule 49 is a RNA chain called 18S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	S2	1740	Total	C	N	O	P	0	0
			36896	16458	6597	12102	1739		

There are 5 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
S2	582	C	U	conflict	GB 36162
S2	583	C	A	conflict	GB 36162
S2	584	G	A	conflict	GB 36162
S2	798	A	G	conflict	GB 36162
S2	1095	U	C	conflict	GB 36162

- Molecule 50 is a protein called 40S ribosomal protein SA.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	SA	221	Total	C	N	O	S	0	0
			1741	1106	305	322	8		

- Molecule 51 is a protein called 40S ribosomal protein S3a.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	SB	214	Total	C	N	O	S	0	0
			1738	1103	310	311	14		

- Molecule 52 is a protein called 40S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	SD	227	Total	C	N	O	S	0	0
			1765	1125	317	315	8		

- Molecule 53 is a protein called 40S ribosomal protein S4, X isoform.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	SE	262	Total	C	N	O	S	0	0
			2076	1324	386	358	8		

- Molecule 54 is a protein called 40S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	SF	184	Total	C	N	O	S	0	0
			1461	914	276	264	7		

- Molecule 55 is a protein called 40S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	SH	186	Total	C	N	O	S	0	0
			1497	956	274	266	1		

- Molecule 56 is a protein called 40S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	SI	206	Total	C	N	O	S	0	0
			1686	1058	332	291	5		

- Molecule 57 is a protein called 40S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
57	SK	95	Total	C	N	O	S	0	0
			799	524	139	130	6		

- Molecule 58 is a protein called 40S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
58	SL	144	Total	C	N	O	S	0	0
			1182	752	224	200	6		

- Molecule 59 is a protein called 40S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
59	SP	129	Total	C	N	O	S	0	0
			1061	672	202	180	7		

- Molecule 60 is a protein called 40S ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
60	SQ	144	Total	C	N	O	S	0	0
			1142	726	216	197	3		

- Molecule 61 is a protein called 40S ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
61	SR	135	Total	C	N	O	S	0	0
			1090	685	202	198	5		

- Molecule 62 is a protein called 40S ribosomal protein S18.

Mol	Chain	Residues	Atoms					AltConf	Trace
62	SS	144	Total	C	N	O	S	0	0
			1190	746	241	202	1		

- Molecule 63 is a protein called 40S ribosomal protein S19.

Mol	Chain	Residues	Atoms					AltConf	Trace
63	ST	143	Total	C	N	O	S	0	0
			1112	697	214	198	3		

- Molecule 64 is a protein called 40S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
64	SU	104	Total	C	N	O	S	0	0
			821	514	155	148	4		

- Molecule 65 is a protein called 40S ribosomal protein S21.

Mol	Chain	Residues	Atoms					AltConf	Trace
65	SV	83	Total	C	N	O	S	0	0
			636	393	117	121	5		

- Molecule 66 is a protein called 40S ribosomal protein S23.

Mol	Chain	Residues	Atoms					AltConf	Trace
66	SX	141	Total	C	N	O	S	0	0
			1098	693	219	183	3		

- Molecule 67 is a protein called 40S ribosomal protein S26.

Mol	Chain	Residues	Atoms					AltConf	Trace
67	Sa	102	Total	C	N	O	S	0	0
			821	512	171	133	5		

- Molecule 68 is a protein called 40S ribosomal protein S28.

Mol	Chain	Residues	Atoms					AltConf	Trace
68	Sc	64	Total	C	N	O	S	0	0
			506	308	102	94	2		

- Molecule 69 is a protein called 40S ribosomal protein S29.

Mol	Chain	Residues	Atoms					AltConf	Trace
69	Sd	55	Total	C	N	O	S	0	0
			459	286	94	74	5		

- Molecule 70 is a protein called Receptor of activated protein C kinase 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
70	Sg	313	Total	C	N	O	S	0	0
			2436	1535	424	465	12		

- Molecule 71 is a protein called 40S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
71	SC	222	Total	C	N	O	S	0	0
			1725	1115	298	302	10		

- Molecule 72 is a protein called 40S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
72	SG	237	Total	C	N	O	S	0	0
			1923	1200	387	329	7		

- Molecule 73 is a protein called 40S ribosomal protein S9.

Mol	Chain	Residues	Atoms					AltConf	Trace
73	SJ	185	Total	C	N	O	S	0	0
			1525	969	306	248	2		

- Molecule 74 is a protein called 40S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
74	SM	122	Total	C	N	O		0	0
			604	359	122	123			

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
SM	52	GLN	LEU	conflict	UNP P25398
SM	69	LEU	CYS	conflict	UNP P25398
SM	99	ASN	LYS	conflict	UNP P25398

- Molecule 75 is a protein called 40S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
75	SN	150	Total	C	N	O	S	0	0
			1208	773	229	205	1		

- Molecule 76 is a protein called 40S ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace
76	SO	135	Total	C	N	O	S	0	0
			1010	618	198	188	6		

- Molecule 77 is a protein called 40S ribosomal protein S15a.

Mol	Chain	Residues	Atoms					AltConf	Trace
77	SW	129	Total	C	N	O	S	0	0
			1034	659	193	176	6		

- Molecule 78 is a protein called 40S ribosomal protein S24.

Mol	Chain	Residues	Atoms					AltConf	Trace
78	SY	126	Total	C	N	O	S	0	0
			1027	648	201	173	5		

- Molecule 79 is a protein called 40S ribosomal protein S25.

Mol	Chain	Residues	Atoms					AltConf	Trace
79	SZ	75	Total	C	N	O	S	0	0
			598	382	111	104	1		

- Molecule 80 is a protein called 40S ribosomal protein S27.

Mol	Chain	Residues	Atoms					AltConf	Trace
80	Sb	83	Total	C	N	O	S	0	0
			651	408	121	115	7		

- Molecule 81 is a protein called 40S ribosomal protein S30.

Mol	Chain	Residues	Atoms					AltConf	Trace
81	Se	58	Total	C	N	O	S	0	0
			459	284	100	74	1		

- Molecule 82 is a protein called Ubiquitin-40S ribosomal protein S27a.

Mol	Chain	Residues	Atoms					AltConf	Trace
82	Sf	67	Total	C	N	O	S	0	0
			548	346	102	93	7		

- Molecule 83 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
83	L5	212	Total	Mg	0
			212	212	
83	L7	2	Total	Mg	0
			2	2	
83	L8	5	Total	Mg	0
			5	5	
83	LA	1	Total	Mg	0
			1	1	
83	LI	1	Total	Mg	0
			1	1	
83	LP	1	Total	Mg	0
			1	1	
83	LV	1	Total	Mg	0
			1	1	
83	Le	2	Total	Mg	0
			2	2	
83	S2	29	Total	Mg	0
			29	29	
83	SG	1	Total	Mg	0
			1	1	

- Molecule 84 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
84	Lg	1	Total	Zn	0
			1	1	
84	Lj	1	Total	Zn	0
			1	1	
84	Lm	1	Total	Zn	0
			1	1	

Continued on next page...

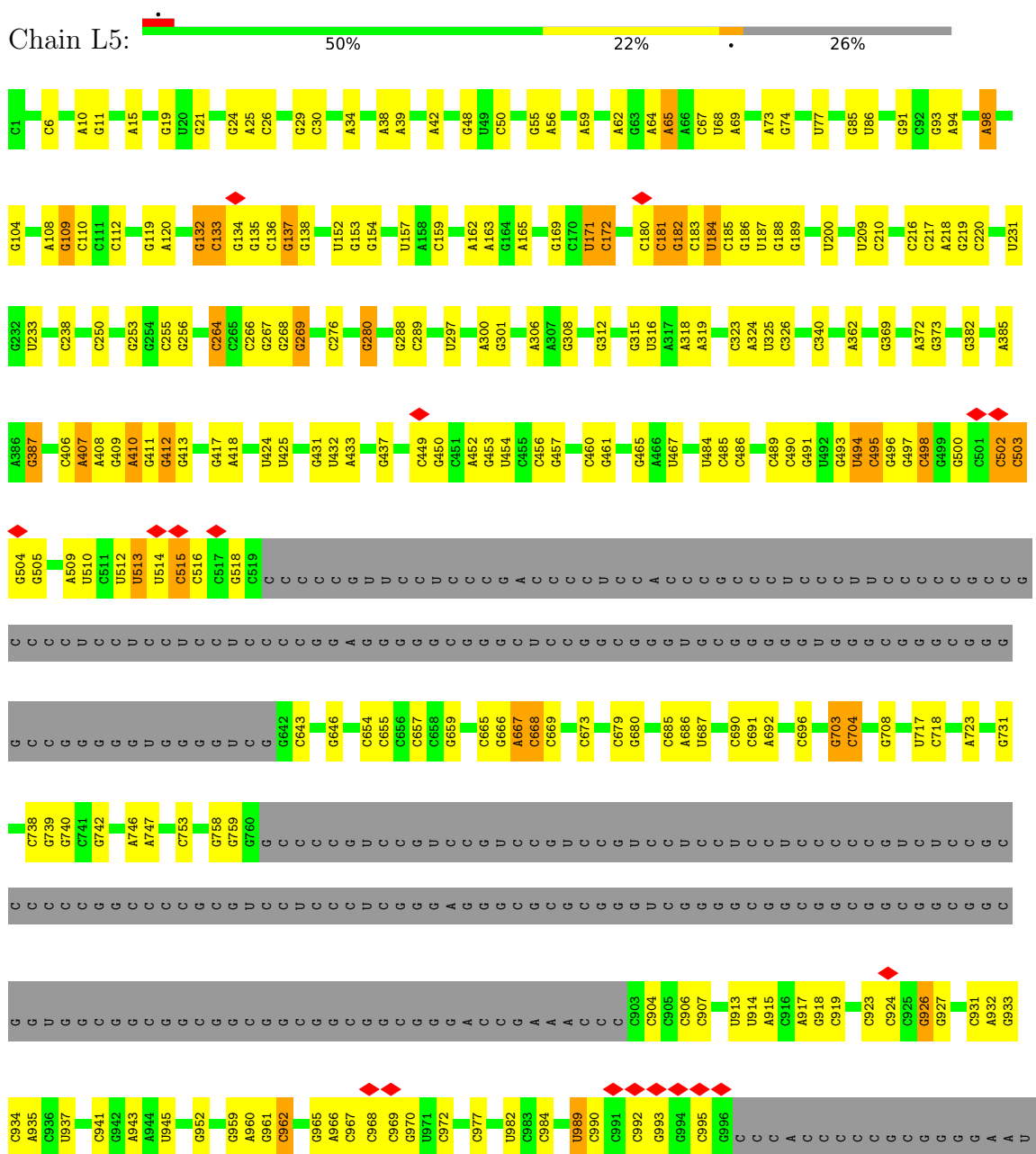
Continued from previous page...

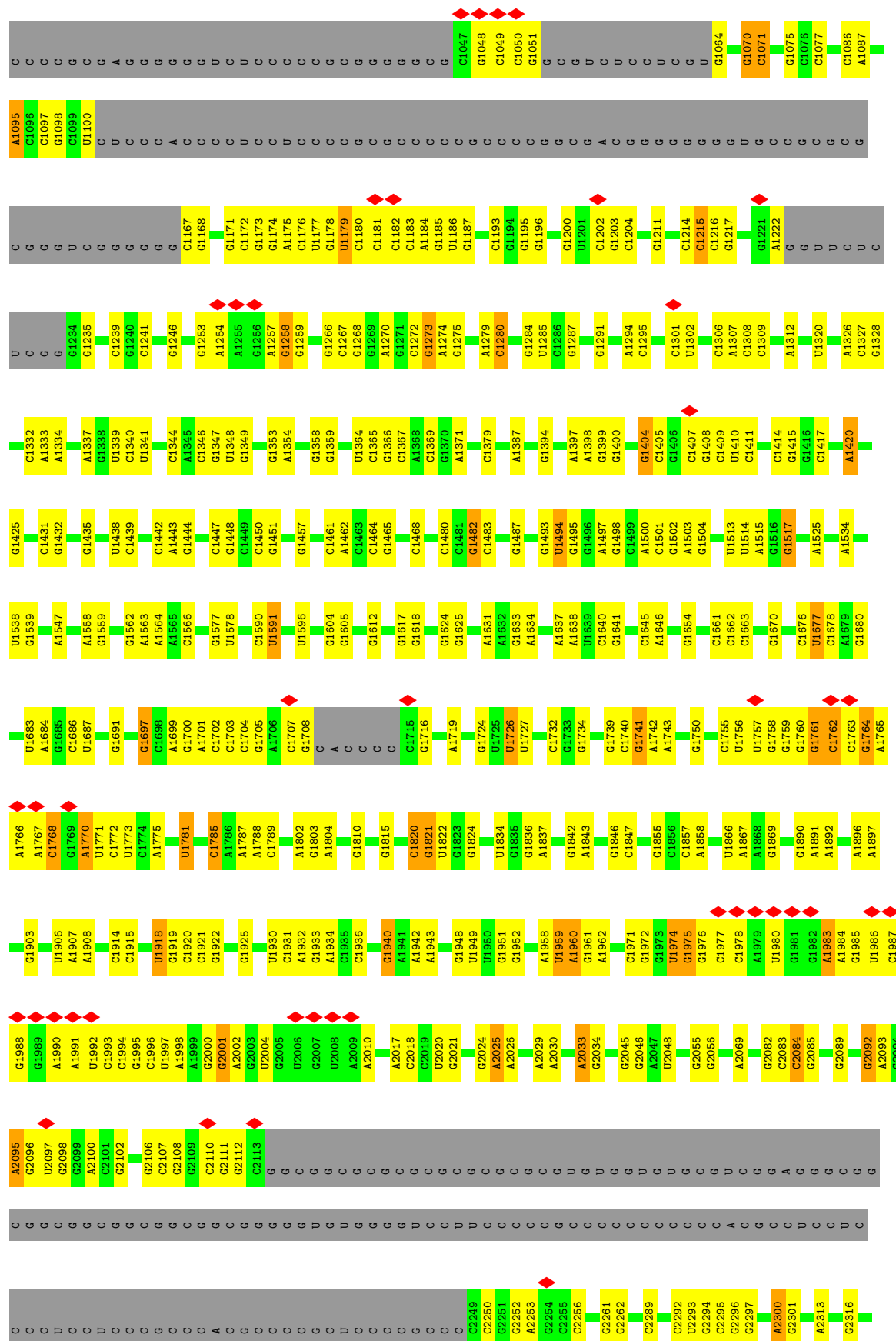
Mol	Chain	Residues	Atoms		AltConf
84	Lo	1	Total 1	Zn 1	0
84	Lp	1	Total 1	Zn 1	0
84	Sa	1	Total 1	Zn 1	0
84	Sd	1	Total 1	Zn 1	0
84	Sf	1	Total 1	Zn 1	0

3 Residue-property plots [i](#)

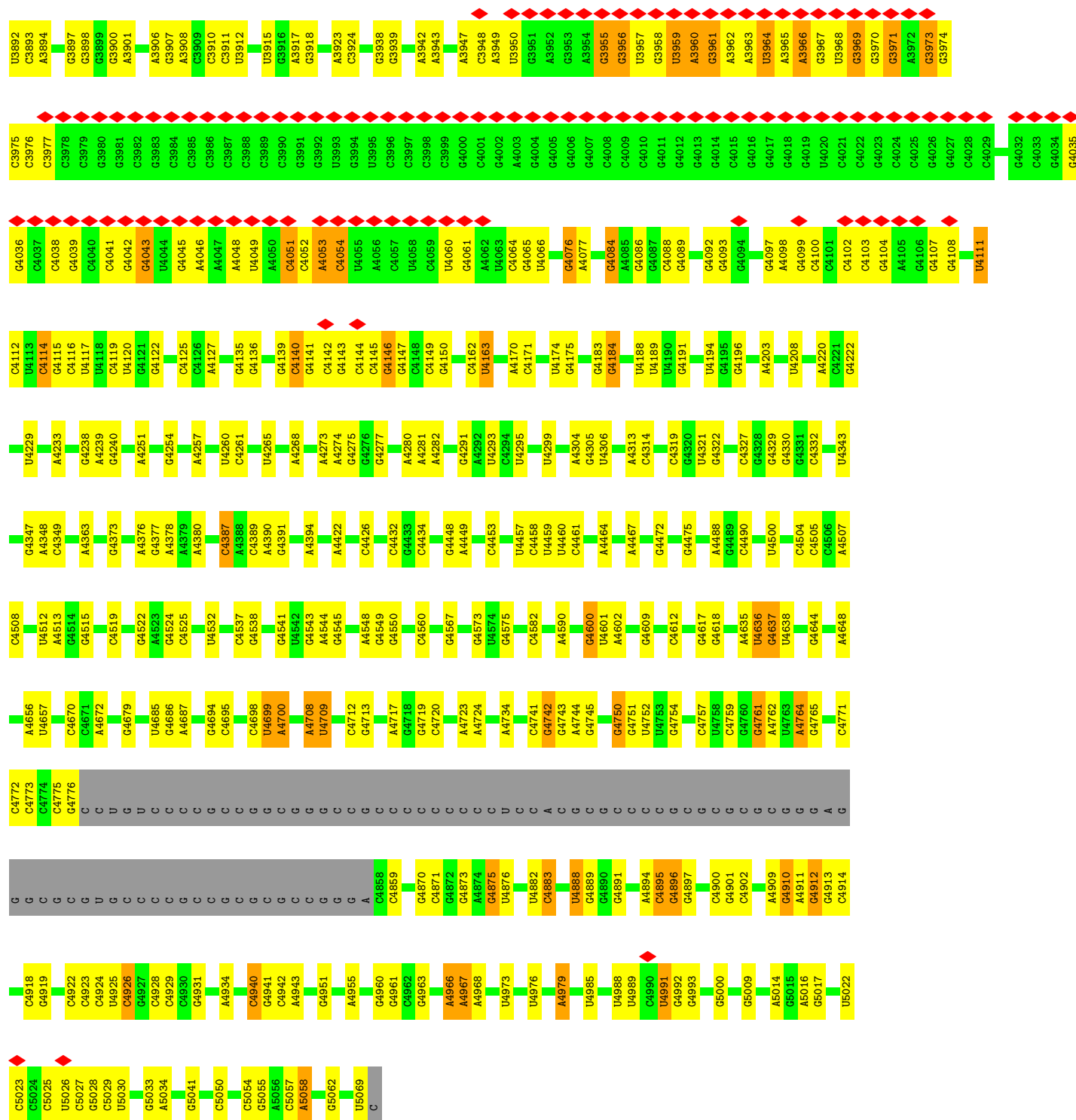
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

• Molecule 1: 28S rRNA









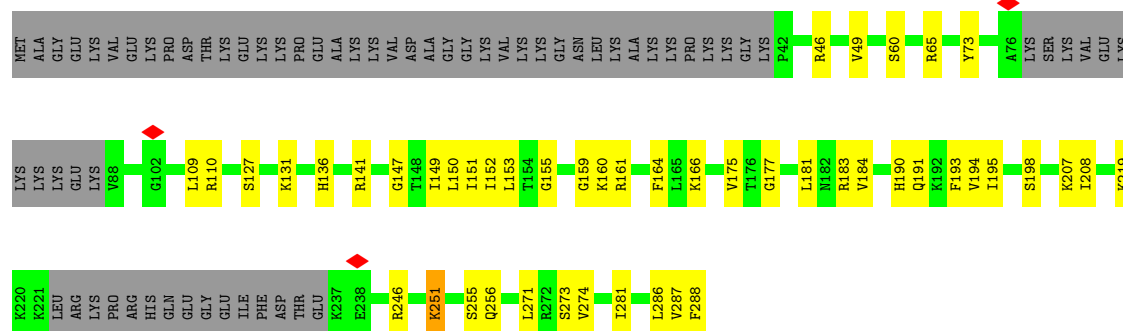
• Molecule 2: 5S rRNA

Chain L7: 79% 19% ::

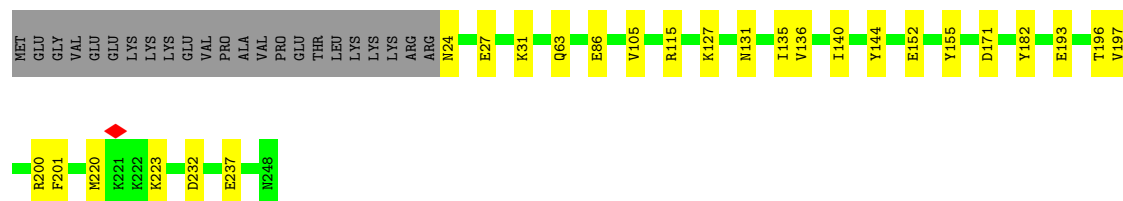
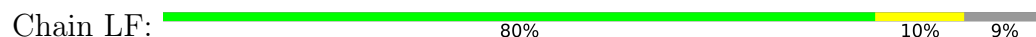




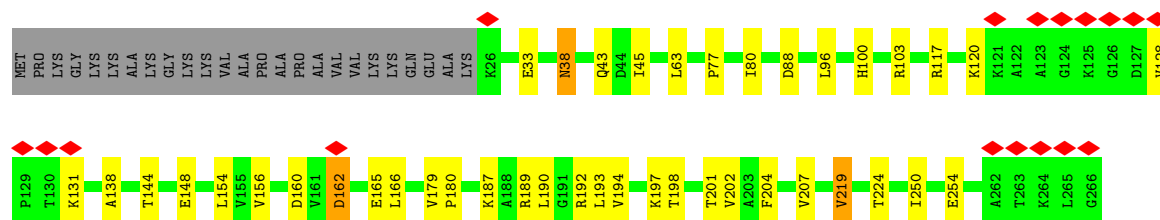
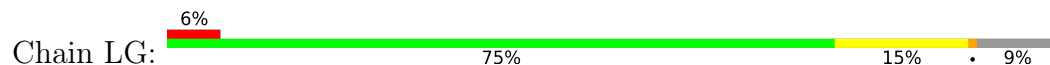
- Molecule 8: 60S ribosomal protein L6



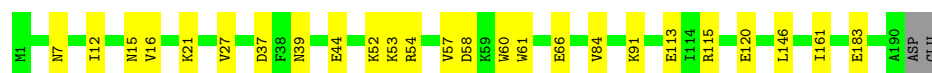
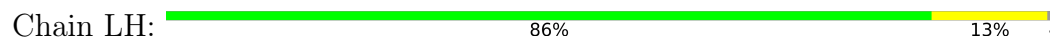
- Molecule 9: 60S ribosomal protein L7



- Molecule 10: 60S ribosomal protein L7a

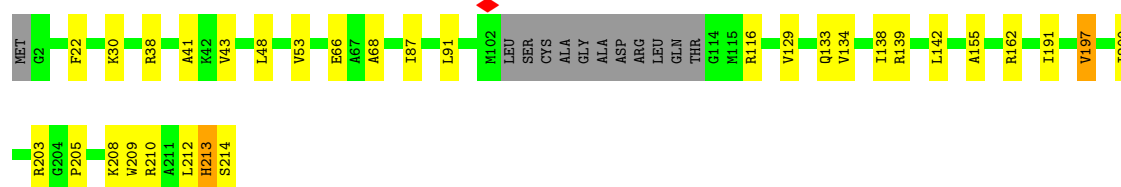


- Molecule 11: 60S ribosomal protein L9



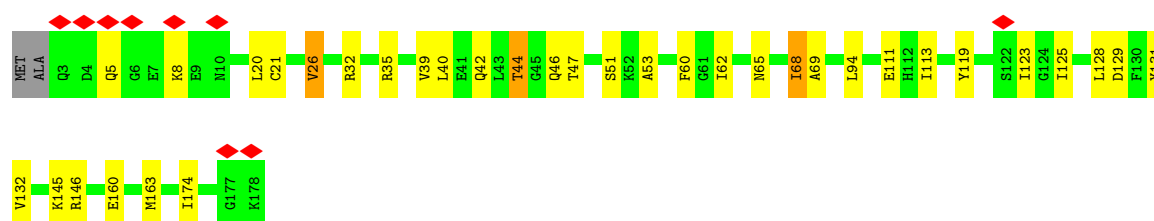
- Molecule 12: Large ribosomal subunit protein uL16

Chain LI: 

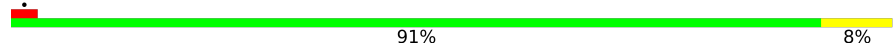


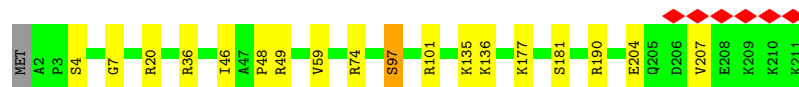
- Molecule 13: 60S ribosomal protein L11

Chain LJ: 



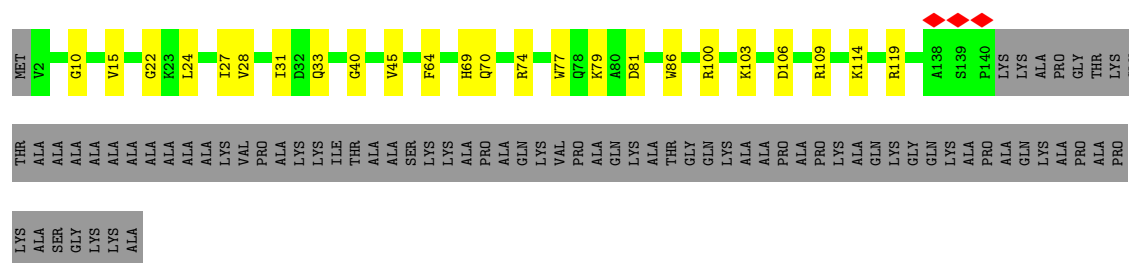
- Molecule 14: 60S ribosomal protein L13

Chain LL: 



- Molecule 15: 60S ribosomal protein L14

Chain LM: 



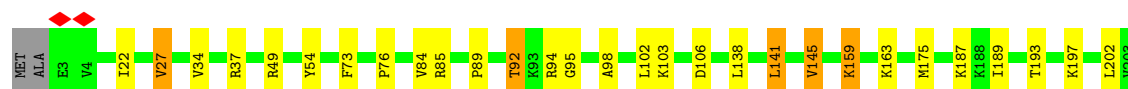
- Molecule 16: 60S ribosomal protein L15

Chain LN: 



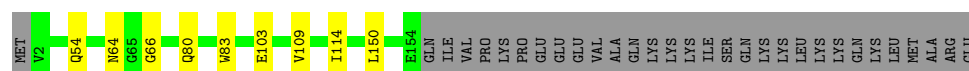
- Molecule 17: 60S ribosomal protein L13a

Chain LO:  85% 12% ..



- Molecule 18: 60S ribosomal protein L17

Chain LP:  78% 5% 17%



- Molecule 19: 60S ribosomal protein L18

Chain LQ:  87% 12% .



- Molecule 20: 60S ribosomal protein L19

Chain LR:  89% 7% 5%



- Molecule 21: 60S ribosomal protein L18a

Chain LS:  86% 13% ..



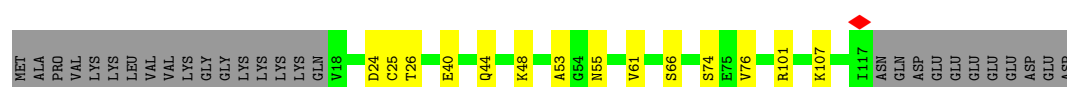
- Molecule 22: 60S ribosomal protein L21

Chain LT:  85% 14% .



- Molecule 23: 60S ribosomal protein L22

Chain LU:  67% 11% 22%



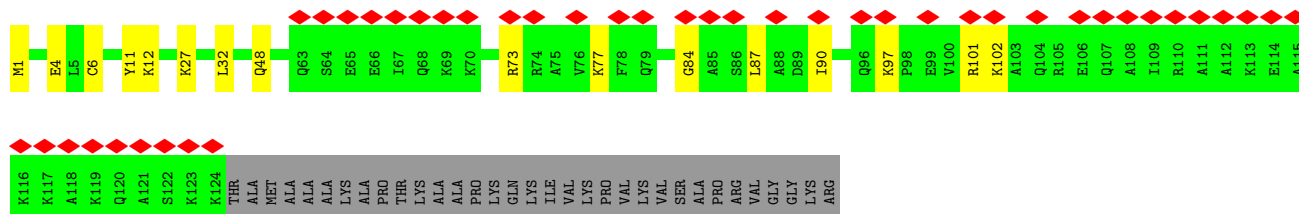
- Molecule 24: 60S ribosomal protein L23

Chain LV:  81% 11% • 6%



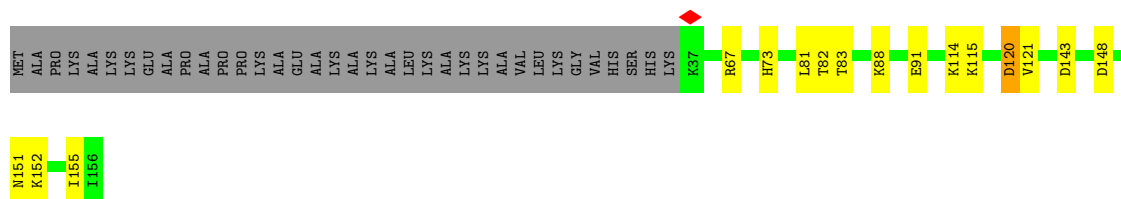
- Molecule 25: 60S ribosomal protein L24

Chain LW:  27% 69% 10% 21%



- Molecule 26: 60S ribosomal protein L23a

Chain LX:  67% 10% • 23%



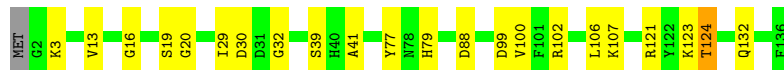
- Molecule 27: 60S ribosomal protein L26

Chain LY:  78% 13% • 8%



- Molecule 28: 60S ribosomal protein L27

Chain LZ:  83% 15% ..

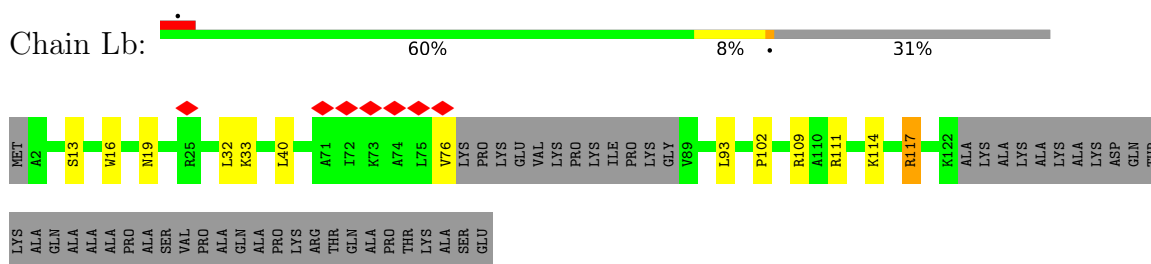


- Molecule 29: 60S ribosomal protein L27a

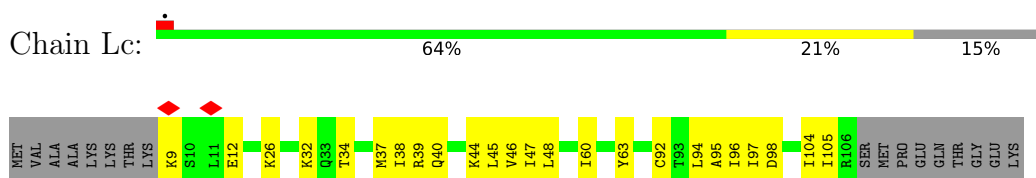
Chain La:  89% 10% •



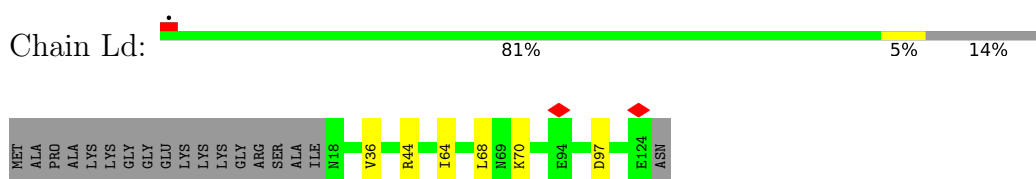
- Molecule 30: 60S ribosomal protein L29



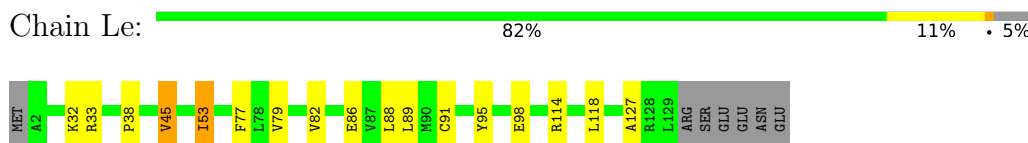
- Molecule 31: 60S ribosomal protein L30



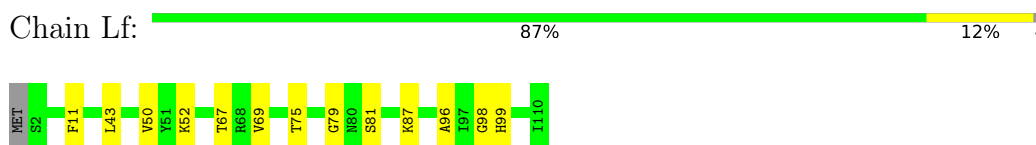
- Molecule 32: 60S ribosomal protein L31



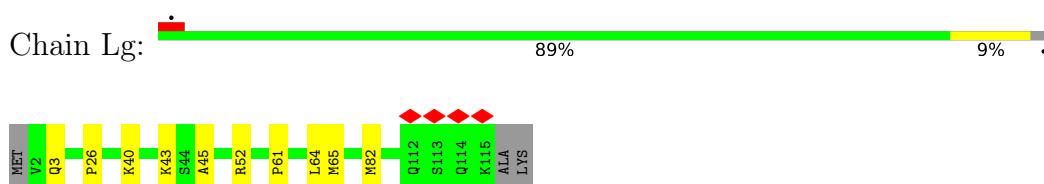
- Molecule 33: 60S ribosomal protein L32



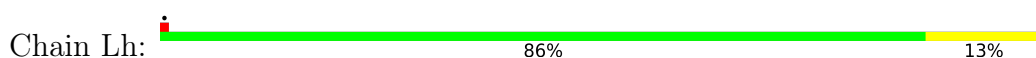
- Molecule 34: 60S ribosomal protein L35a



- Molecule 35: 60S ribosomal protein L34

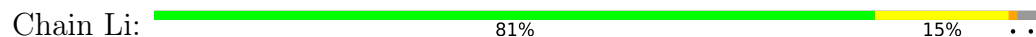


- Molecule 36: 60S ribosomal protein L35





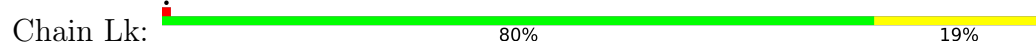
- Molecule 37: 60S ribosomal protein L36



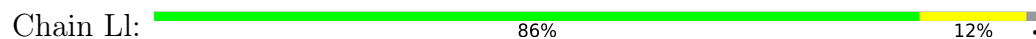
- Molecule 38: 60S ribosomal protein L37



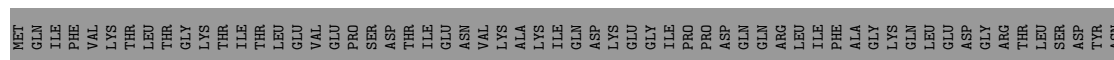
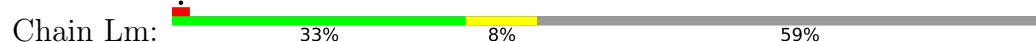
- Molecule 39: 60S ribosomal protein L38



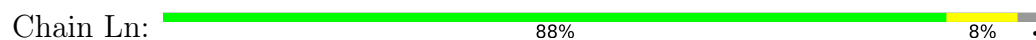
- Molecule 40: 60S ribosomal protein L39



- Molecule 41: Ubiquitin-60S ribosomal protein L40

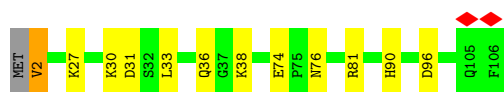


- Molecule 42: 60S ribosomal protein L41



- Molecule 43: 60S ribosomal protein L36a

Chain Lo:  88% 10% ..



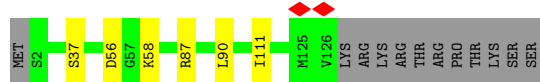
- Molecule 44: 60S ribosomal protein L37a

Chain Lp:  86% 12% ..

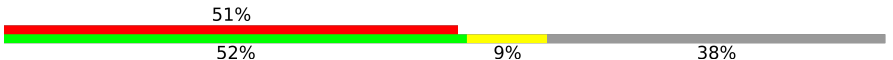


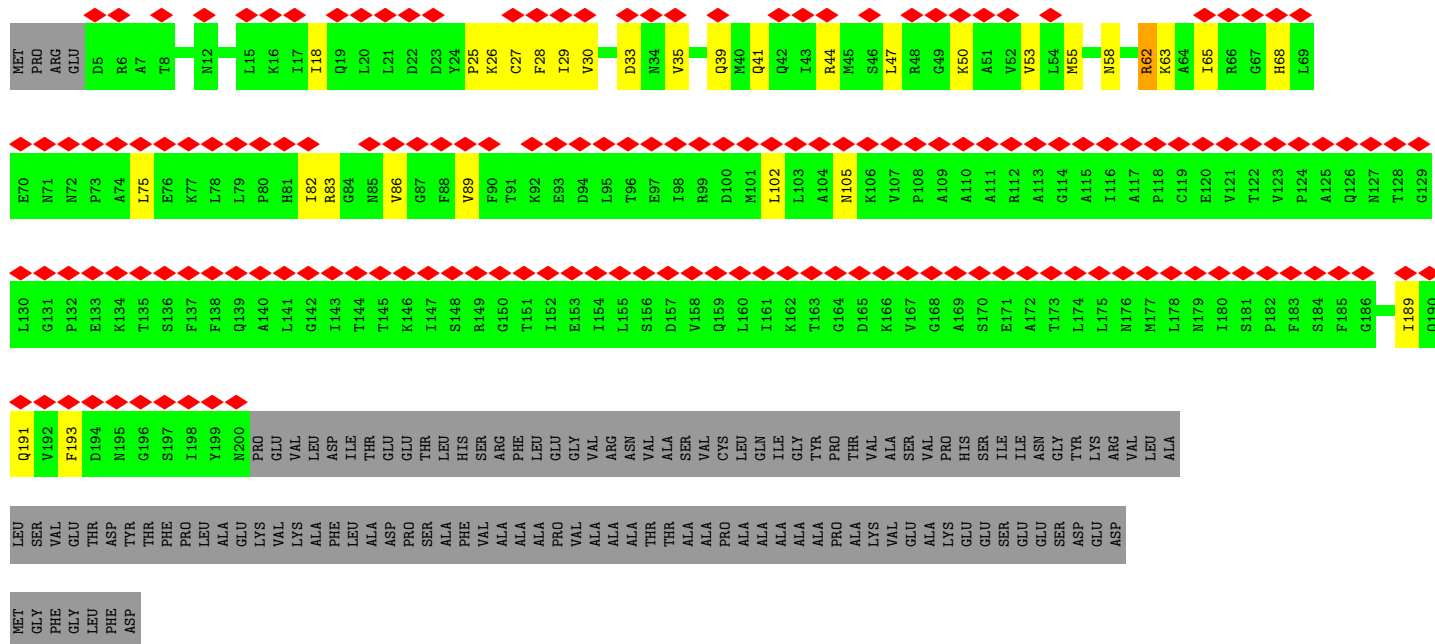
- Molecule 45: 60S ribosomal protein L28

Chain Lr:  87% 9%



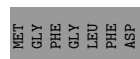
- Molecule 46: Large ribosomal subunit protein uL10

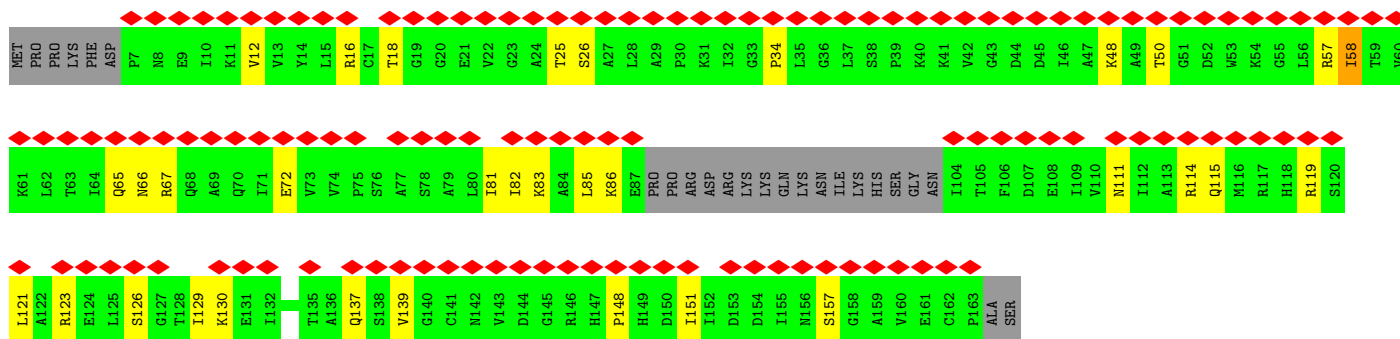
Chain Ls:  51% 52% 9% 38%



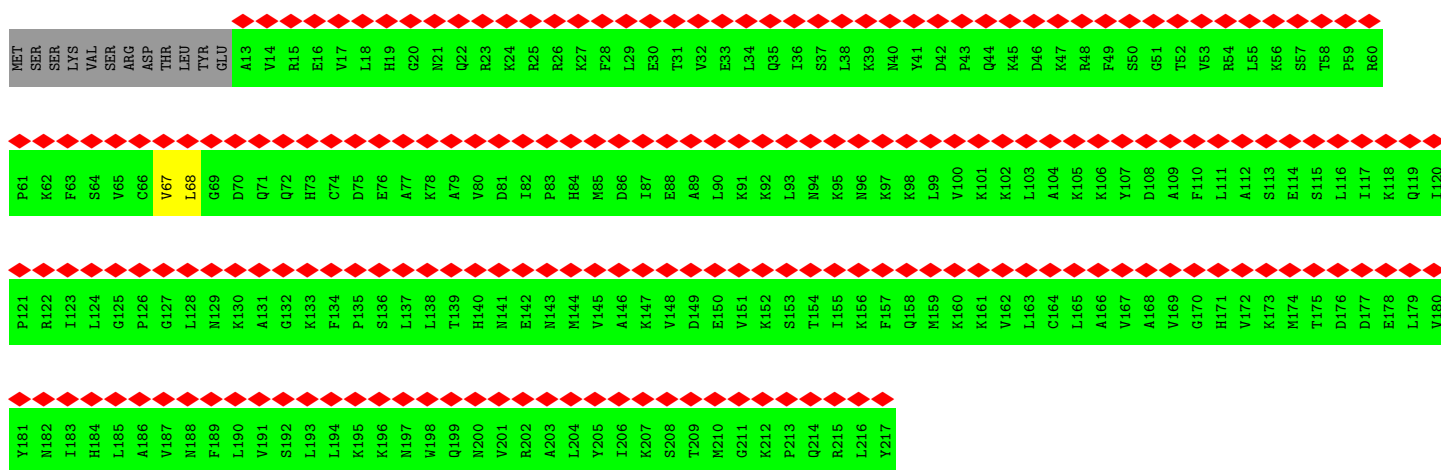
- Molecule 47: 60S ribosomal protein L12

Chain Lt:  65% 19% 15%

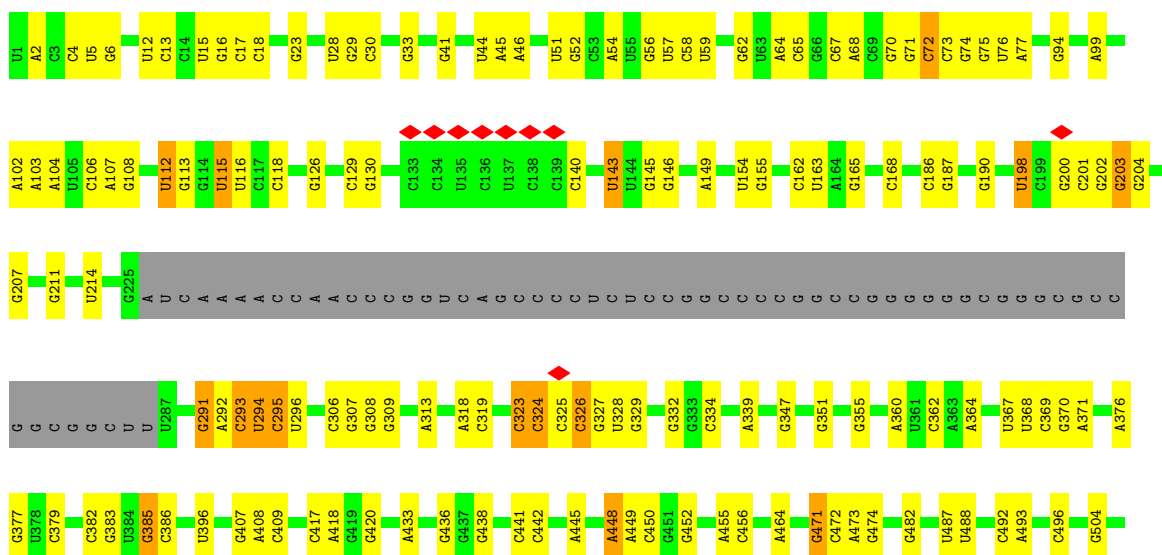


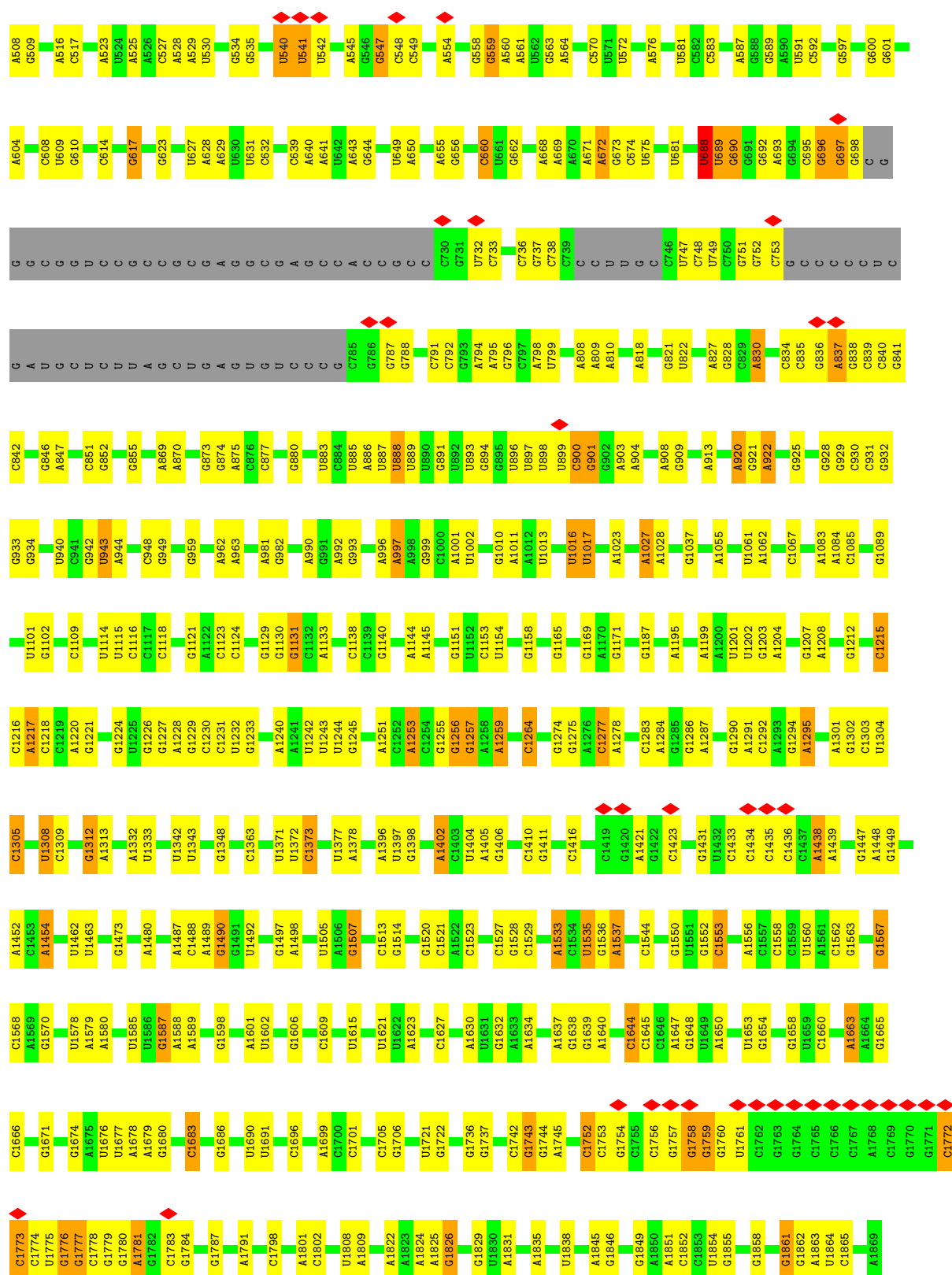


• Molecule 48: 60S ribosomal protein L10a



• Molecule 49: 18S rRNA

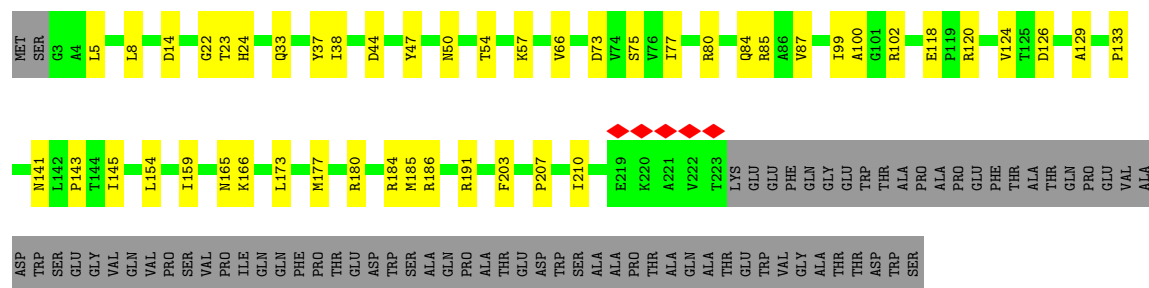




• Molecule 50: 40S ribosomal protein SA

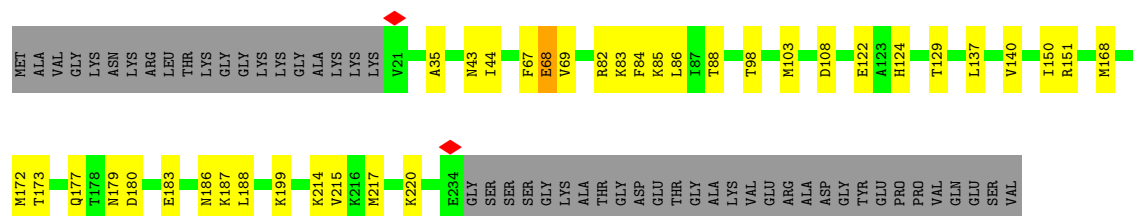
Chain SA:





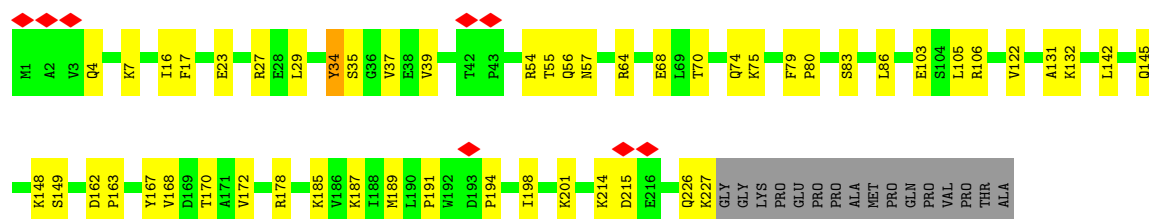
- Molecule 51: 40S ribosomal protein S3a

Chain SB: 67% 14% 19%



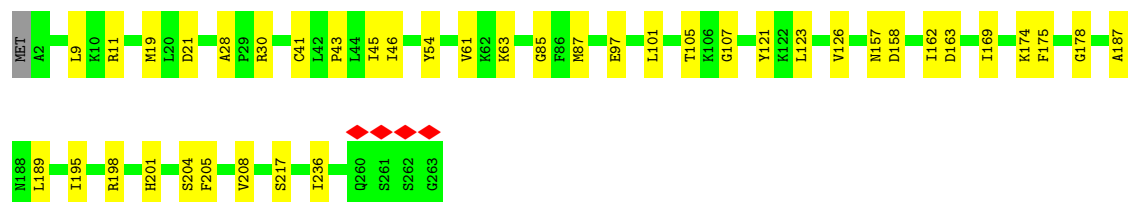
- Molecule 52: 40S ribosomal protein S3

Chain SD: 72% 21% 7%



- Molecule 53: 40S ribosomal protein S4, X isoform

Chain SE: 84% 15%



- Molecule 54: 40S ribosomal protein S5

Chain SF: 73% 16% 10%





- Molecule 55: 40S ribosomal protein S7

Chain SH: 71% 25% .



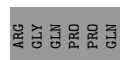
- Molecule 56: 40S ribosomal protein S8

Chain SI: 85% 14% .



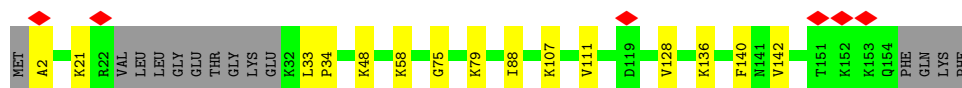
- Molecule 57: 40S ribosomal protein S10

Chain SK: 38% 18% 42% .



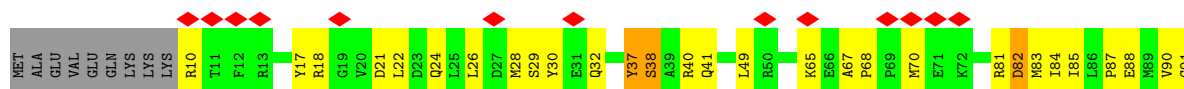
- Molecule 58: 40S ribosomal protein S11

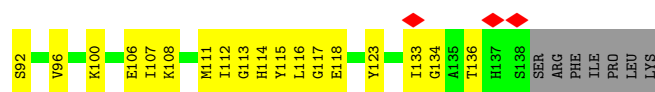
Chain SL: 82% 9% 9% .



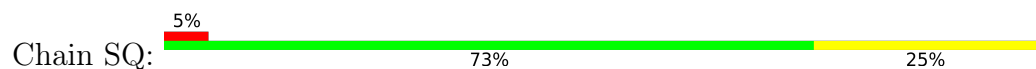
- Molecule 59: 40S ribosomal protein S15

Chain SP: 11% 57% 30% 11% .

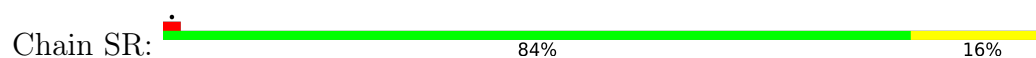




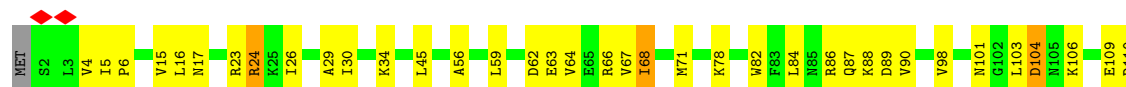
- Molecule 60: 40S ribosomal protein S16



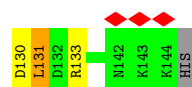
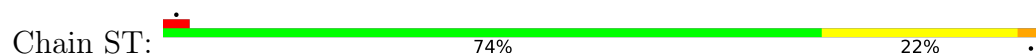
- Molecule 61: 40S ribosomal protein S17



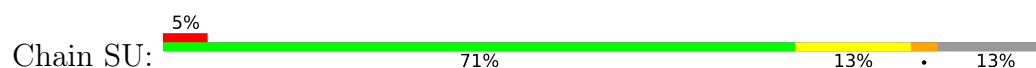
- Molecule 62: 40S ribosomal protein S18



- Molecule 63: 40S ribosomal protein S19

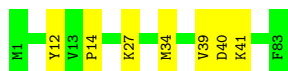


- Molecule 64: 40S ribosomal protein S20

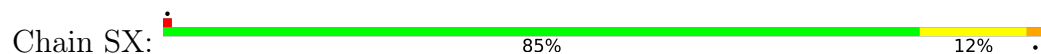




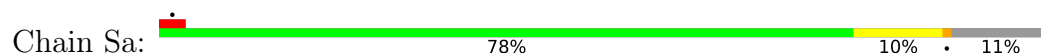
- Molecule 65: 40S ribosomal protein S21



- Molecule 66: 40S ribosomal protein S23



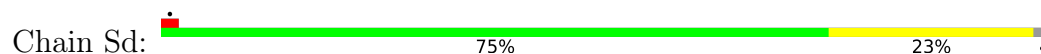
- Molecule 67: 40S ribosomal protein S26



- Molecule 68: 40S ribosomal protein S28

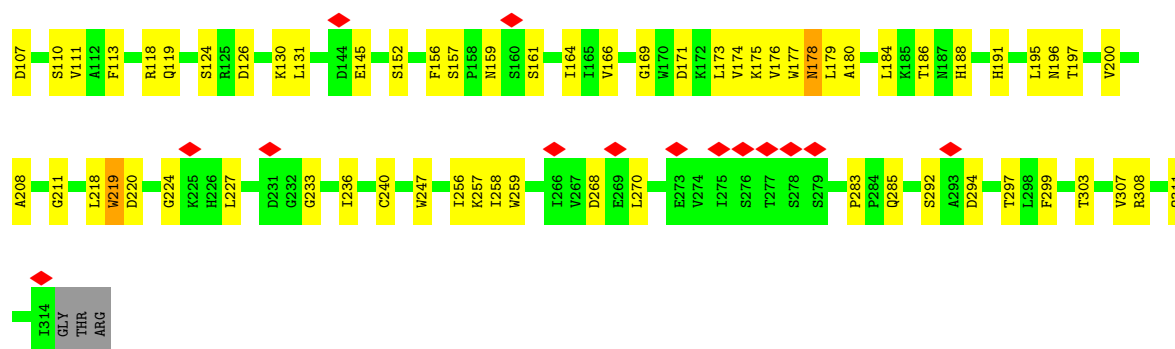


- Molecule 69: 40S ribosomal protein S29



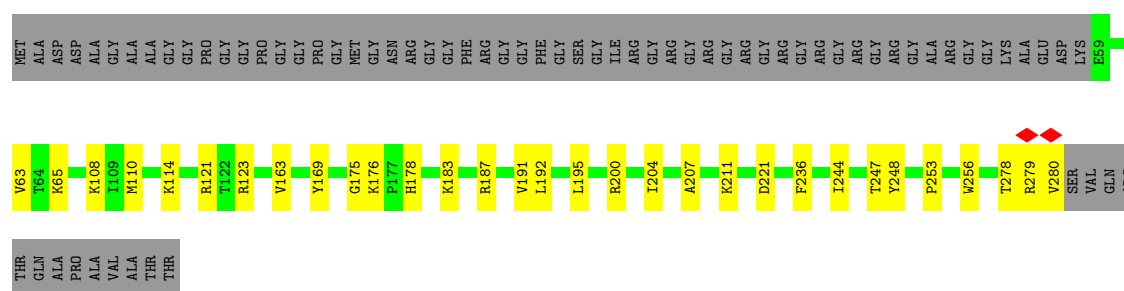
- Molecule 70: Receptor of activated protein C kinase 1





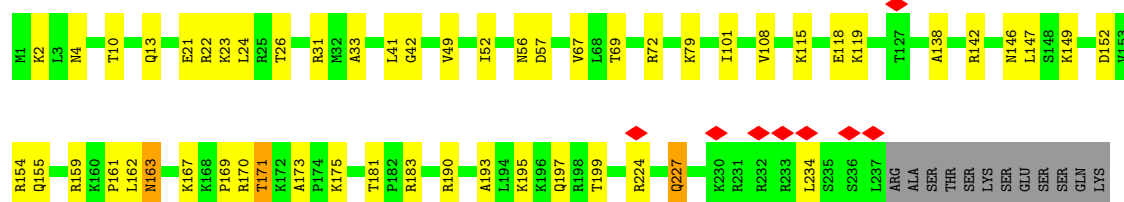
- Molecule 71: 40S ribosomal protein S2

Chain SC: 65% 11% 24%



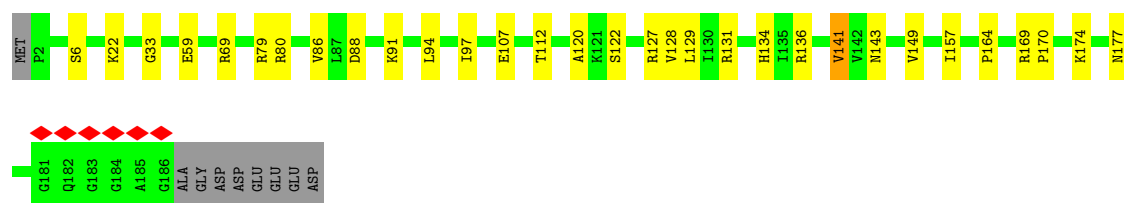
- Molecule 72: 40S ribosomal protein S6

Chain SG: 73% 20% 5%



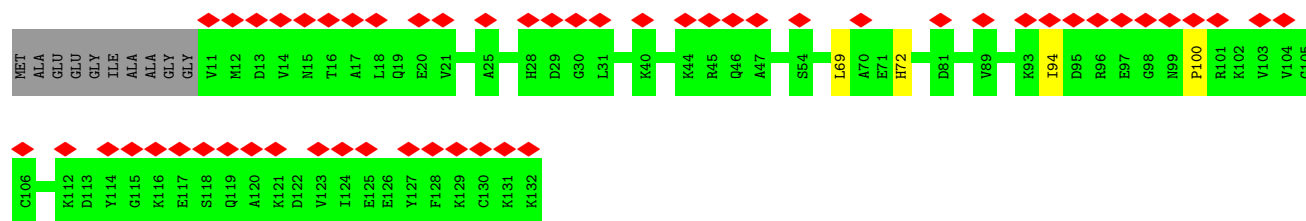
- Molecule 73: 40S ribosomal protein S9

Chain SJ: 79% 15% 5%



- Molecule 74: 40S ribosomal protein S12

Chain SM: 41% 89% 8%



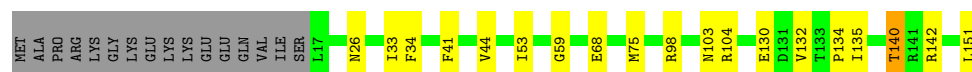
- Molecule 75: 40S ribosomal protein S13

Chain SN: 91% 7% ..



- Molecule 76: 40S ribosomal protein S14

Chain SO: 77% 12% 11%



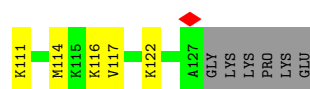
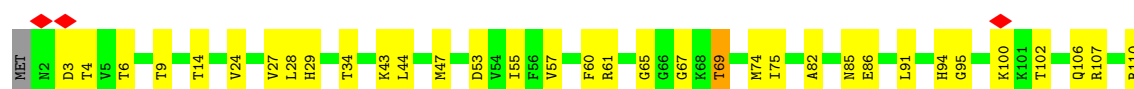
- Molecule 77: 40S ribosomal protein S15a

Chain SW: 85% 14%



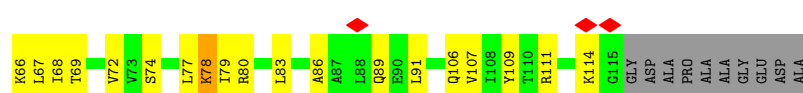
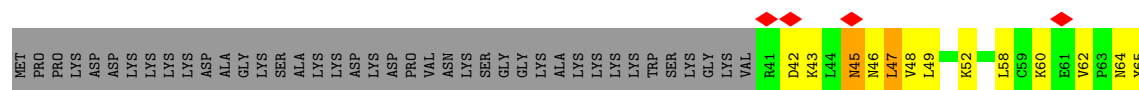
- Molecule 78: 40S ribosomal protein S24

Chain SY: 65% 29% 5%



- Molecule 79: 40S ribosomal protein S25

Chain SZ: 6% 34% 23% 40%



-

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	98884	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION; cryoSPARC	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	44	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	2.263	Depositor
Minimum map value	-0.635	Depositor
Average map value	0.007	Depositor
Map value standard deviation	0.078	Depositor
Recommended contour level	0.2	Depositor
Map size (Å)	458.01, 458.01, 458.01	wwPDB
Map dimensions	630, 630, 630	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.727, 0.727, 0.727	Depositor

5 Model quality

5.1 Standard geometry

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

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	L5	0.18	0/89548	0.36	0/139613
2	L7	0.15	0/2861	0.29	0/4459
3	L8	0.16	0/3701	0.31	0/5766
4	LA	0.34	0/1936	0.64	0/2596
5	LB	0.22	0/3306	0.57	0/4424
6	LC	0.23	0/2981	0.59	2/4002 (0.0%)
7	LD	0.27	0/2428	0.51	0/3252
8	LE	0.20	0/1808	0.53	0/2425
9	LF	0.22	0/1905	0.52	0/2539
10	LG	0.30	0/1960	0.62	2/2637 (0.1%)
11	LH	0.21	0/1537	0.51	0/2066
12	LI	0.24	0/1677	0.56	0/2237
13	LJ	0.21	0/1433	0.55	0/1915
14	LL	0.24	0/1732	0.57	0/2315
15	LM	0.21	0/1161	0.51	0/1554
16	LN	0.25	0/1746	0.60	0/2338
17	LO	0.21	0/1682	0.47	0/2250
18	LP	0.18	0/1268	0.44	0/1701
19	LQ	0.22	0/1537	0.52	0/2052
20	LR	0.19	0/1582	0.41	0/2091
21	LS	0.19	0/1493	0.44	0/2003
22	LT	0.27	0/1326	0.57	0/1770
23	LU	0.18	0/830	0.50	0/1114
24	LV	0.20	0/993	0.54	0/1332
25	LW	0.24	0/1030	0.50	0/1364
26	LX	0.19	0/1002	0.49	0/1345
27	LY	0.20	0/1123	0.52	0/1493
28	LZ	0.30	0/1130	0.59	0/1507
29	La	0.20	0/1191	0.50	0/1591
30	Lb	0.31	0/895	0.61	0/1182
31	Lc	0.17	0/774	0.45	0/1038
32	Ld	0.20	0/903	0.50	0/1216

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
33	Le	0.21	0/1071	0.55	0/1429
34	Lf	0.23	0/895	0.61	0/1198
35	Lg	0.17	0/916	0.42	0/1220
36	Lh	0.18	0/1023	0.45	0/1351
37	Li	0.22	0/843	0.51	0/1115
38	Lj	0.26	0/720	0.59	0/952
39	Lk	0.28	0/575	0.71	0/761
40	Ll	0.20	0/454	0.44	0/599
41	Lm	0.16	0/435	0.40	0/575
42	Ln	0.17	0/231	0.35	0/294
43	Lo	0.17	0/876	0.45	0/1156
44	Lp	0.22	0/718	0.53	0/953
45	Lr	0.21	0/1017	0.46	0/1364
46	Ls	0.22	0/1519	0.57	0/2052
47	Lt	0.26	0/1058	0.75	1/1430 (0.1%)
48	Lz	0.17	0/1017	0.50	0/1416
49	S2	0.18	0/41241	0.35	3/64258 (0.0%)
50	SA	0.21	0/1778	0.47	0/2416
51	SB	0.19	0/1765	0.51	0/2362
52	SD	0.22	0/1793	0.57	0/2414
53	SE	0.18	0/2118	0.48	0/2849
54	SF	0.21	0/1481	0.60	2/1988 (0.1%)
55	SH	0.24	0/1519	0.64	1/2033 (0.0%)
56	SI	0.23	0/1715	0.54	0/2287
57	SK	0.50	0/823	0.91	1/1111 (0.1%)
58	SL	0.22	0/1202	0.45	0/1606
59	SP	0.27	0/1082	0.77	1/1446 (0.1%)
60	SQ	0.25	0/1160	0.67	0/1553
61	SR	0.24	0/1105	0.61	0/1484
62	SS	0.32	0/1208	0.82	2/1618 (0.1%)
63	ST	0.26	0/1131	0.68	0/1515
64	SU	0.40	0/831	0.71	1/1115 (0.1%)
65	SV	0.16	0/643	0.44	0/860
66	SX	0.19	0/1116	0.46	0/1490
67	Sa	0.18	0/836	0.47	0/1121
68	Sc	0.23	0/508	0.59	0/680
69	Sd	0.59	0/470	0.74	0/623
70	Sg	0.24	0/2493	0.67	2/3394 (0.1%)
71	SC	0.21	0/1762	0.53	0/2381
72	SG	0.27	0/1946	0.66	1/2590 (0.0%)
73	SJ	0.18	0/1550	0.44	0/2069
74	SM	0.14	0/603	0.49	0/837
75	SN	0.17	0/1232	0.41	0/1656

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
76	SO	0.19	0/1023	0.48	0/1372
77	SW	0.19	0/1051	0.51	0/1406
78	SY	0.18	0/1044	0.48	0/1388
79	SZ	0.34	0/604	0.92	1/810 (0.1%)
80	Sb	0.18	0/665	0.47	0/891
81	Se	0.20	0/465	0.61	0/612
82	Sf	0.26	0/560	0.72	0/745
All	All	0.20	0/234370	0.44	20/344032 (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
5	LB	0	1
22	LT	0	2
28	LZ	0	1
29	La	0	1
34	Lf	0	1
61	SR	0	1
70	Sg	0	1
79	SZ	0	1
All	All	0	9

There are no bond length outliers.

The worst 5 of 20 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
49	S2	112	U	C2'-C3'-O3'	8.00	125.70	113.70
49	S2	291	G	C2'-C3'-O3'	7.46	124.89	113.70
6	LC	2	ALA	CA-C-N	6.09	132.66	121.70
6	LC	2	ALA	C-N-CA	6.09	132.66	121.70
57	SK	33	PRO	CA-N-CD	-5.89	103.75	112.00

There are no chirality outliers.

5 of 9 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
5	LB	303	ALA	Peptide
22	LT	25	VAL	Mainchain

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Mol	Chain	Res	Type	Group
22	LT	80	VAL	Peptide
28	LZ	124	THR	Peptide
29	La	22	ILE	Peptide

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	L5	80096	0	40358	502	0
2	L7	2561	0	1295	12	0
3	L8	3314	0	1683	25	0
4	LA	1898	0	1993	15	0
5	LB	3238	0	3376	34	0
6	LC	2927	0	3104	19	0
7	LD	2382	0	2410	20	0
8	LE	1774	0	1930	33	0
9	LF	1870	0	1996	16	0
10	LG	1927	0	2074	21	0
11	LH	1518	0	1601	16	0
12	LI	1639	0	1687	20	0
13	LJ	1410	0	1441	20	0
14	LL	1701	0	1818	12	0
15	LM	1138	0	1204	16	0
16	LN	1701	0	1749	23	0
17	LO	1650	0	1794	19	0
18	LP	1242	0	1269	5	0
19	LQ	1513	0	1628	15	0
20	LR	1566	0	1729	10	0
21	LS	1453	0	1490	12	0
22	LT	1298	0	1366	15	0
23	LU	816	0	842	9	0
24	LV	979	0	1039	13	0
25	LW	1015	0	1079	13	0
26	LX	985	0	1066	10	0
27	LY	1106	0	1192	12	0
28	LZ	1107	0	1182	13	0
29	La	1162	0	1213	9	0
30	Lb	882	0	959	10	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
31	Lc	764	0	804	14	0
32	Ld	888	0	930	4	0
33	Le	1053	0	1147	11	0
34	Lf	876	0	912	7	0
35	Lg	906	0	998	6	0
36	Lh	1015	0	1148	12	0
37	Li	832	0	917	11	0
38	Lj	705	0	736	20	0
39	Lk	569	0	637	7	0
40	Ll	444	0	483	5	0
41	Lm	429	0	465	5	0
42	Ln	230	0	276	2	0
43	Lo	862	0	929	8	0
44	Lp	708	0	756	9	0
45	Lr	1002	0	1068	3	0
46	Ls	1496	0	1540	21	0
47	Lt	1046	0	1076	17	0
48	Lz	1018	0	448	1	0
49	S2	36896	0	18603	264	0
50	SA	1741	0	1746	29	0
51	SB	1738	0	1809	23	0
52	SD	1765	0	1865	33	0
53	SE	2076	0	2177	26	0
54	SF	1461	0	1511	21	0
55	SH	1497	0	1590	30	0
56	SI	1686	0	1772	18	0
57	SK	799	0	823	22	0
58	SL	1182	0	1253	12	0
59	SP	1061	0	1107	30	0
60	SQ	1142	0	1213	24	0
61	SR	1090	0	1149	13	0
62	SS	1190	0	1249	33	0
63	ST	1112	0	1146	27	0
64	SU	821	0	883	14	0
65	SV	636	0	637	6	0
66	SX	1098	0	1167	11	0
67	Sa	821	0	870	9	0
68	Sc	506	0	536	10	0
69	Sd	459	0	451	10	0
70	Sg	2436	0	2393	55	0
71	SC	1725	0	1813	20	0
72	SG	1923	0	2088	38	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
73	SJ	1525	0	1640	19	0
74	SM	604	0	281	3	0
75	SN	1208	0	1294	8	0
76	SO	1010	0	1034	11	0
77	SW	1034	0	1080	11	0
78	SY	1027	0	1093	26	0
79	SZ	598	0	656	28	0
80	Sb	651	0	672	11	0
81	Se	459	0	503	6	0
82	Sf	548	0	551	13	0
83	L5	212	0	0	0	0
83	L7	2	0	0	0	0
83	L8	5	0	0	0	0
83	LA	1	0	0	0	0
83	LI	1	0	0	0	0
83	LP	1	0	0	0	0
83	LV	1	0	0	0	0
83	Le	2	0	0	0	0
83	S2	29	0	0	0	0
83	SG	1	0	0	0	0
84	Lg	1	0	0	0	0
84	Lj	1	0	0	0	0
84	Lm	1	0	0	0	0
84	Lo	1	0	0	0	0
84	Lp	1	0	0	0	0
84	Sa	1	0	0	0	0
84	Sd	1	0	0	0	0
84	Sf	1	0	0	0	0
All	All	218499	0	161492	1728	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 5.

The worst 5 of 1728 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)
60:SQ:28:GLY:O	60:SQ:65:GLY:HA2	1.12	1.30
60:SQ:28:GLY:O	60:SQ:65:GLY:CA	1.90	1.17
25:LW:4:GLU:O	25:LW:12:LYS:HA	1.48	1.13
1:L5:1176:C:N4	1:L5:1184:A:H61	1.53	1.06
49:S2:1756:C:H42	49:S2:1776:G:N2	1.53	1.06

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	
4	LA	246/257 (96%)	229 (93%)	17 (7%)	0	100	100
5	LB	400/403 (99%)	382 (96%)	16 (4%)	2 (0%)	24	27
6	LC	366/427 (86%)	345 (94%)	21 (6%)	0	100	100
7	LD	291/297 (98%)	281 (97%)	10 (3%)	0	100	100
8	LE	215/288 (75%)	195 (91%)	20 (9%)	0	100	100
9	LF	223/248 (90%)	216 (97%)	7 (3%)	0	100	100
10	LG	239/266 (90%)	226 (95%)	13 (5%)	0	100	100
11	LH	188/192 (98%)	172 (92%)	16 (8%)	0	100	100
12	LI	198/214 (92%)	192 (97%)	5 (2%)	1 (0%)	24	27
13	LJ	174/178 (98%)	166 (95%)	8 (5%)	0	100	100
14	LL	208/211 (99%)	196 (94%)	11 (5%)	1 (0%)	24	27
15	LM	137/215 (64%)	130 (95%)	7 (5%)	0	100	100
16	LN	201/204 (98%)	192 (96%)	7 (4%)	2 (1%)	12	11
17	LO	199/203 (98%)	196 (98%)	2 (1%)	1 (0%)	24	27
18	LP	151/184 (82%)	145 (96%)	6 (4%)	0	100	100
19	LQ	185/188 (98%)	179 (97%)	6 (3%)	0	100	100
20	LR	185/196 (94%)	182 (98%)	3 (2%)	0	100	100
21	LS	173/176 (98%)	166 (96%)	7 (4%)	0	100	100
22	LT	157/160 (98%)	153 (98%)	4 (2%)	0	100	100
23	LU	98/128 (77%)	95 (97%)	3 (3%)	0	100	100
24	LV	129/140 (92%)	124 (96%)	5 (4%)	0	100	100
25	LW	122/157 (78%)	116 (95%)	6 (5%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
26	LX	118/156 (76%)	116 (98%)	2 (2%)	0	100	100
27	LY	131/145 (90%)	129 (98%)	2 (2%)	0	100	100
28	LZ	133/136 (98%)	129 (97%)	4 (3%)	0	100	100
29	La	145/148 (98%)	138 (95%)	7 (5%)	0	100	100
30	Lb	105/159 (66%)	98 (93%)	7 (7%)	0	100	100
31	Lc	96/115 (84%)	93 (97%)	3 (3%)	0	100	100
32	Ld	105/125 (84%)	101 (96%)	4 (4%)	0	100	100
33	Le	126/135 (93%)	124 (98%)	2 (2%)	0	100	100
34	Lf	107/110 (97%)	99 (92%)	8 (8%)	0	100	100
35	Lg	112/117 (96%)	111 (99%)	1 (1%)	0	100	100
36	Lh	120/123 (98%)	119 (99%)	1 (1%)	0	100	100
37	Li	100/105 (95%)	99 (99%)	1 (1%)	0	100	100
38	Lj	84/97 (87%)	79 (94%)	5 (6%)	0	100	100
39	Lk	67/70 (96%)	63 (94%)	4 (6%)	0	100	100
40	Ll	48/51 (94%)	48 (100%)	0	0	100	100
41	Lm	50/128 (39%)	50 (100%)	0	0	100	100
42	Ln	22/25 (88%)	22 (100%)	0	0	100	100
43	Lo	103/106 (97%)	97 (94%)	6 (6%)	0	100	100
44	Lp	89/92 (97%)	85 (96%)	4 (4%)	0	100	100
45	Lr	123/137 (90%)	119 (97%)	4 (3%)	0	100	100
46	Ls	194/317 (61%)	179 (92%)	15 (8%)	0	100	100
47	Lt	137/165 (83%)	108 (79%)	29 (21%)	0	100	100
48	Lz	203/217 (94%)	184 (91%)	19 (9%)	0	100	100
50	SA	219/295 (74%)	210 (96%)	9 (4%)	0	100	100
51	SB	212/264 (80%)	204 (96%)	8 (4%)	0	100	100
52	SD	225/243 (93%)	204 (91%)	21 (9%)	0	100	100
53	SE	260/263 (99%)	247 (95%)	13 (5%)	0	100	100
54	SF	180/204 (88%)	169 (94%)	10 (6%)	1 (1%)	21	23
55	SH	182/194 (94%)	173 (95%)	9 (5%)	0	100	100
56	SI	204/208 (98%)	199 (98%)	5 (2%)	0	100	100
57	SK	93/165 (56%)	84 (90%)	8 (9%)	1 (1%)	11	10

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
58	SL	140/158 (89%)	133 (95%)	7 (5%)	0	100	100
59	SP	127/145 (88%)	120 (94%)	7 (6%)	0	100	100
60	SQ	142/146 (97%)	125 (88%)	17 (12%)	0	100	100
61	SR	133/135 (98%)	124 (93%)	9 (7%)	0	100	100
62	SS	142/152 (93%)	132 (93%)	10 (7%)	0	100	100
63	ST	141/145 (97%)	133 (94%)	8 (6%)	0	100	100
64	SU	102/119 (86%)	94 (92%)	8 (8%)	0	100	100
65	SV	81/83 (98%)	80 (99%)	1 (1%)	0	100	100
66	SX	139/143 (97%)	134 (96%)	4 (3%)	1 (1%)	18	19
67	Sa	100/115 (87%)	94 (94%)	6 (6%)	0	100	100
68	Sc	62/69 (90%)	60 (97%)	2 (3%)	0	100	100
69	Sd	53/56 (95%)	50 (94%)	3 (6%)	0	100	100
70	Sg	311/317 (98%)	271 (87%)	40 (13%)	0	100	100
71	SC	220/293 (75%)	211 (96%)	9 (4%)	0	100	100
72	SG	235/249 (94%)	223 (95%)	12 (5%)	0	100	100
73	SJ	183/194 (94%)	176 (96%)	6 (3%)	1 (0%)	24	27
74	SM	120/132 (91%)	114 (95%)	6 (5%)	0	100	100
75	SN	148/151 (98%)	146 (99%)	2 (1%)	0	100	100
76	SO	133/151 (88%)	127 (96%)	5 (4%)	1 (1%)	16	16
77	SW	127/130 (98%)	122 (96%)	5 (4%)	0	100	100
78	SY	124/133 (93%)	120 (97%)	4 (3%)	0	100	100
79	SZ	73/125 (58%)	62 (85%)	10 (14%)	1 (1%)	9	7
80	Sb	81/84 (96%)	76 (94%)	5 (6%)	0	100	100
81	Se	56/59 (95%)	50 (89%)	6 (11%)	0	100	100
82	Sf	65/156 (42%)	56 (86%)	9 (14%)	0	100	100
All	All	11816/13387 (88%)	11191 (95%)	612 (5%)	13 (0%)	49	57

5 of 13 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
12	LI	213	HIS
16	LN	124	ASP
57	SK	2	LEU

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Mol	Chain	Res	Type
79	SZ	45	ASN
5	LB	360	LEU

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
4	LA	190/199 (96%)	183 (96%)	7 (4%)	30	41
5	LB	348/349 (100%)	345 (99%)	3 (1%)	70	84
6	LC	306/348 (88%)	298 (97%)	8 (3%)	40	55
7	LD	246/250 (98%)	243 (99%)	3 (1%)	63	78
8	LE	195/252 (77%)	190 (97%)	5 (3%)	40	55
9	LF	194/215 (90%)	191 (98%)	3 (2%)	57	73
10	LG	203/223 (91%)	192 (95%)	11 (5%)	20	25
11	LH	169/171 (99%)	166 (98%)	3 (2%)	51	68
12	LI	172/181 (95%)	171 (99%)	1 (1%)	78	89
13	LJ	148/149 (99%)	142 (96%)	6 (4%)	27	37
14	LL	176/177 (99%)	172 (98%)	4 (2%)	44	59
15	LM	118/161 (73%)	116 (98%)	2 (2%)	53	69
16	LN	171/172 (99%)	167 (98%)	4 (2%)	44	59
17	LO	173/174 (99%)	167 (96%)	6 (4%)	32	43
18	LP	134/163 (82%)	134 (100%)	0	100	100
19	LQ	164/165 (99%)	162 (99%)	2 (1%)	63	78
20	LR	166/175 (95%)	166 (100%)	0	100	100
21	LS	156/157 (99%)	152 (97%)	4 (3%)	40	55
22	LT	139/140 (99%)	136 (98%)	3 (2%)	45	61
23	LU	90/115 (78%)	89 (99%)	1 (1%)	65	79
24	LV	101/107 (94%)	100 (99%)	1 (1%)	68	81
25	LW	103/126 (82%)	101 (98%)	2 (2%)	50	66

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
26	LX	108/133 (81%)	105 (97%)	3 (3%)	38	52
27	LY	123/135 (91%)	119 (97%)	4 (3%)	33	45
28	LZ	117/118 (99%)	116 (99%)	1 (1%)	70	84
29	La	120/121 (99%)	119 (99%)	1 (1%)	73	85
30	Lb	89/126 (71%)	86 (97%)	3 (3%)	32	44
31	Lc	83/97 (86%)	81 (98%)	2 (2%)	43	58
32	Ld	98/110 (89%)	98 (100%)	0	100	100
33	Le	114/121 (94%)	111 (97%)	3 (3%)	40	55
34	Lf	88/89 (99%)	86 (98%)	2 (2%)	44	59
35	Lg	98/100 (98%)	97 (99%)	1 (1%)	68	81
36	Lh	109/110 (99%)	107 (98%)	2 (2%)	51	68
37	Li	86/89 (97%)	84 (98%)	2 (2%)	44	59
38	Lj	73/80 (91%)	71 (97%)	2 (3%)	39	53
39	Lk	64/65 (98%)	62 (97%)	2 (3%)	35	48
40	Ll	47/48 (98%)	47 (100%)	0	100	100
41	Lm	48/116 (41%)	46 (96%)	2 (4%)	26	36
42	Ln	23/24 (96%)	22 (96%)	1 (4%)	26	35
43	Lo	93/94 (99%)	90 (97%)	3 (3%)	34	47
44	Lp	74/75 (99%)	73 (99%)	1 (1%)	59	75
45	Lr	109/121 (90%)	108 (99%)	1 (1%)	70	84
46	Ls	162/258 (63%)	160 (99%)	2 (1%)	63	78
47	Lt	112/137 (82%)	108 (96%)	4 (4%)	31	42
50	SA	183/243 (75%)	179 (98%)	4 (2%)	45	61
51	SB	195/231 (84%)	191 (98%)	4 (2%)	47	63
52	SD	190/202 (94%)	184 (97%)	6 (3%)	34	47
53	SE	224/225 (100%)	221 (99%)	3 (1%)	61	76
54	SF	156/170 (92%)	151 (97%)	5 (3%)	34	47
55	SH	166/174 (95%)	162 (98%)	4 (2%)	43	58
56	SI	178/180 (99%)	175 (98%)	3 (2%)	53	69
57	SK	86/136 (63%)	78 (91%)	8 (9%)	8	9
58	SL	130/142 (92%)	130 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
59	SP	115/130 (88%)	108 (94%)	7 (6%)	17	20
60	SQ	119/121 (98%)	114 (96%)	5 (4%)	26	36
61	SR	122/122 (100%)	120 (98%)	2 (2%)	55	71
62	SS	125/132 (95%)	119 (95%)	6 (5%)	23	30
63	ST	113/115 (98%)	108 (96%)	5 (4%)	25	34
64	SU	94/107 (88%)	88 (94%)	6 (6%)	16	19
65	SV	67/67 (100%)	66 (98%)	1 (2%)	57	73
66	SX	113/115 (98%)	109 (96%)	4 (4%)	32	43
67	Sa	89/98 (91%)	87 (98%)	2 (2%)	45	61
68	Sc	57/62 (92%)	53 (93%)	4 (7%)	14	16
69	Sd	48/49 (98%)	44 (92%)	4 (8%)	10	11
70	Sg	272/275 (99%)	257 (94%)	15 (6%)	19	24
71	SC	188/225 (84%)	186 (99%)	2 (1%)	65	79
72	SG	207/218 (95%)	202 (98%)	5 (2%)	43	58
73	SJ	161/168 (96%)	157 (98%)	4 (2%)	42	56
75	SN	130/131 (99%)	129 (99%)	1 (1%)	73	85
76	SO	105/119 (88%)	101 (96%)	4 (4%)	29	40
77	SW	112/113 (99%)	111 (99%)	1 (1%)	70	84
78	SY	109/115 (95%)	105 (96%)	4 (4%)	30	41
79	SZ	66/103 (64%)	62 (94%)	4 (6%)	17	20
80	Sb	75/76 (99%)	73 (97%)	2 (3%)	39	53
81	Se	47/48 (98%)	46 (98%)	1 (2%)	47	63
82	Sf	60/140 (43%)	58 (97%)	2 (3%)	33	45
All	All	10002/11088 (90%)	9753 (98%)	249 (2%)	42	56

5 of 249 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
46	Ls	55	MET
72	SG	10	THR
55	SH	24	SER
71	SC	63	VAL
78	SY	14	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 101 such sidechains are listed below:

Mol	Chain	Res	Type
46	Ls	179	ASN
59	SP	35	GLN
80	Sb	84	HIS
50	SA	141	ASN
55	SH	163	GLN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	L5	3703/5070 (73%)	776 (20%)	18 (0%)
2	L7	119/121 (98%)	9 (7%)	0
3	L8	155/157 (98%)	23 (14%)	0
49	S2	1715/1869 (91%)	372 (21%)	9 (0%)
All	All	5692/7217 (78%)	1180 (20%)	27 (0%)

5 of 1180 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	L5	15	A
1	L5	30	C
1	L5	39	A
1	L5	42	A
1	L5	48	G

5 of 27 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	L5	3876	A
1	L5	4913	G
49	S2	688	U
1	L5	4699	U
49	S2	112	U

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 263 ligands modelled in this entry, 263 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

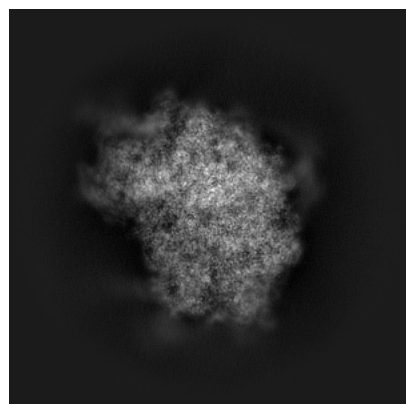
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-39456. These allow visual inspection of the internal detail of the map and identification of artifacts.

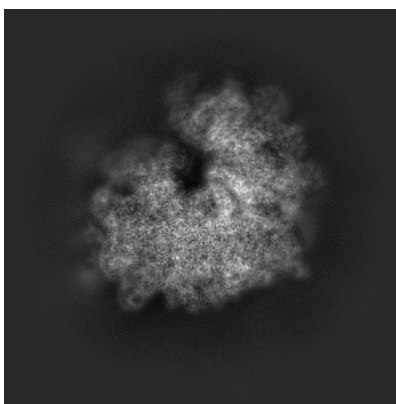
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

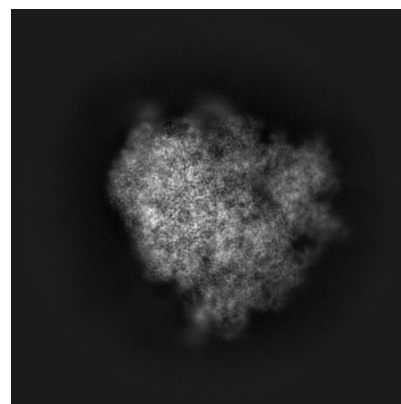
6.1.1 Primary map



X

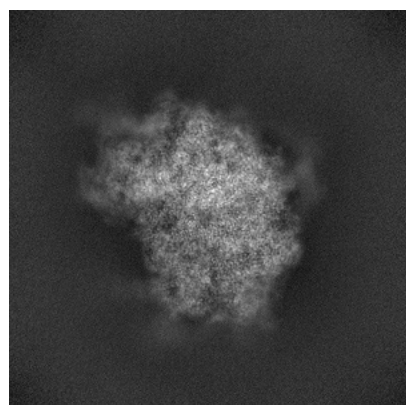


Y

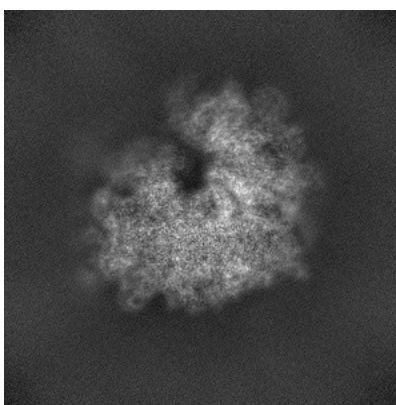


Z

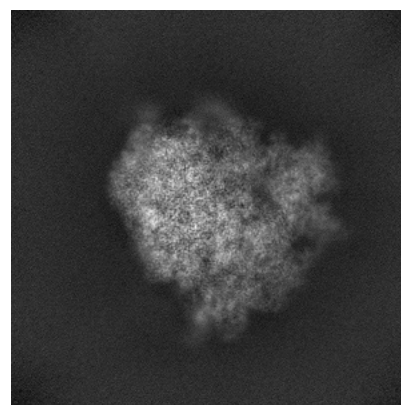
6.1.2 Raw map



X



Y

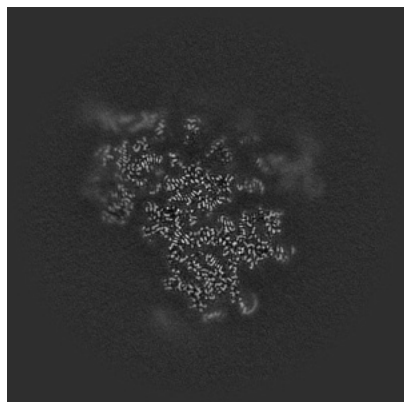


Z

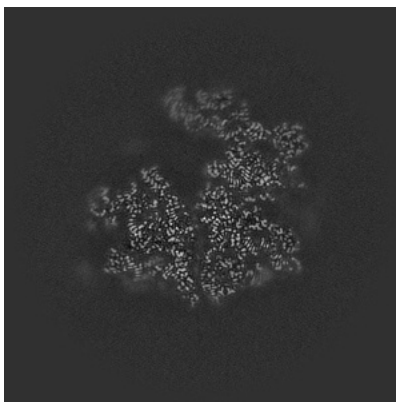
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

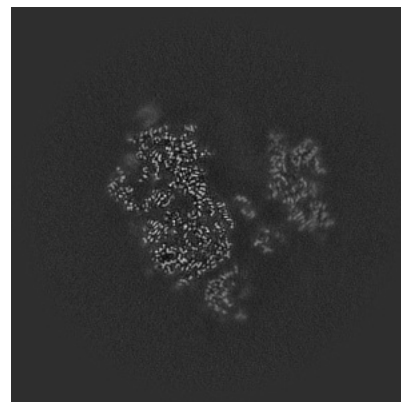
6.2.1 Primary map



X Index: 315

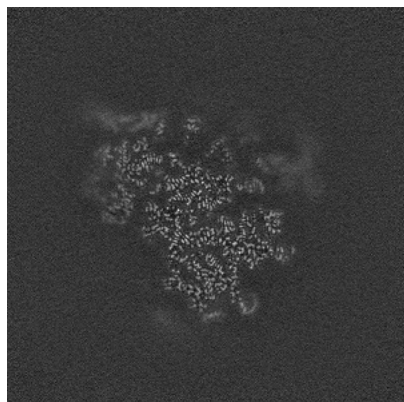


Y Index: 315

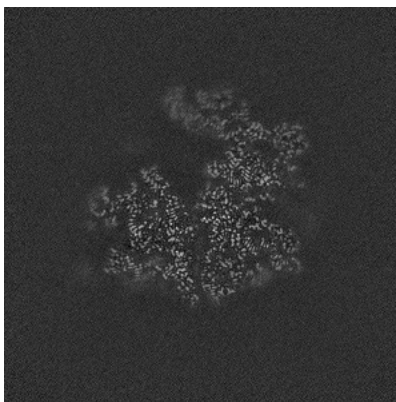


Z Index: 315

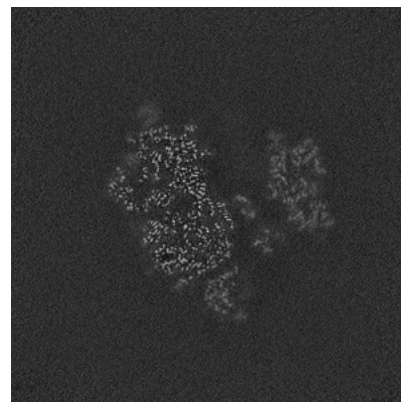
6.2.2 Raw map



X Index: 315



Y Index: 315

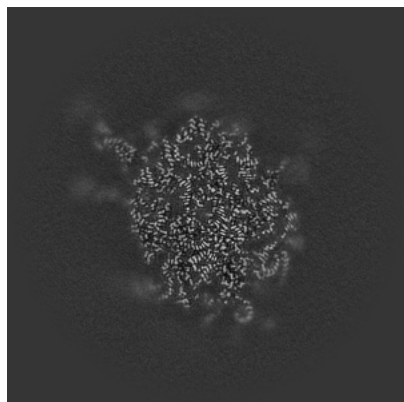


Z Index: 315

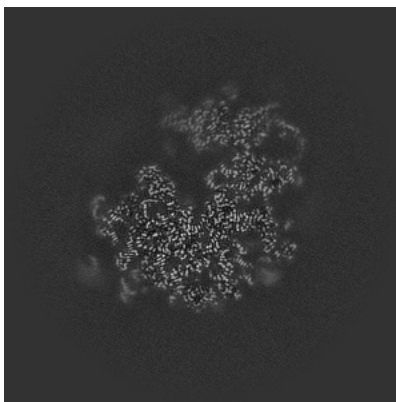
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

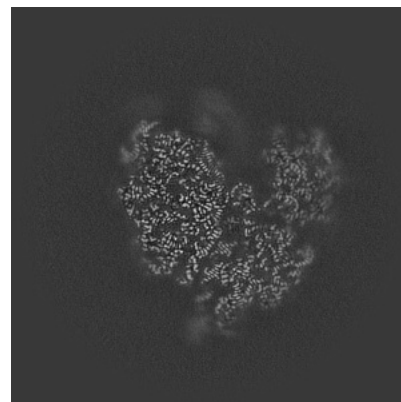
6.3.1 Primary map



X Index: 285

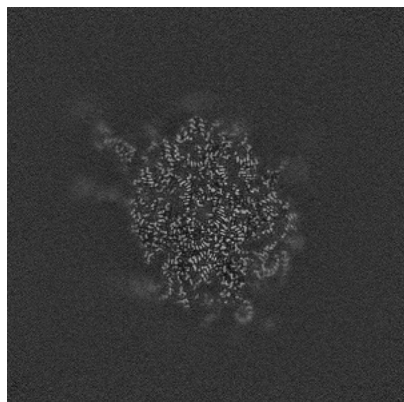


Y Index: 333

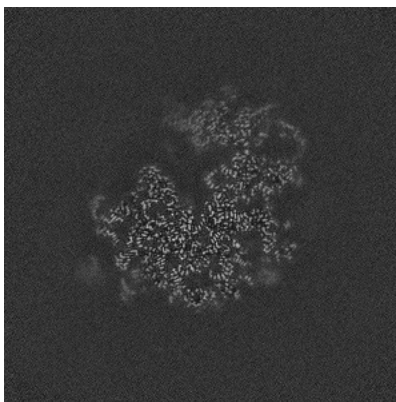


Z Index: 350

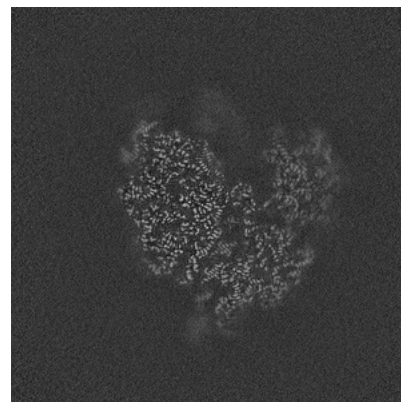
6.3.2 Raw map



X Index: 285



Y Index: 332

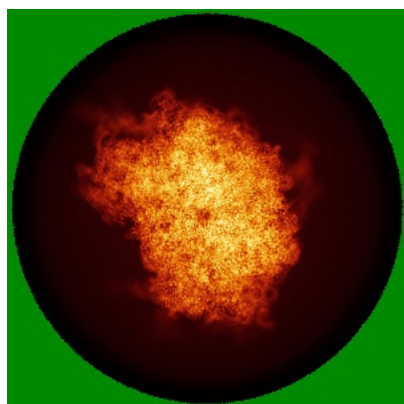


Z Index: 350

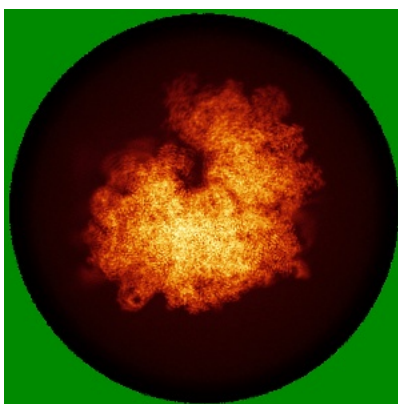
The images above show the largest variance slices of the map in three orthogonal directions.

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

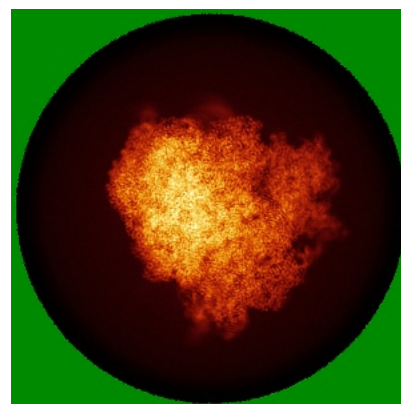
6.4.1 Primary map



X

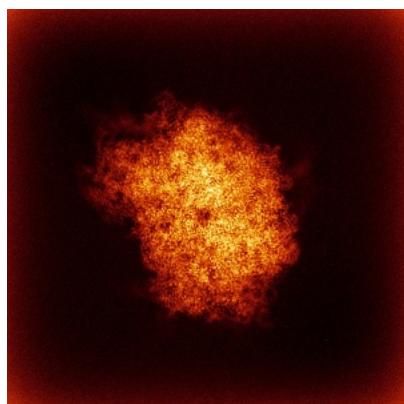


Y

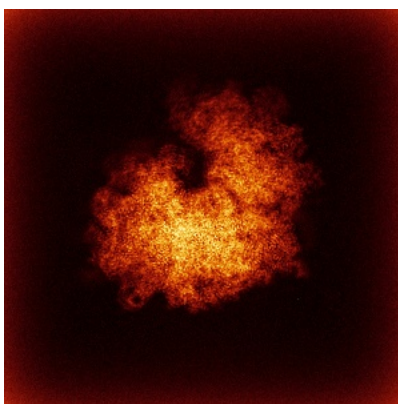


Z

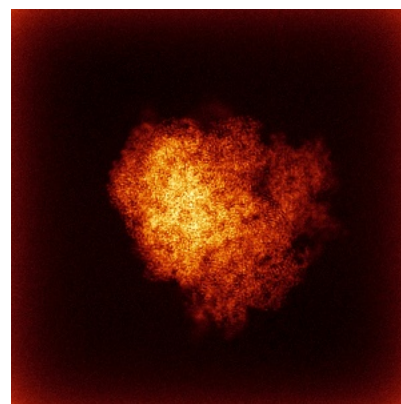
6.4.2 Raw map



X



Y

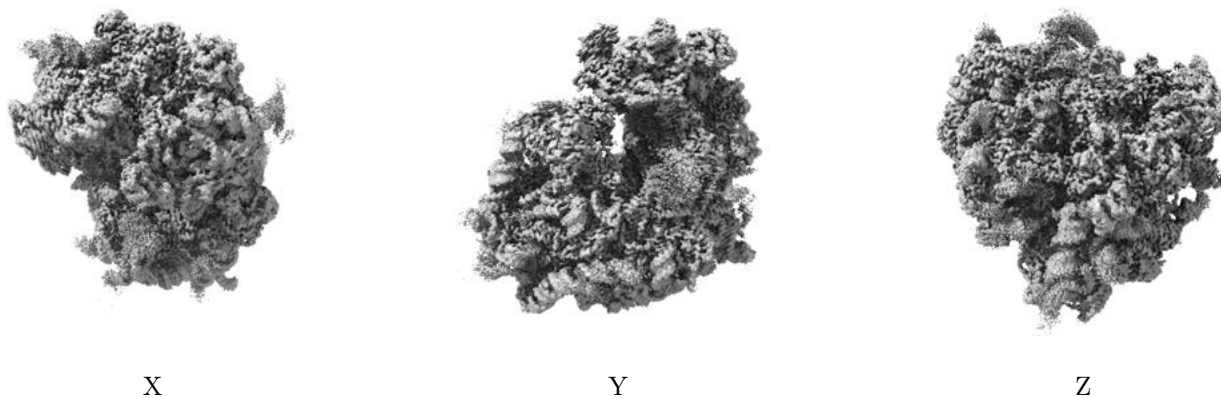


Z

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.

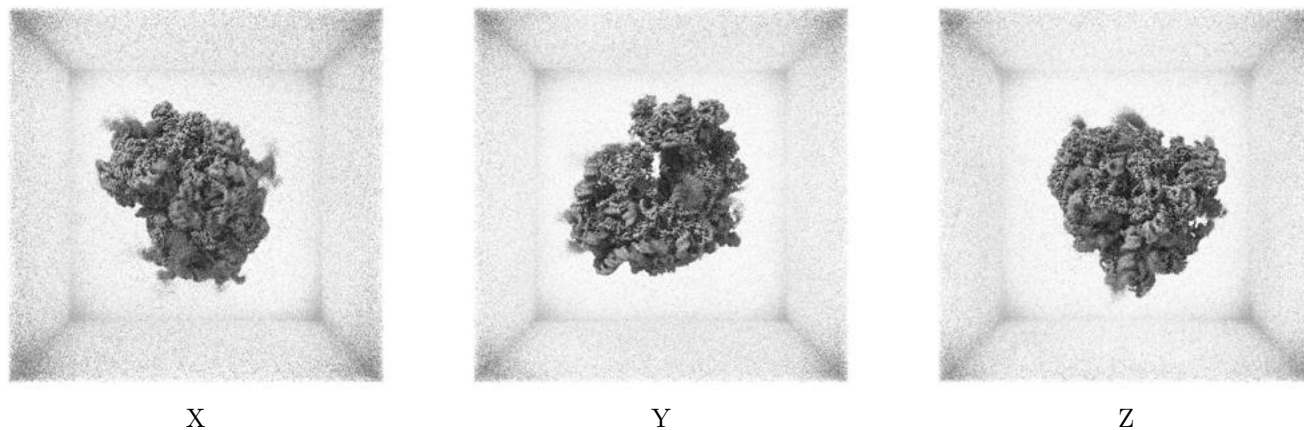
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.2. 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



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.

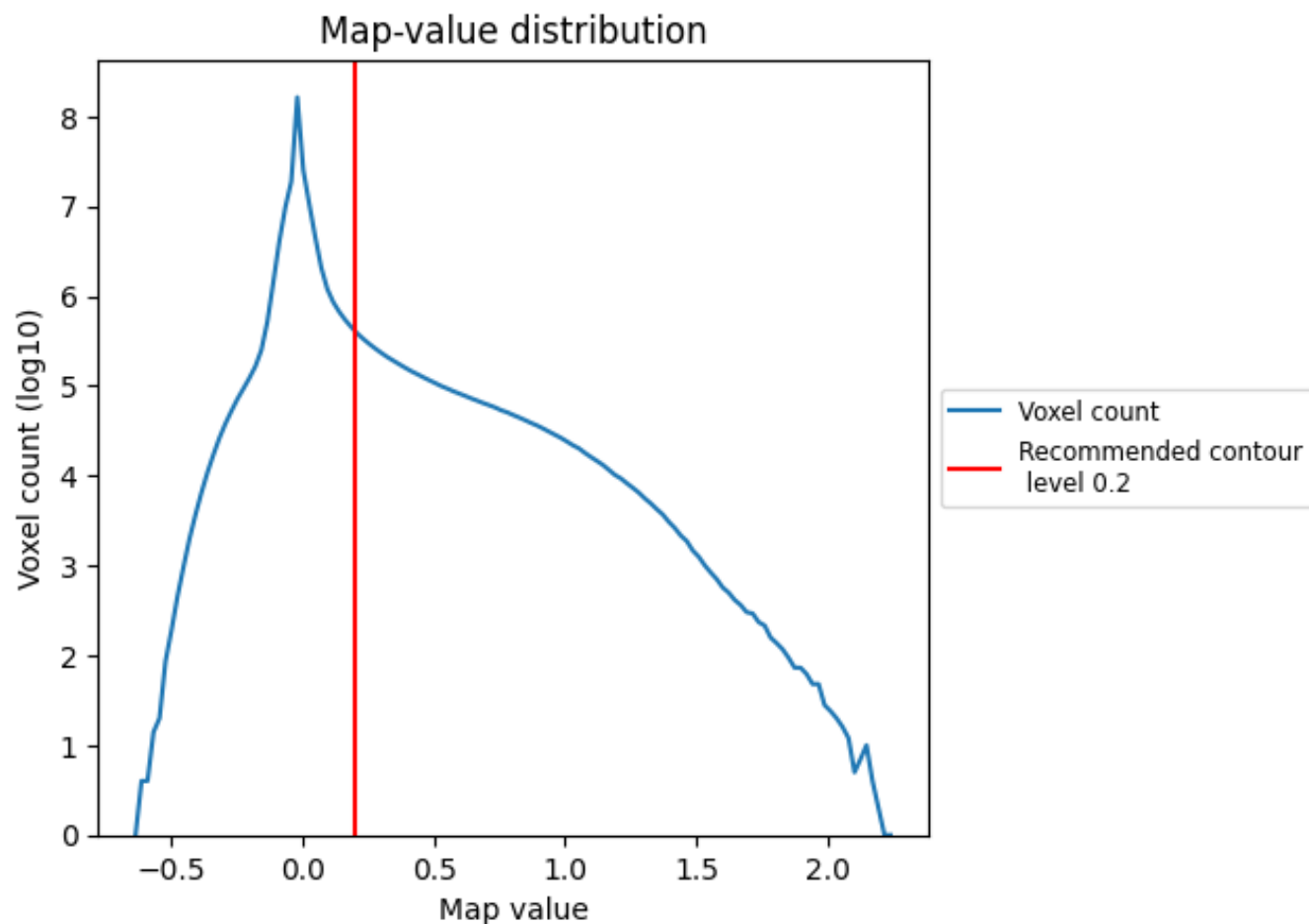
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

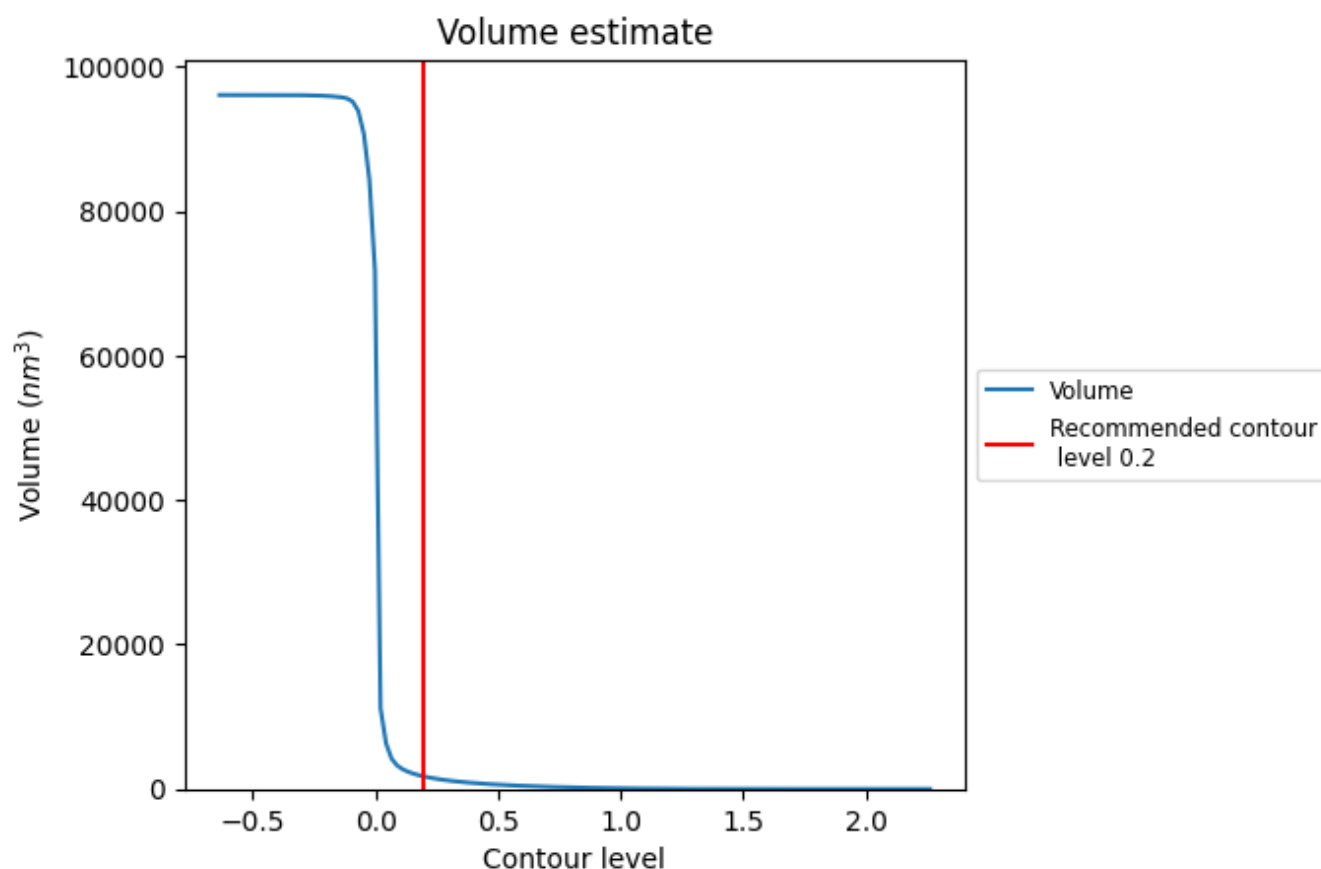
This section contains the results of statistical analysis of the map.

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.

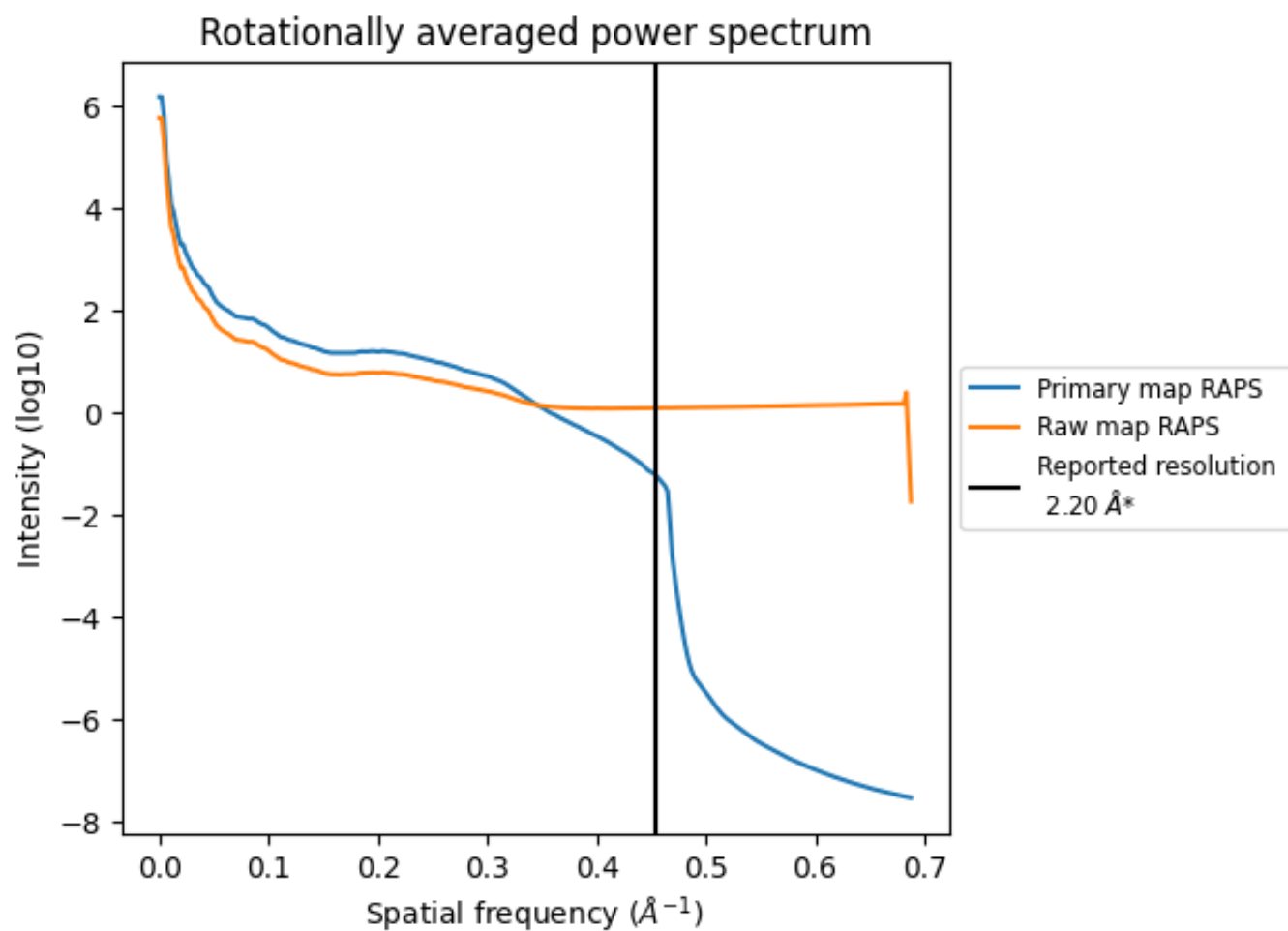
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1722 nm^3 ; this corresponds to an approximate mass of 1555 kDa.

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

7.3 Rotationally averaged power spectrum ⓘ

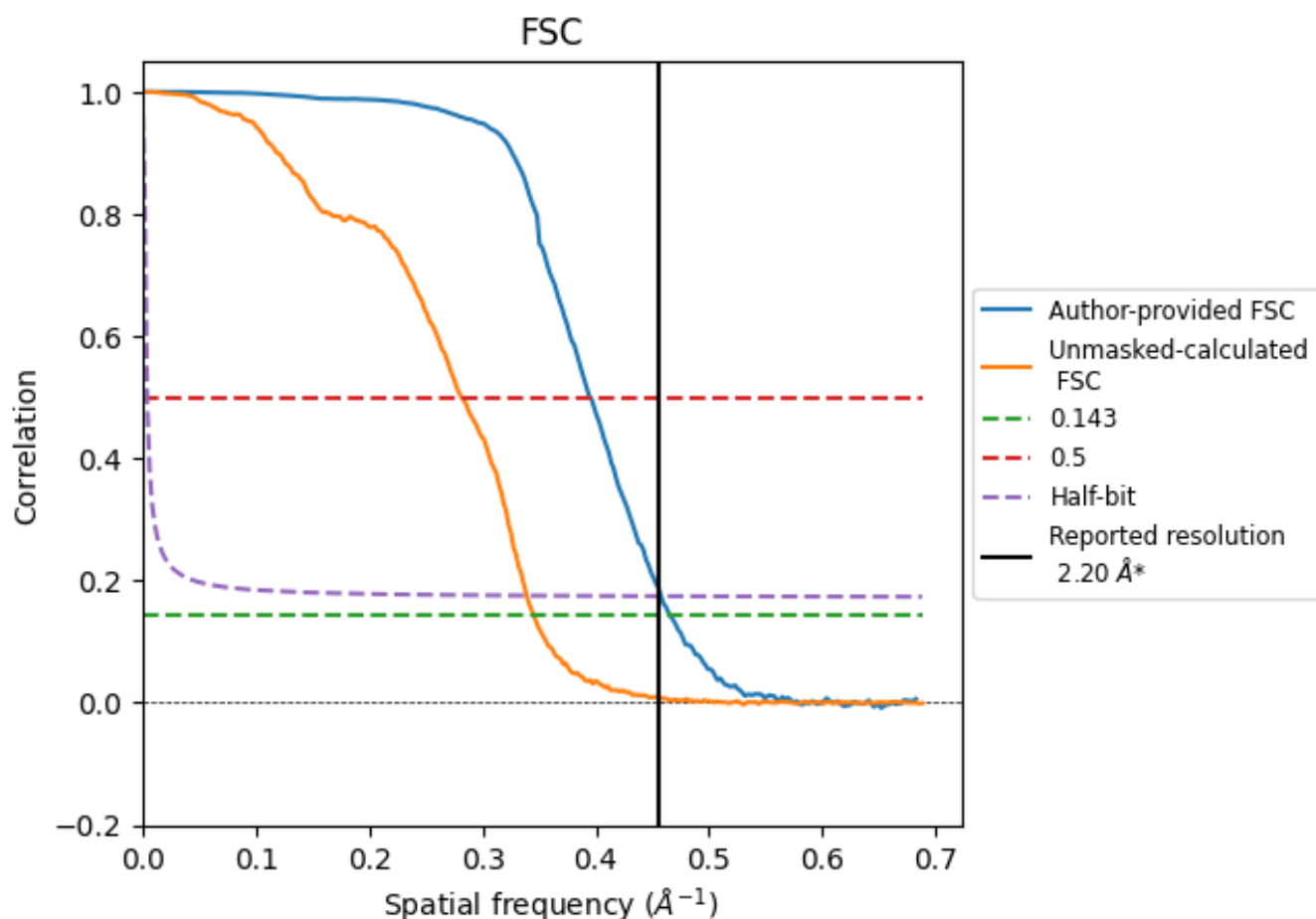


*Reported resolution corresponds to spatial frequency of 0.455 $\text{\AA}^{-1}$

8 Fourier-Shell correlation [i](#)

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

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.455 $\text{\AA}^{-1}$

8.2 Resolution estimates

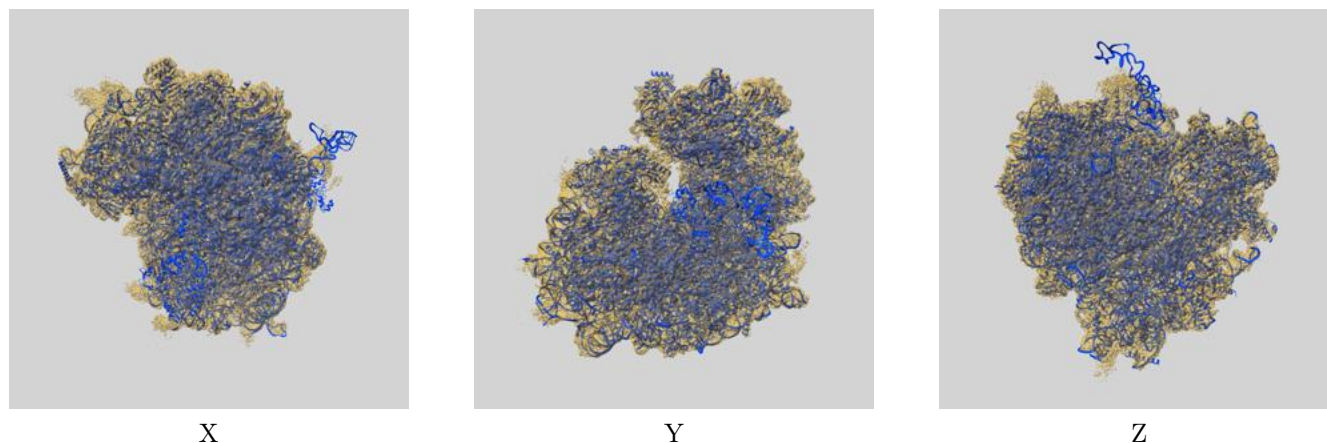
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.20	-	-
Author-provided FSC curve	2.15	2.53	2.19
Unmasked-calculated*	2.90	3.55	2.95

*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 2.90 differs from the reported value 2.2 by more than 10 %

9 Map-model fit [i](#)

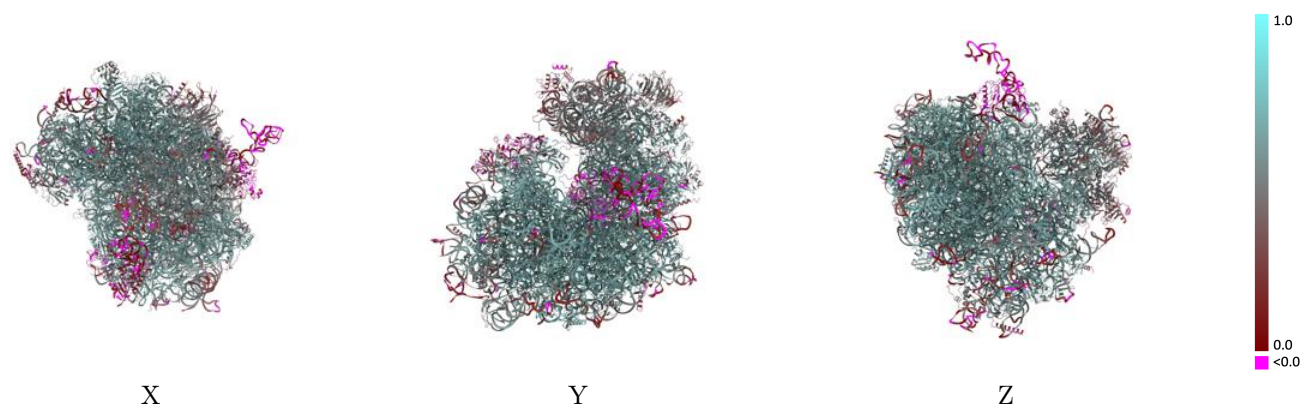
This section contains information regarding the fit between EMDB map EMD-39456 and PDB model 8YOP. Per-residue inclusion information can be found in section [3](#) on page [21](#).

9.1 Map-model overlay [i](#)



The images above show the 3D surface view of the map at the recommended contour level 0.2 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](#)

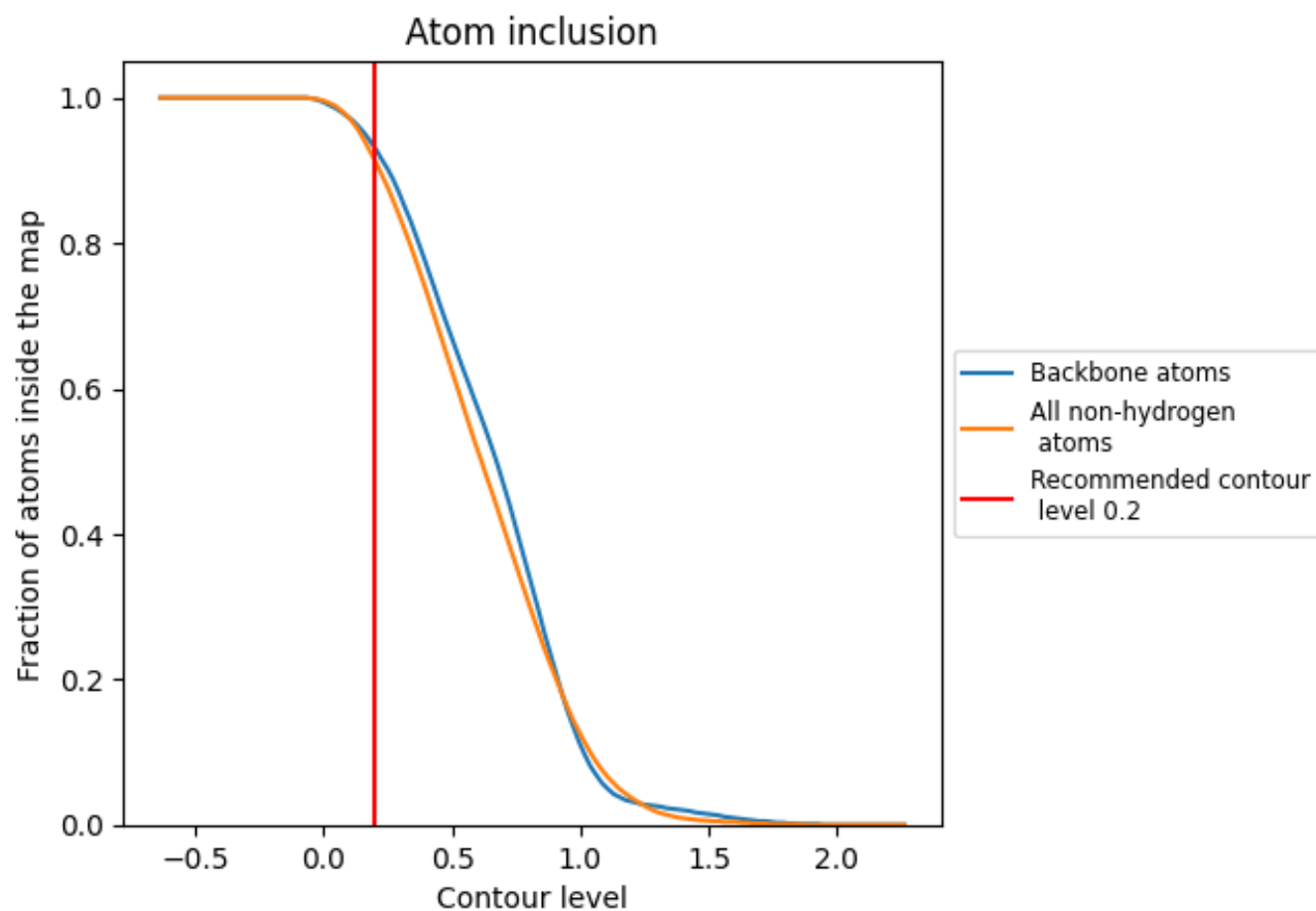


The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

This section was not generated.

9.4 Atom inclusion [i](#)



At the recommended contour level, 93% 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 (0.2) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9140	 0.5660
L5	 0.9350	 0.5740
L7	 0.9960	 0.6360
L8	 0.9650	 0.6100
LA	 0.9780	 0.6690
LB	 0.9520	 0.6420
LC	 0.9480	 0.6320
LD	 0.9490	 0.6050
LE	 0.9340	 0.5950
LF	 0.9610	 0.6450
LG	 0.8880	 0.5720
LH	 0.9480	 0.6230
LI	 0.9530	 0.6370
LJ	 0.8720	 0.5430
LL	 0.9200	 0.6070
LM	 0.9440	 0.6200
LN	 0.9860	 0.6650
LO	 0.9610	 0.6520
LP	 0.9680	 0.6610
LQ	 0.9680	 0.6610
LR	 0.9150	 0.6010
LS	 0.9780	 0.6600
LT	 0.9420	 0.6250
LU	 0.9100	 0.5630
LV	 0.9660	 0.6590
LW	 0.6190	 0.4270
LX	 0.9440	 0.6310
LY	 0.9500	 0.6310
LZ	 0.9560	 0.6260
La	 0.9740	 0.6630
Lb	 0.8820	 0.5740
Lc	 0.9370	 0.6220
Ld	 0.9440	 0.6230
Le	 0.9640	 0.6610
Lf	 0.9680	 0.6620



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Chain	Atom inclusion	Q-score
Lg	 0.9380	 0.6320
Lh	 0.9380	 0.6260
Li	 0.9390	 0.6210
Lj	 0.9750	 0.6490
Lk	 0.8810	 0.5680
Ll	 0.9620	 0.6400
Lm	 0.9420	 0.6370
Ln	 0.8570	 0.6530
Lo	 0.9340	 0.6300
Lp	 0.9460	 0.6430
Lr	 0.9620	 0.6390
Ls	 0.1760	 0.0840
Lt	 0.1000	 0.0250
Lz	 0.0040	 -0.0120
S2	 0.9550	 0.5500
SA	 0.9280	 0.5780
SB	 0.9290	 0.6020
SC	 0.9400	 0.6090
SD	 0.8050	 0.4780
SE	 0.9380	 0.5960
SF	 0.8580	 0.5080
SG	 0.8530	 0.4970
SH	 0.8710	 0.5290
SI	 0.9230	 0.5980
SJ	 0.9180	 0.5780
SK	 0.8200	 0.4290
SL	 0.9260	 0.6230
SM	 0.5180	 0.2120
SN	 0.9480	 0.6280
SO	 0.9450	 0.6100
SP	 0.7170	 0.3660
SQ	 0.8370	 0.4930
SR	 0.8590	 0.5330
SS	 0.7790	 0.4120
ST	 0.8420	 0.4540
SU	 0.7800	 0.4550
SV	 0.9490	 0.5930
SW	 0.9640	 0.6360
SX	 0.9450	 0.6200
SY	 0.8950	 0.5430
SZ	 0.7290	 0.3690
Sa	 0.9200	 0.6100

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Chain	Atom inclusion	Q-score
Sb	 0.9200	 0.5900
Sc	 0.8190	 0.5260
Sd	 0.8850	 0.5320
Se	 0.7630	 0.4980
Sf	 0.5260	 0.2020
Sg	 0.7620	 0.3980