Full wwPDB EM Validation Report ⓘ

Dec 11, 2022 – 09:30 pm GMT

PDB ID	:	6T7T
EMDB ID	:	EMD-10397
Title	:	Structure of yeast 80S ribosome stalled on poly(A) tract.
Authors	:	Tesina, P.; Buschauer, R.; Cheng, J.; Berninghausen, O.; Becker, R.; Beckmann, R.
Deposited on	:	2019-10-23
Resolution	:	3.10 Å(reported)

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

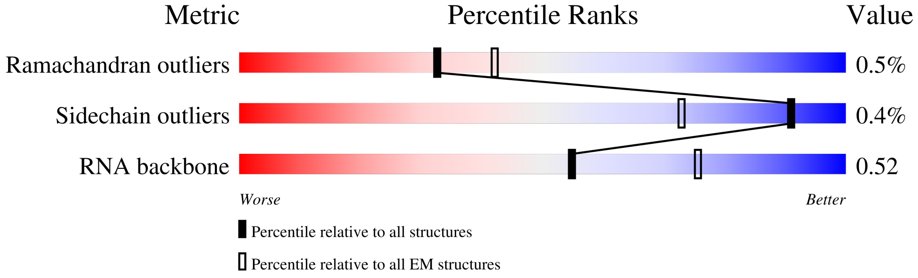
EMDB validation analysis	:	0.0.1.dev43
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.3

1 Overall quality at a glance ⓘ

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

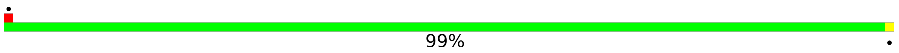
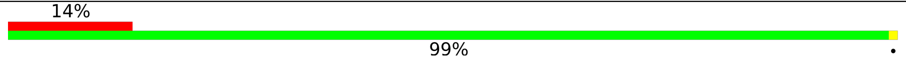
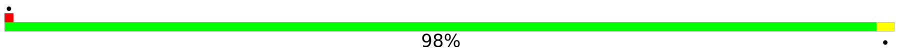
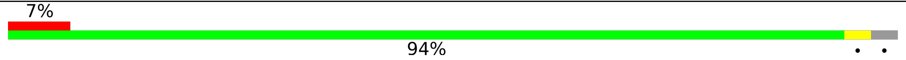
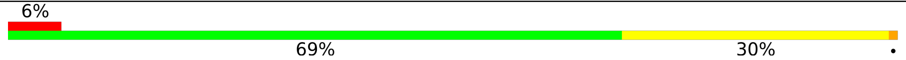
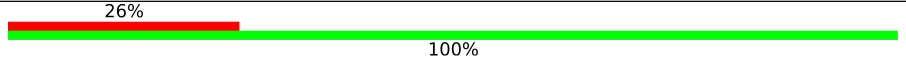
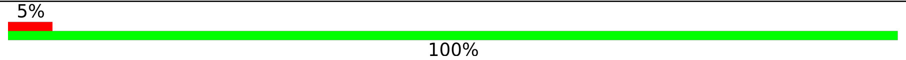
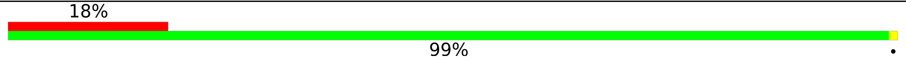
The reported resolution of this entry is 3.10 Å.

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



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

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

Mol	Chain	Length	Quality of chain
1	LA	251	 • 99% •
2	SA	206	 14% 99% •
3	LB	386	 • 98% •
4	SB	232	 7% 94% • •
5	C2	1771	 6% 69% 30% •
6	SP	117	 26% 100%
7	SC	216	 5% 100%
8	SD	222	 18% 99% •

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Mol	Chain	Length	Quality of chain
9	SE	258	7% 99% •
10	SF	206	14% 100%
11	SG	228	16% 98% •
12	SH	184	21% 98% •
13	SI	187	6% 98% • •
14	SJ	184	12% 98% ••
15	SK	92	17% 100%
16	SL	144	8% 99% •
17	SM	121	70% 93% 6% •
18	SN	150	• 99% •
19	SO	127	• 98% •
20	SQ	141	14% 99% •
21	SR	125	14% 96% • •
22	SS	145	11% 96% •
23	ST	143	16% 100%
24	SU	100	22% 100%
25	SV	87	6% 99% •
26	SW	129	• 98% •
27	SX	144	• 99% •
28	SY	134	13% 99% •
29	SZ	82	24% 96% •
30	Sa	97	• 95% • •
31	Sb	81	15% 99% •
32	Sd	53	6% 100%
33	Se	60	20% 100%

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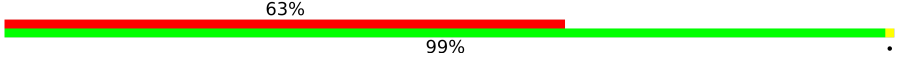
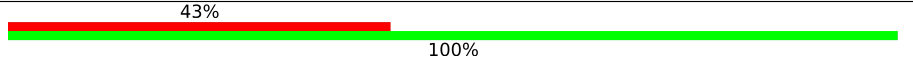
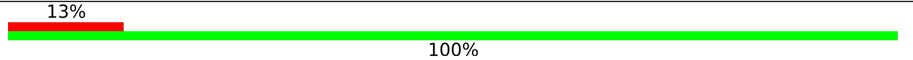
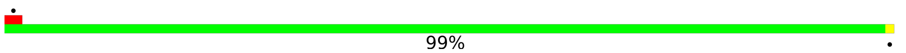
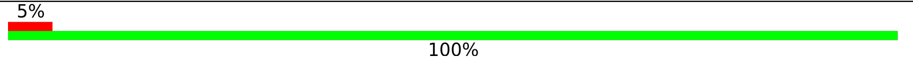
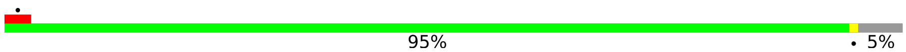
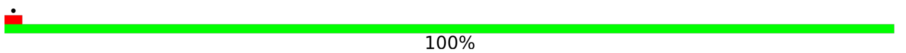
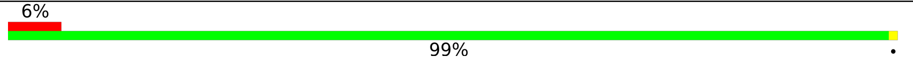
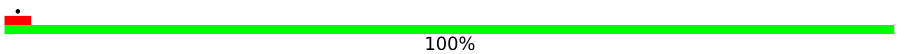
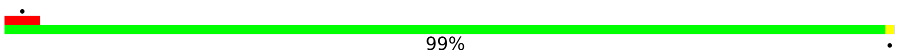
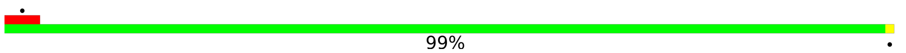
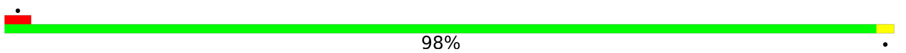
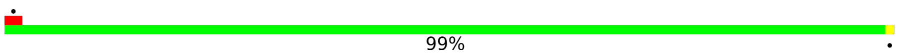
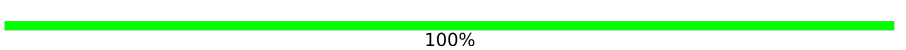
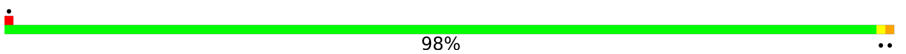
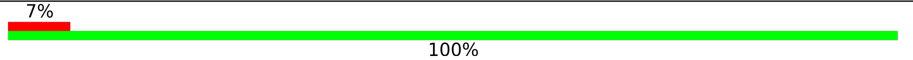
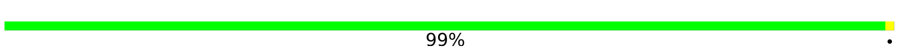
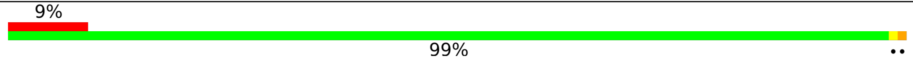
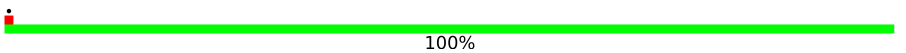
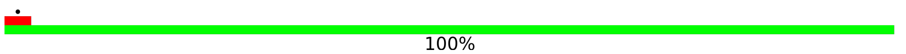
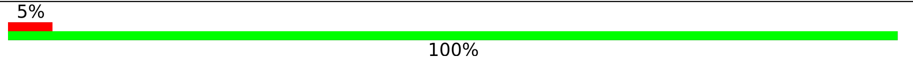
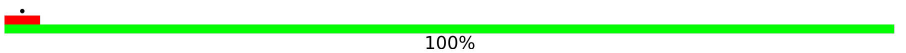
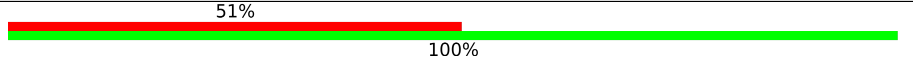
Mol	Chain	Length	Quality of chain
34	Sf	73	
35	Sg	312	
36	Sc	63	
37	C4	121	
38	C3	158	
39	LC	361	
40	LD	294	
41	LE	175	
42	LF	222	
43	LG	233	
44	LH	191	
45	LI	218	
46	LJ	169	
47	LL	193	
48	LM	136	
49	LN	203	
50	LO	197	
51	LP	183	
52	LQ	185	
53	LR	188	
54	LS	171	
55	LT	159	
56	LU	100	
57	LV	136	
58	LW	126	

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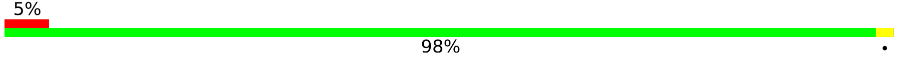
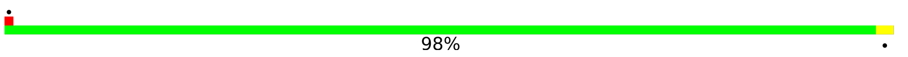
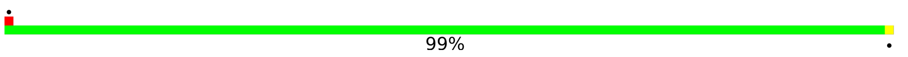
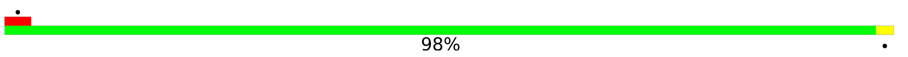
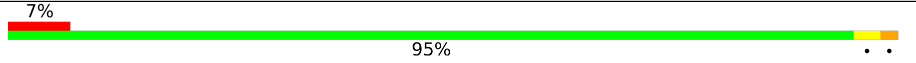
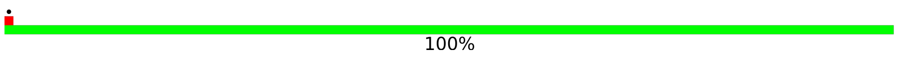
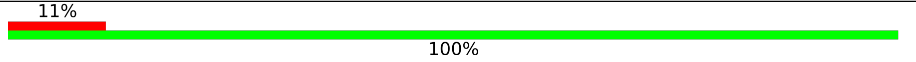
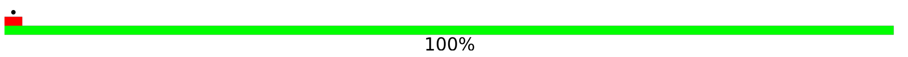
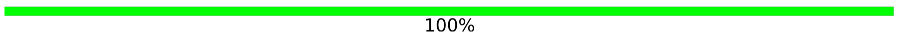
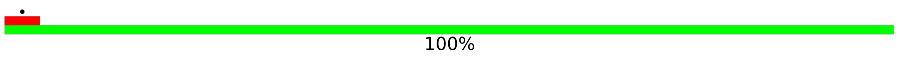
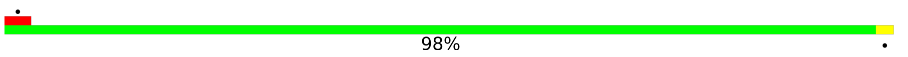
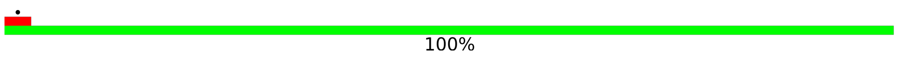
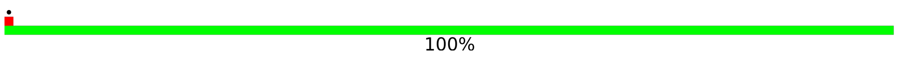
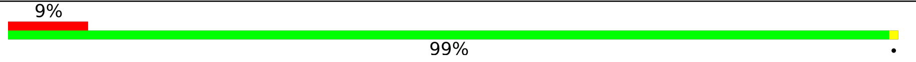
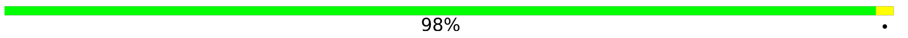
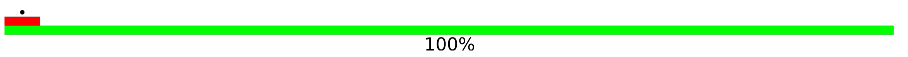
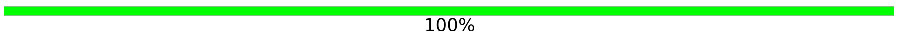
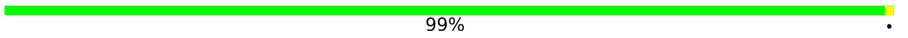
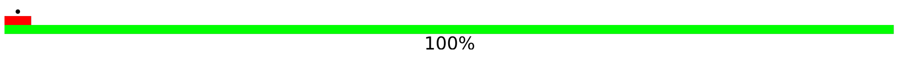
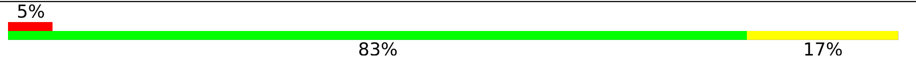
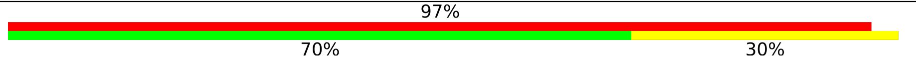
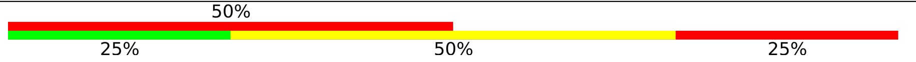
Mol	Chain	Length	Quality of chain
59	LX	121	
60	LY	125	
61	LZ	135	
62	La	148	
63	Lb	58	
64	Lc	96	
65	Ld	109	
66	Le	127	
67	Lf	106	
68	Lg	112	
69	Lh	119	
70	Li	99	
71	Lj	85	
72	Lk	77	
73	Ll	50	
74	Lm	52	
75	Ln	25	
76	Lo	103	
77	Lp	91	
78	C1	3184	
79	5	11	
80	6	76	
80	7	76	
81	A	4	

2 Entry composition

There are 81 unique types of molecules in this entry. The entry contains 202869 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 protein called 60S ribosomal protein L2-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	LA	251	1899	1182	385	331	1	0	0

- Molecule 2 is a protein called 40S ribosomal protein S0-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	SA	206	1603	1030	284	287	2	0	0

- Molecule 3 is a protein called 60S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	LB	386	3075	1950	584	533	8	0	0

- Molecule 4 is a protein called 40S ribosomal protein S1-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	SB	226	1798	1139	330	325	4	0	0

- Molecule 5 is a RNA chain called 18S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
5	C2	1771	37604	16807	6624	12402	1771	0	0

- Molecule 6 is a protein called 40S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	SP	117	916	583	171	155	7	0	0

- Molecule 7 is a protein called 40S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	SC	216	Total	C	N	O	S	0	0
			1626	1042	287	295	2		

- Molecule 8 is a protein called 40S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	SD	222	Total	C	N	O	S	0	0
			1729	1098	312	313	6		

- Molecule 9 is a protein called 40S ribosomal protein S4-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	SE	258	Total	C	N	O	S	0	0
			2056	1308	387	358	3		

- Molecule 10 is a protein called Rps5p.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	SF	206	Total	C	N	O	S	0	0
			1605	1005	299	298	3		

- Molecule 11 is a protein called 40S ribosomal protein S6-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	SG	228	Total	C	N	O	S	0	0
			1815	1138	351	323	3		

- Molecule 12 is a protein called 40S ribosomal protein S7-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
12	SH	184	Total	C	N	O	0	0
			1473	946	263	264		

- Molecule 13 is a protein called 40S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	SI	187	Total	C	N	O	S	0	0
			1476	916	295	263	2		

- Molecule 14 is a protein called 40S ribosomal protein S9-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
14	SJ	184	1479	935	285	258	1	0	0

- Molecule 15 is a protein called 40S ribosomal protein S10-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
15	SK	92	752	487	122	141	2	0	0

- Molecule 16 is a protein called 40S ribosomal protein S11-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
16	SL	144	1159	742	219	195	3	0	0

- Molecule 17 is a protein called 40S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
17	SM	121	875	551	153	169	2	0	0

- Molecule 18 is a protein called 40S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
18	SN	150	1192	759	224	207	2	0	0

- Molecule 19 is a protein called 40S ribosomal protein S14-B.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
19	SO	127	926	569	185	169	3	0	0

- Molecule 20 is a protein called 40S ribosomal protein S16-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
20	SQ	141	1105	708	203	194	0	0

- Molecule 21 is a protein called 40S ribosomal protein S17-B.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	SR	121	Total	C	N	O	S	0	0
			948	596	179	171	2		

- Molecule 22 is a protein called 40S ribosomal protein S18-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	SS	145	Total	C	N	O	S	0	0
			1192	743	237	210	2		

- Molecule 23 is a protein called 40S ribosomal protein S19-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	ST	143	Total	C	N	O	S	0	0
			1112	694	208	208	2		

- Molecule 24 is a protein called 40S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	SU	100	Total	C	N	O	S	0	0
			797	506	144	146	1		

- Molecule 25 is a protein called 40S ribosomal protein S21-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	SV	87	Total	C	N	O	S	0	0
			673	415	125	131	2		

- Molecule 26 is a protein called 40S ribosomal protein S22-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	SW	129	Total	C	N	O	S	0	0
			1021	650	188	180	3		

- Molecule 27 is a protein called 40S ribosomal protein S23-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	SX	144	Total	C	N	O	S	0	0
			1121	708	220	191	2		

- Molecule 28 is a protein called 40S ribosomal protein S24-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
28	SY	134	1073	676	208	189	0	0

- Molecule 29 is a protein called 40S ribosomal protein S25-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
29	SZ	82	651	416	123	112	0	0

- Molecule 30 is a protein called 40S ribosomal protein S26-B.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
30	Sa	97	769	475	160	129	5	0	0

- Molecule 31 is a protein called 40S ribosomal protein S27-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
31	Sb	81	610	382	110	113	5	0	0

- Molecule 32 is a protein called 40S ribosomal protein S29-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
32	Sd	53	442	274	92	72	4	0	0

- Molecule 33 is a protein called 40S ribosomal protein S30-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
33	Se	60	472	298	97	76	1	0	0

- Molecule 34 is a protein called Ubiquitin-40S ribosomal protein S31.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
34	Sf	73	556	352	105	95	4	0	0

- Molecule 35 is a protein called Guanine nucleotide-binding protein subunit beta-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
35	Sg	312	2383	1514	409	452	8	0	0

- Molecule 36 is a protein called 40S ribosomal protein S28-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
36	Sc	63	491	303	96	91	1	0	0

- Molecule 37 is a RNA chain called 5S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
37	C4	121	2579	1152	461	845	121	0	0

- Molecule 38 is a RNA chain called 5.8S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
38	C3	158	3353	1500	586	1109	158	0	0

- Molecule 39 is a protein called 60S ribosomal protein L4-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
39	LC	361	2748	1729	522	494	3	0	0

- Molecule 40 is a protein called 60S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
40	LD	294	2351	1484	410	455	2	0	0

- Molecule 41 is a protein called 60S ribosomal protein L6-B.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
41	LE	167	1305	841	234	229	1	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
LE	146	ILE	LEU	conflict	UNP P05739
LE	173	MET	LEU	conflict	UNP P05739

- Molecule 42 is a protein called 60S ribosomal protein L7-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
42	LF	222	1784	1151	324	308	1	0	0

- Molecule 43 is a protein called 60S ribosomal protein L8-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
43	LG	233	1804	1151	323	327	3	0	0

- Molecule 44 is a protein called 60S ribosomal protein L9-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
44	LH	191	1508	957	274	273	4	0	0

- Molecule 45 is a protein called 60S ribosomal protein L10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
45	LI	218	1764	1117	334	306	7	0	0

- Molecule 46 is a protein called 60S ribosomal protein L11-B.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
46	LJ	169	1350	846	253	247	4	0	0

- Molecule 47 is a protein called 60S ribosomal protein L13-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
47	LL	193	1543	962	315	266	0	0

- Molecule 48 is a protein called 60S ribosomal protein L14-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
48	LM	136	1053	675	199	177	2	0	0

- Molecule 49 is a protein called 60S ribosomal protein L15-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
49	LN	203	1720	1077	361	281	1	0	0

- Molecule 50 is a protein called 60S ribosomal protein L16-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
50	LO	197	1555	1003	289	262	1	197	0

- Molecule 51 is a protein called 60S ribosomal protein L17-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
51	LP	183	1416	879	284	253	0	0

- Molecule 52 is a protein called 60S ribosomal protein L18-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
52	LQ	185	1441	908	290	241	2	0	0

- Molecule 53 is a protein called 60S ribosomal protein L19-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
53	LR	188	1515	932	323	260	0	0

- Molecule 54 is a protein called 60S ribosomal protein L20-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
54	LS	171	1437	925	266	243	3	0	0

- Molecule 55 is a protein called 60S ribosomal protein L21-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
55	LT	159	1276	805	246	221	4	0	0

- Molecule 56 is a protein called 60S ribosomal protein L22-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
56	LU	100	796	516	131	149	0	0

- Molecule 57 is a protein called 60S ribosomal protein L23-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
57	LV	136	1003	628	189	179	7	0	0

- Molecule 58 is a protein called 60S ribosomal protein L24-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
58	LW	126	836	525	165	145	1	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
LW	104	GLN	ASN	conflict	UNP P04449
LW	109	GLN	LEU	conflict	UNP P04449
LW	112	ASP	ASN	conflict	UNP P04449
LW	119	ALA	GLU	conflict	UNP P04449

- Molecule 59 is a protein called 60S ribosomal protein L25.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
59	LX	121	964	620	169	173	2	0	0

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

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
60	LY	125	984	620	191	173	0	0

- Molecule 61 is a protein called 60S ribosomal protein L27-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
61	LZ	135	1092	710	202	180	0	0

- Molecule 62 is a protein called 60S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
62	La	148	1173	749	231	190	3	0	0

- Molecule 63 is a protein called 60S ribosomal protein L29.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
63	Lb	58	462	289	100	73	0	0

- Molecule 64 is a protein called 60S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
64	Lc	96	737	476	123	137	1	0	0

- Molecule 65 is a protein called 60S ribosomal protein L31-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
65	Ld	109	876	556	167	152	1	0	0

- Molecule 66 is a protein called 60S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
66	Le	127	1017	644	205	167	1	0	0

- Molecule 67 is a protein called 60S ribosomal protein L33-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
67	Lf	106	850	540	165	144	1	0	0

- Molecule 68 is a protein called 60S ribosomal protein L34-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
68	Lg	112	Total	C	N	O	S	0	0
			880	545	179	152	4		

- Molecule 69 is a protein called 60S ribosomal protein L35-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
69	Lh	119	Total	C	N	O	S	0	0
			969	615	186	167	1		

- Molecule 70 is a protein called 60S ribosomal protein L36-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
70	Li	99	Total	C	N	O	S	0	0
			766	478	154	132	2		

- Molecule 71 is a protein called 60S ribosomal protein L37-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
71	Lj	85	Total	C	N	O	S	0	0
			670	408	146	111	5		

- Molecule 72 is a protein called 60S ribosomal protein L38.

Mol	Chain	Residues	Atoms				AltConf	Trace
72	Lk	77	Total	C	N	O	0	0
			612	391	115	106		

- Molecule 73 is a protein called 60S ribosomal protein L39.

Mol	Chain	Residues	Atoms					AltConf	Trace
73	Ll	50	Total	C	N	O	S	0	0
			436	272	97	65	2		

- Molecule 74 is a protein called Ubiquitin-60S ribosomal protein L40.

Mol	Chain	Residues	Atoms					AltConf	Trace
74	Lm	52	Total	C	N	O	S	0	0
			417	259	86	67	5		

- Molecule 75 is a protein called 60S ribosomal protein L41-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
75	Ln	25	229	139	62	27	1	0	0

- Molecule 76 is a protein called 60S ribosomal protein L42-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
76	Lo	103	824	517	167	135	5	0	0

- Molecule 77 is a protein called 60S ribosomal protein L43-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
77	Lp	91	694	429	138	121	6	0	0

- Molecule 78 is a RNA chain called 25S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
78	C1	3184	68091	30415	12259	22233	3184	0	0

- Molecule 79 is a RNA chain called mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
79	5	11	242	110	55	66	11	0	0

- Molecule 80 is a RNA chain called tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
80	7	76	1616	721	281	538	76	0	0
			Total	C	N	O	P		
80	6	76	1616	721	281	538	76	0	0

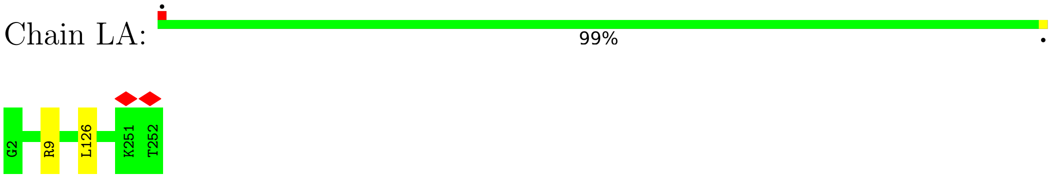
- Molecule 81 is a protein called nascent chain.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
81	A	4	41	27	9	5	1	0

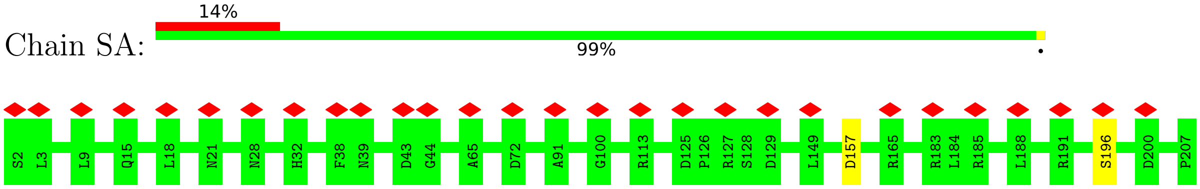
3 Residue-property plots ⓘ

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.

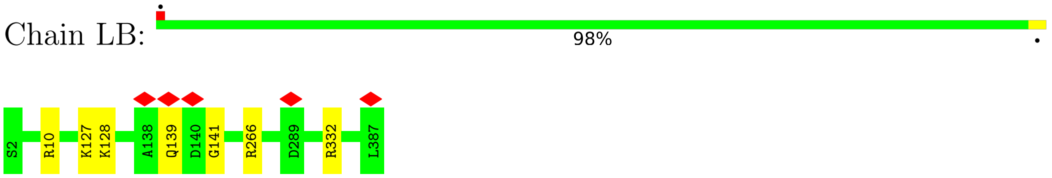
- Molecule 1: 60S ribosomal protein L2-A



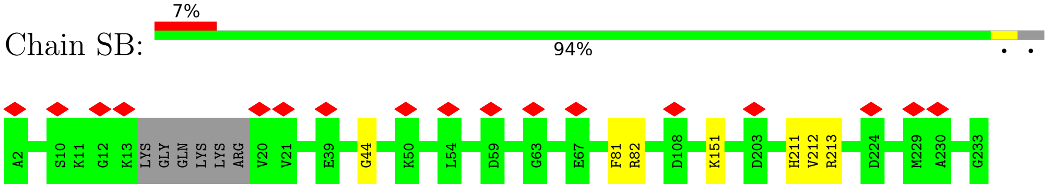
- Molecule 2: 40S ribosomal protein S0-A



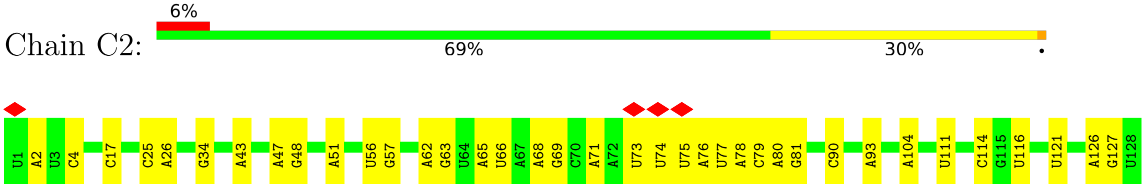
- Molecule 3: 60S ribosomal protein L3

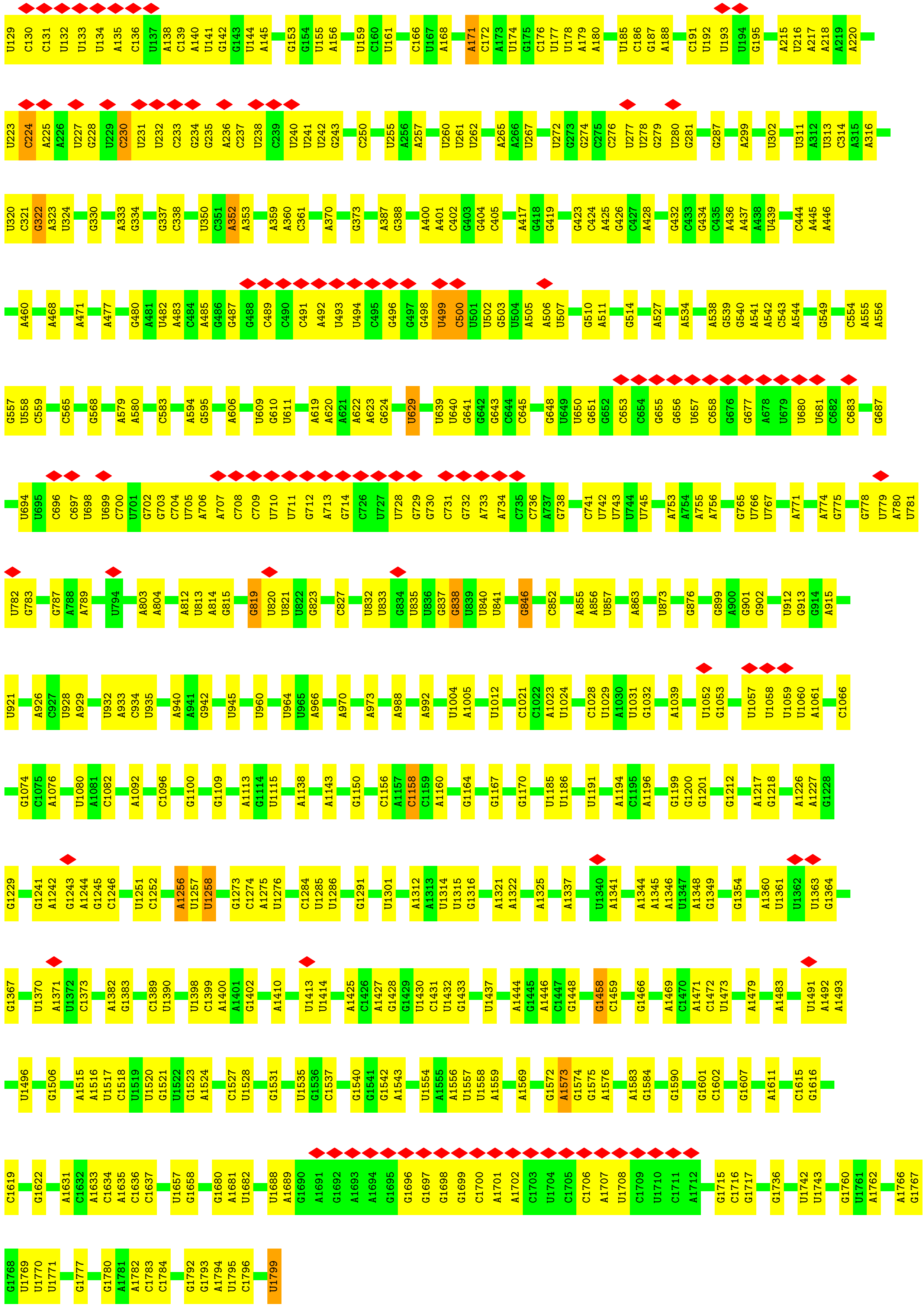


- Molecule 4: 40S ribosomal protein S1-A



- Molecule 5: 18S rRNA

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U320 C321 G322 A323 U324 G330 A333 G334 G337 C338 U350 C351 A352 A353 A359 A360 C361 A370 G373 A387 G388 A400 A401 C402 G403 G404 C405 A417 G418 G419 G423 C424 A425 G426 C427 A428 G432 C433 G434 C435 A436 A437 A438 U439 C444 A445 A446
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U921 A926 C927 U928 A929 U932 A933 C934 U935 A940 A941 G942 U945 U960 U964 U965 A966 A970 A973 A988 A992 U1004 A1005 U1012 C1021 C1022 A1023 U1024 C1028 U1029 A1030 U1031 G1032 A1039 U1052 G1053 U1057 U1058 U1059 U1060 A1061 C1066
G1074 C1075 A1076 U1080 A1081 C1082 A1092 C1096 G1100 G1109 A1113 G1114 U1115 A1138 A1143 G1150 C1156 A1157 C1158 C1159 A1160 G1164 G1167 G1170 U1185 U1186 U1191 A1194 C1195 A1196 G1199 G1200 G1201 G1212 A1217 G1218 A1226 A1227 G1228
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G1367 U1370 A1371 U1372 C1373 A1382 G1383 C1389 U1390 U1398 C1399 A1400 A1401 G1402 A1410 U1413 U1414 A1425 C1426 A1427 G1428 G1429 U1430 C1431 U1432 G1433 U1437 A1444 G1445 A1446 C1447 G1448 G1458 C1459 G1466 A1469 C1470 A1471 C1472 U1473 A1479 A1483 U1491 A1492 A1493
U1496 G1506 A1515 A1516 U1517 C1518 U1519 U1520 G1521 U1522 G1523 A1524 C1527 U1528 G1531 U1535 G1536 C1537 G1540 G1541 G1542 A1543 U1554 A1555 A1556 U1557 U1558 A1559 A1569 G1572 A1573 G1574 G1575 A1576 A1583 G1584 G1590 G1601 C1602 G1607 A1611 C1615 G1616
C1619 G1622 A1631 C1632 A1633 C1634 A1635 C1636 C1637 U1657 G1658 G1680 A1681 U1682 U1688 A1689 G1690 A1691 G1692 A1693 A1694 G1695 G1696 G1697 G1698 G1699 C1700 A1701 A1702 C1703 U1704 C1705 C1706 A1707 U1708 C1709 U1710 C1711 A1712 G1715 C1716 G1717 G1736 U1742 U1743 G1760 U1761 A1762 A1766 G1767
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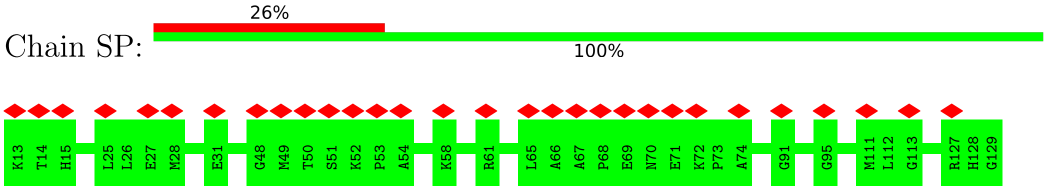
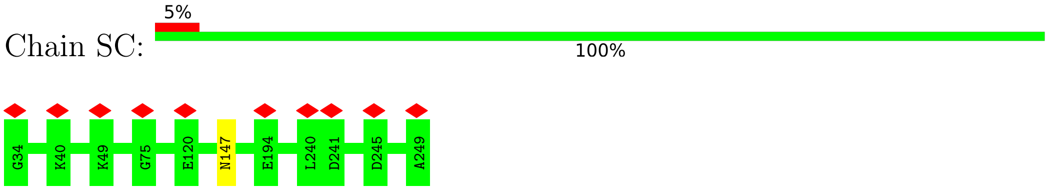
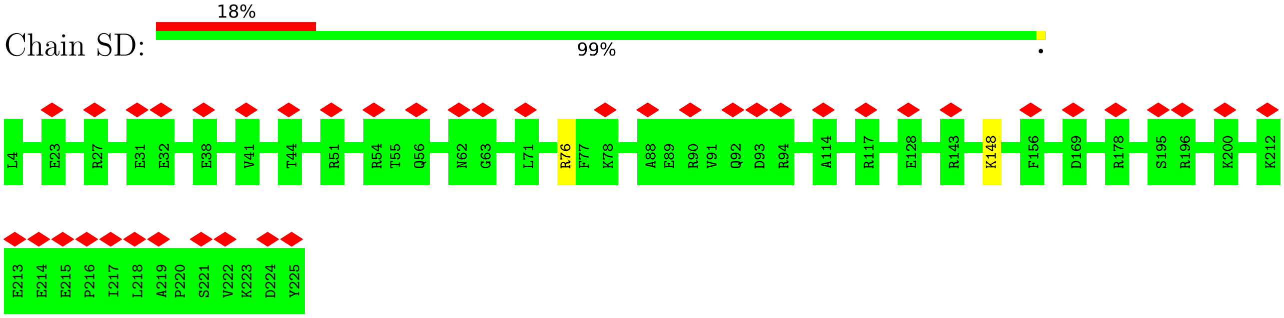
- Molecule 6: 40S ribosomal protein S15



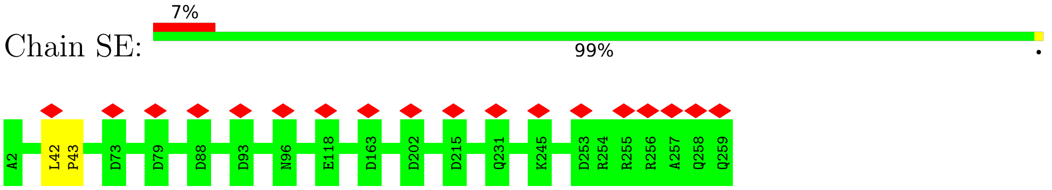
- Molecule 7: 40S ribosomal protein S2



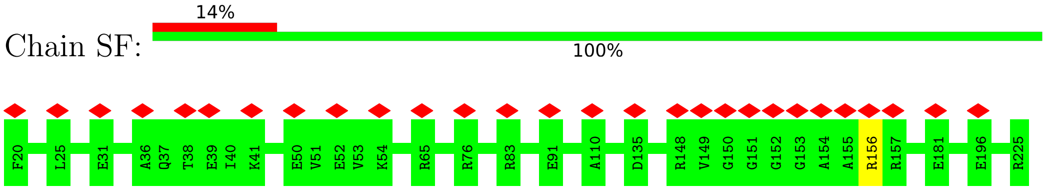
- Molecule 8: 40S ribosomal protein S3



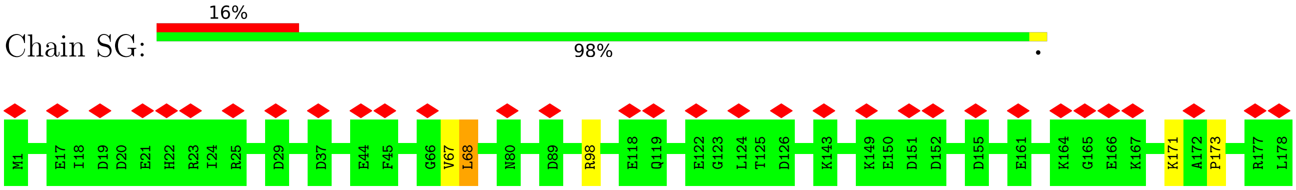
- Molecule 9: 40S ribosomal protein S4-A

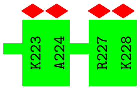


- Molecule 10: Rps5p



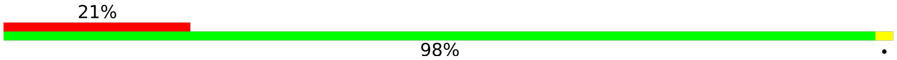
- Molecule 11: 40S ribosomal protein S6-A

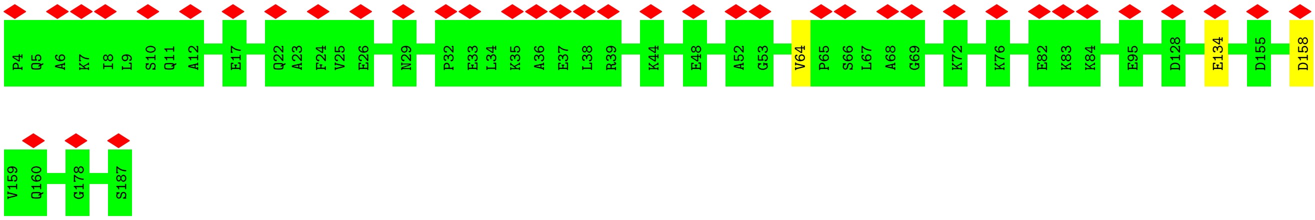




- Molecule 12: 40S ribosomal protein S7-A

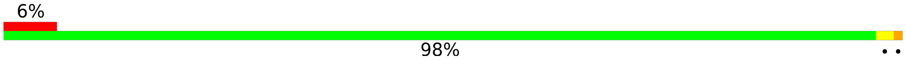
Chain SH:

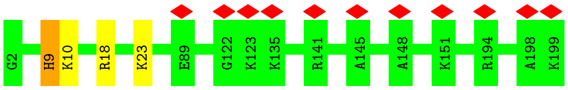




- Molecule 13: 40S ribosomal protein S8

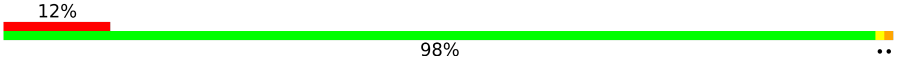
Chain SI:

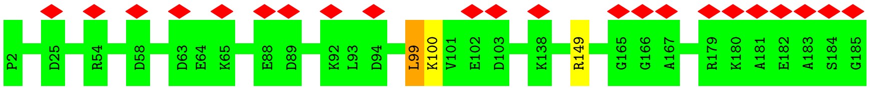




- Molecule 14: 40S ribosomal protein S9-A

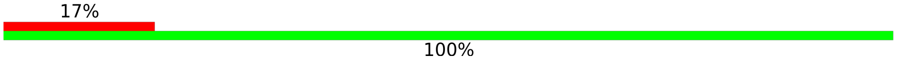
Chain SJ:

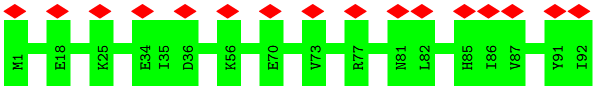




- Molecule 15: 40S ribosomal protein S10-A

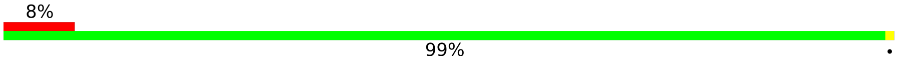
Chain SK:

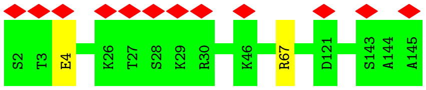




- Molecule 16: 40S ribosomal protein S11-A

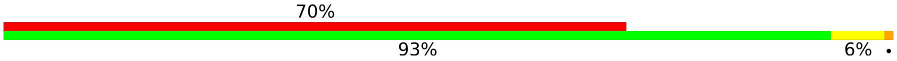
Chain SL:

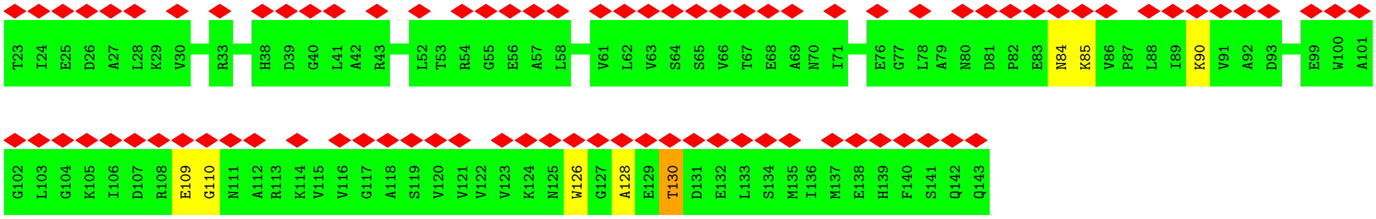




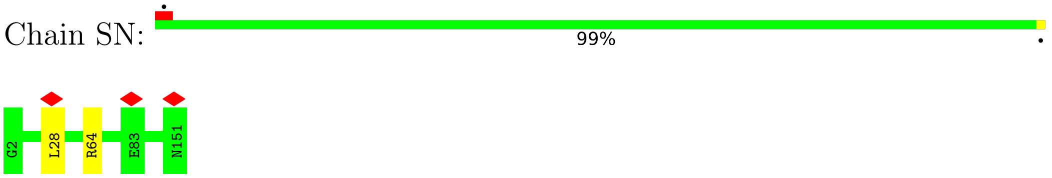
- Molecule 17: 40S ribosomal protein S12

Chain SM:

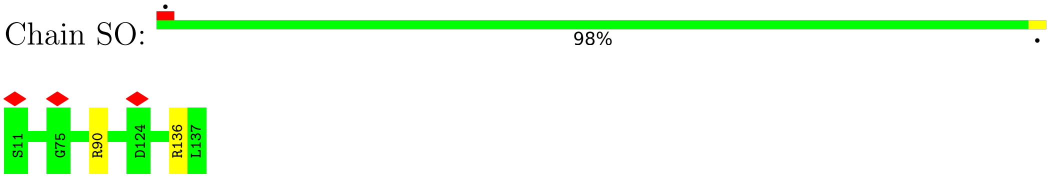




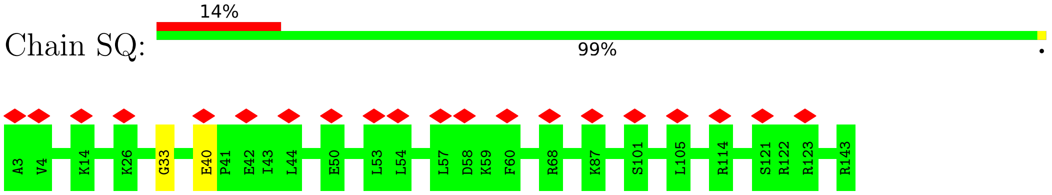
- Molecule 18: 40S ribosomal protein S13



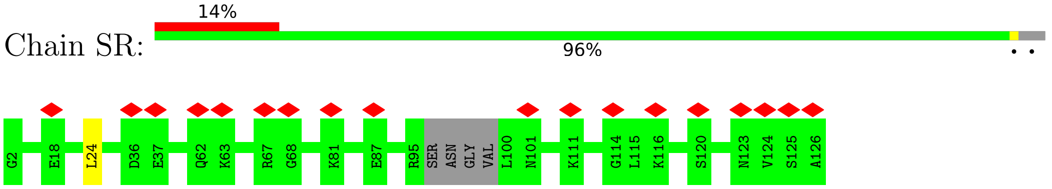
- Molecule 19: 40S ribosomal protein S14-B



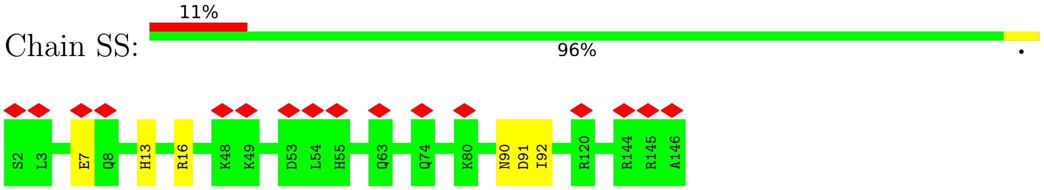
- Molecule 20: 40S ribosomal protein S16-A



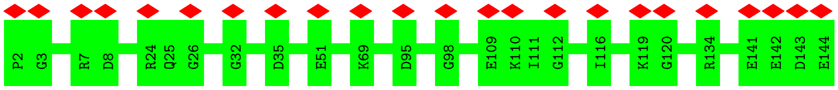
- Molecule 21: 40S ribosomal protein S17-B



- Molecule 22: 40S ribosomal protein S18-A

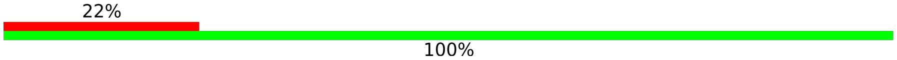


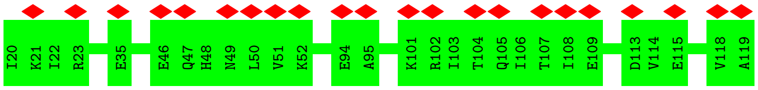
- Molecule 23: 40S ribosomal protein S19-A



- Molecule 24: 40S ribosomal protein S20

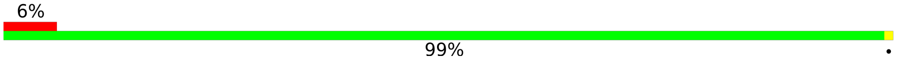
Chain SU:

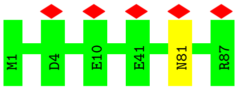




- Molecule 25: 40S ribosomal protein S21-A

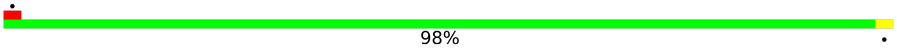
Chain SV:

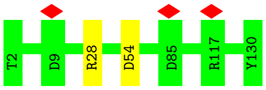




- Molecule 26: 40S ribosomal protein S22-A

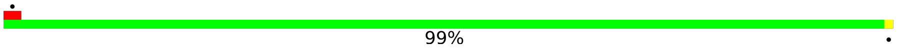
Chain SW:

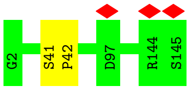




- Molecule 27: 40S ribosomal protein S23-A

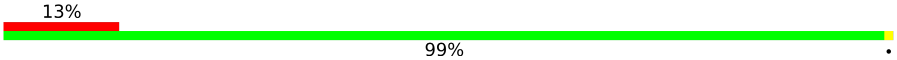
Chain SX:

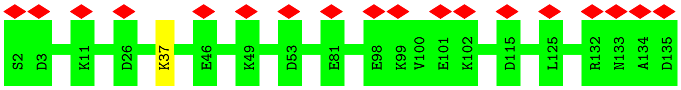




- Molecule 28: 40S ribosomal protein S24-A

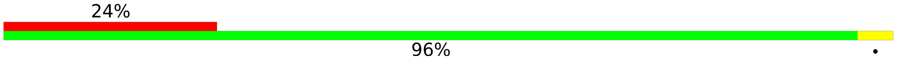
Chain SY:

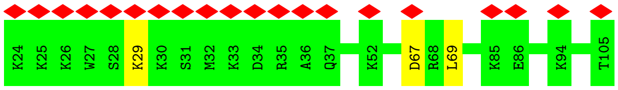




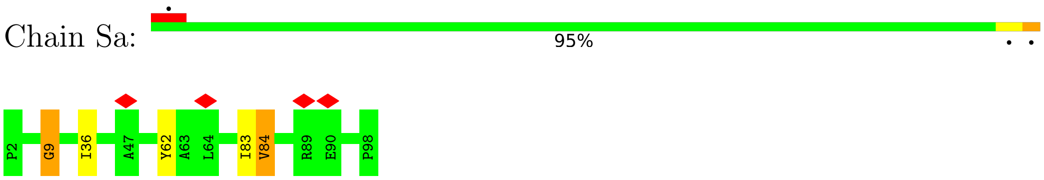
- Molecule 29: 40S ribosomal protein S25-A

Chain SZ:

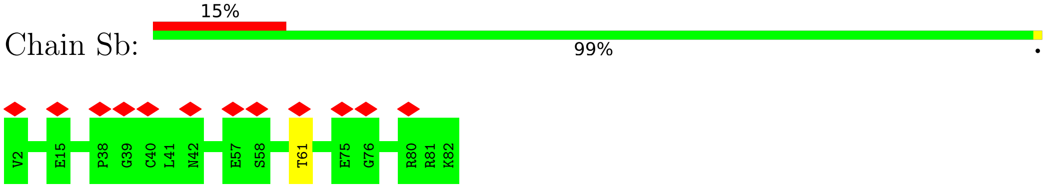




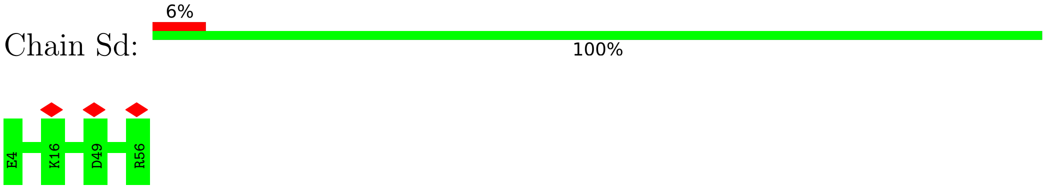
- Molecule 30: 40S ribosomal protein S26-B



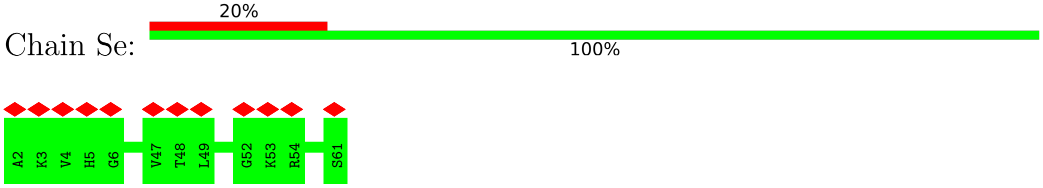
- Molecule 31: 40S ribosomal protein S27-A



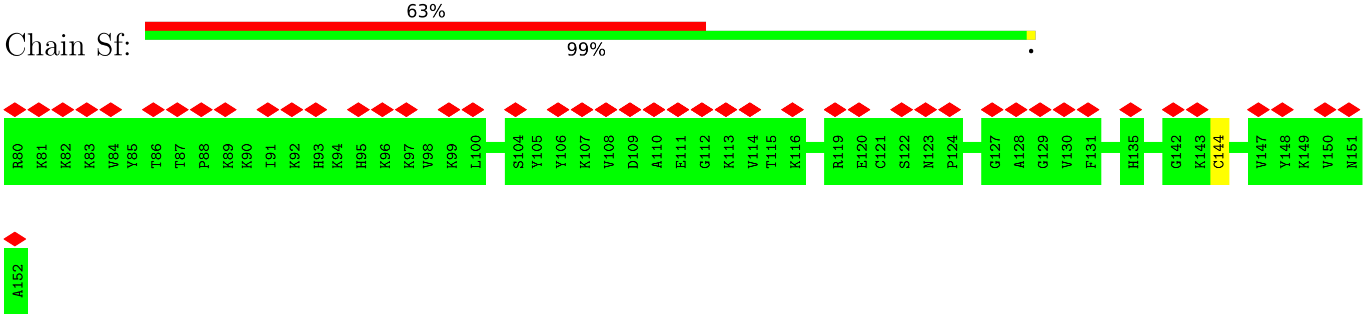
- Molecule 32: 40S ribosomal protein S29-A



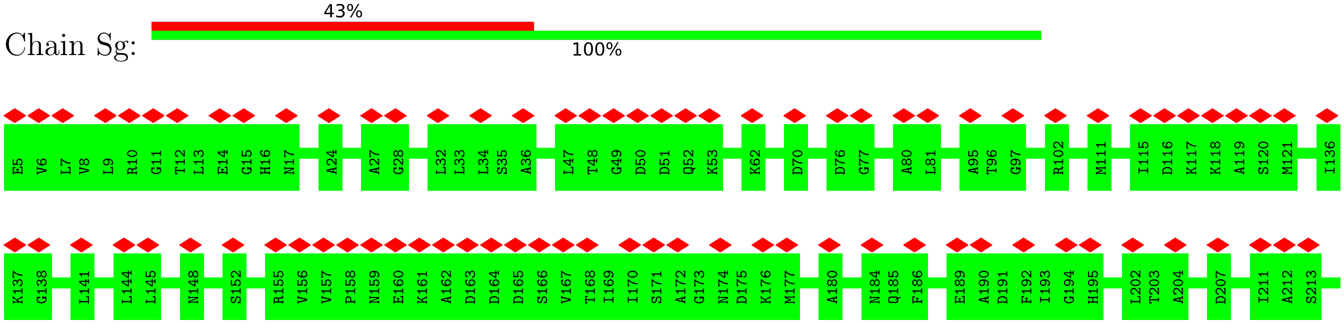
- Molecule 33: 40S ribosomal protein S30-A

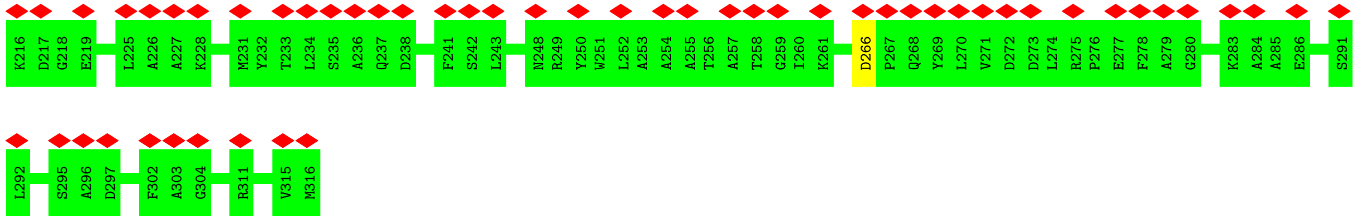


- Molecule 34: Ubiquitin-40S ribosomal protein S31



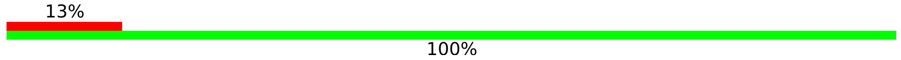
- Molecule 35: Guanine nucleotide-binding protein subunit beta-like protein

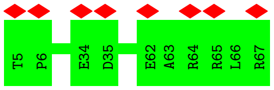




• Molecule 36: 40S ribosomal protein S28-A

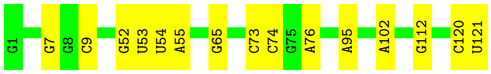
Chain Sc:





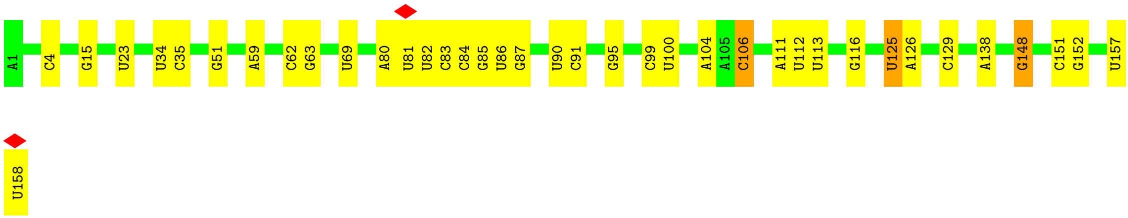
• Molecule 37: 5S rRNA

Chain C4:



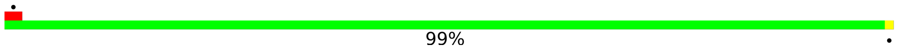
• Molecule 38: 5.8S rRNA

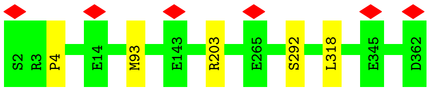
Chain C3:



• Molecule 39: 60S ribosomal protein L4-A

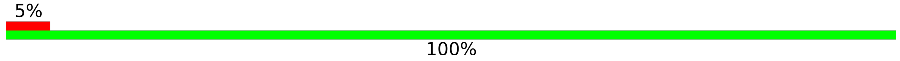
Chain LC:

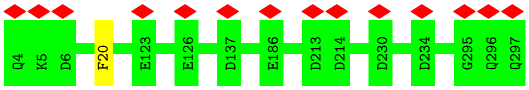




• Molecule 40: 60S ribosomal protein L5

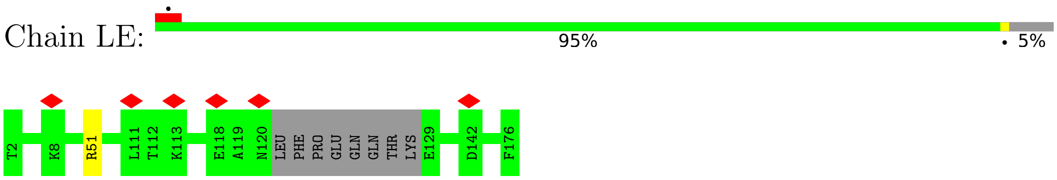
Chain LD:





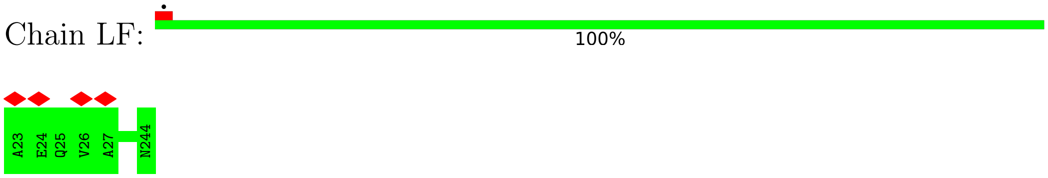
• Molecule 41: 60S ribosomal protein L6-B

Chain LE:



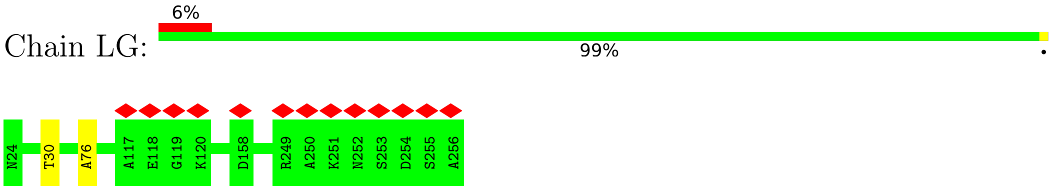
- Molecule 42: 60S ribosomal protein L7-A

Chain LF:



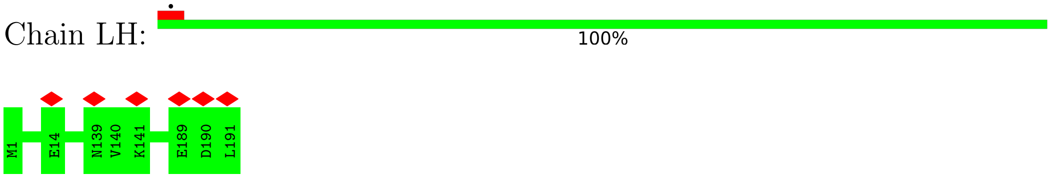
- Molecule 43: 60S ribosomal protein L8-A

Chain LG:



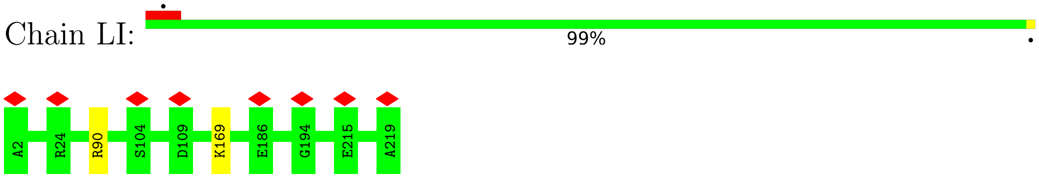
- Molecule 44: 60S ribosomal protein L9-A

Chain LH:



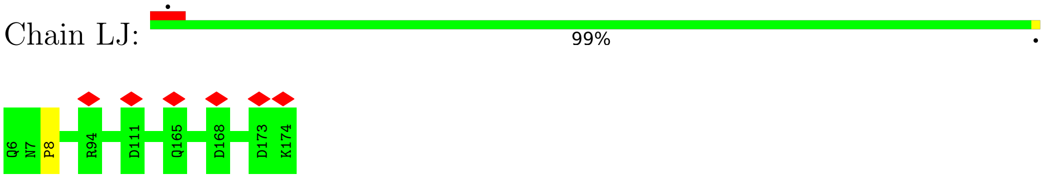
- Molecule 45: 60S ribosomal protein L10

Chain LI:



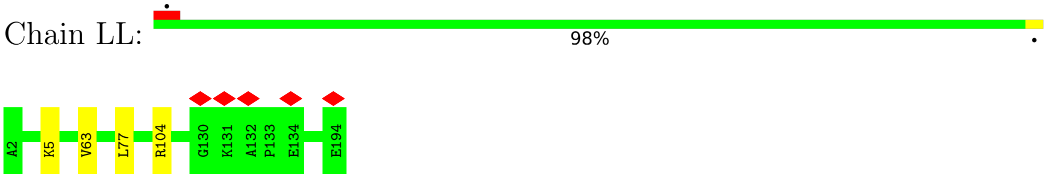
- Molecule 46: 60S ribosomal protein L11-B

Chain LJ:



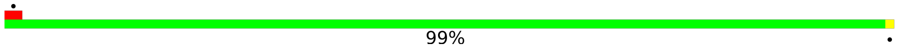
- Molecule 47: 60S ribosomal protein L13-A

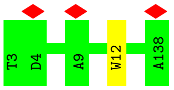
Chain LL:



- Molecule 48: 60S ribosomal protein L14-A

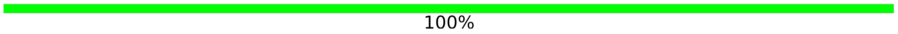
Chain LM:

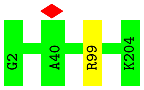




- Molecule 49: 60S ribosomal protein L15-A

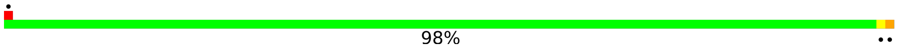
Chain LN:

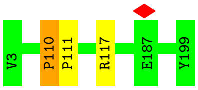




- Molecule 50: 60S ribosomal protein L16-A

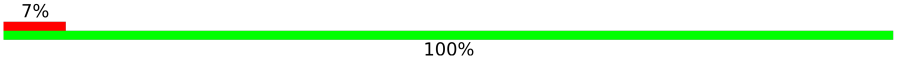
Chain LO:

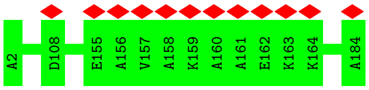




- Molecule 51: 60S ribosomal protein L17-A

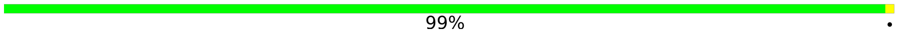
Chain LP:

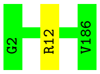




- Molecule 52: 60S ribosomal protein L18-A

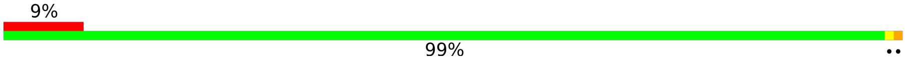
Chain LQ:

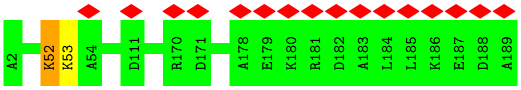




- Molecule 53: 60S ribosomal protein L19-A

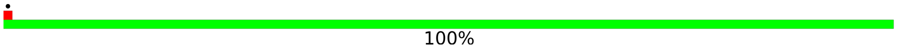
Chain LR:

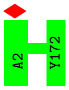




- Molecule 54: 60S ribosomal protein L20-A

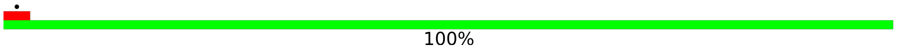
Chain LS:

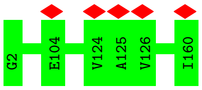




- Molecule 55: 60S ribosomal protein L21-A

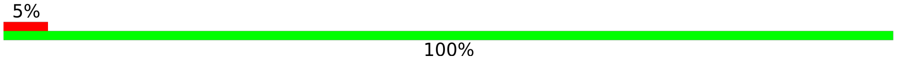
Chain LT:

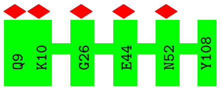




- Molecule 56: 60S ribosomal protein L22-A

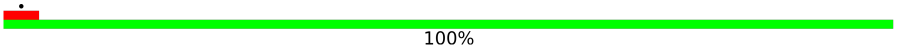
Chain LU:

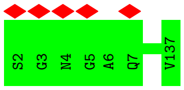




- Molecule 57: 60S ribosomal protein L23-A

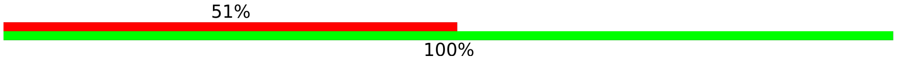
Chain LV:

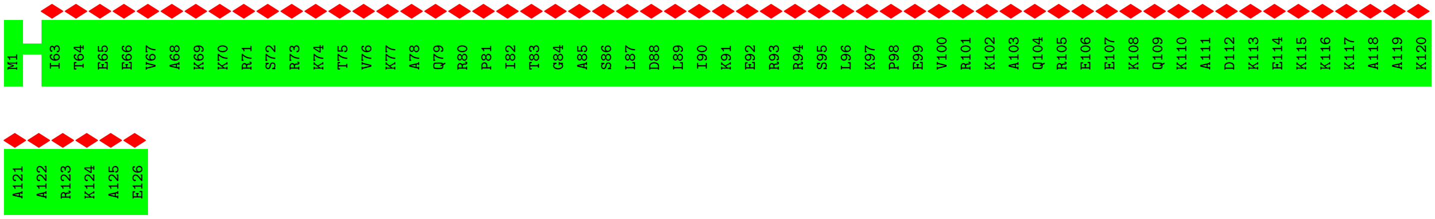




- Molecule 58: 60S ribosomal protein L24-A

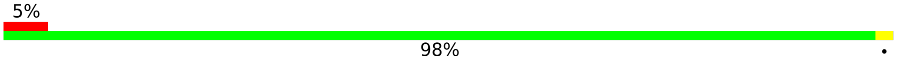
Chain LW:

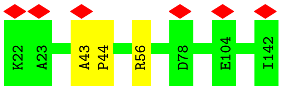




- Molecule 59: 60S ribosomal protein L25

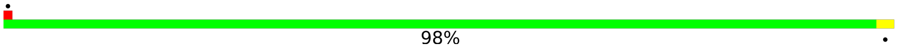
Chain LX:

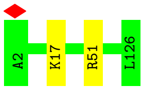




- Molecule 60: 60S ribosomal protein L26-A

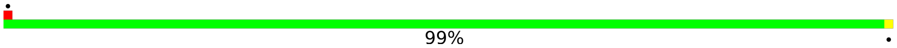
Chain LY:

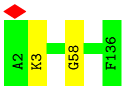




- Molecule 61: 60S ribosomal protein L27-A

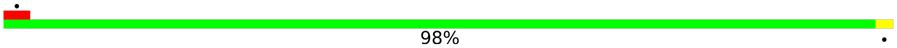
Chain LZ:

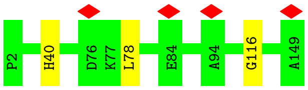




- Molecule 62: 60S ribosomal protein L28

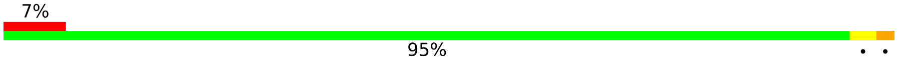
Chain La:

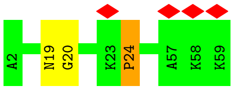




- Molecule 63: 60S ribosomal protein L29

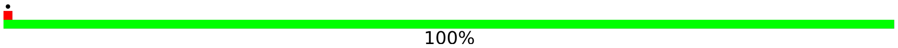
Chain Lb:

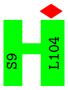




- Molecule 64: 60S ribosomal protein L30

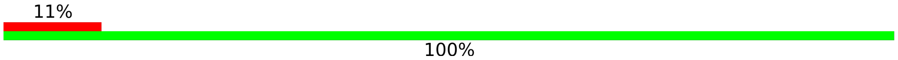
Chain Lc:

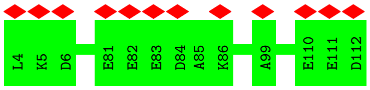




- Molecule 65: 60S ribosomal protein L31-A

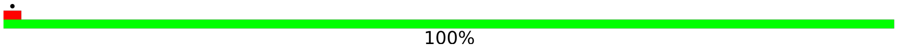
Chain Ld:

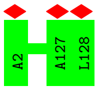




- Molecule 66: 60S ribosomal protein L32

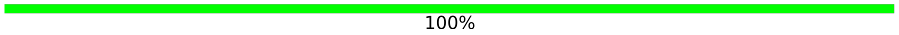
Chain Le:





- Molecule 67: 60S ribosomal protein L33-A

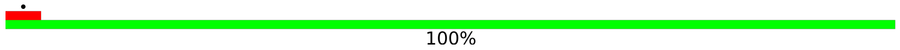
Chain Lf:

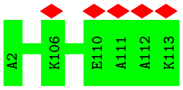


There are no outlier residues recorded for this chain.

- Molecule 68: 60S ribosomal protein L34-A

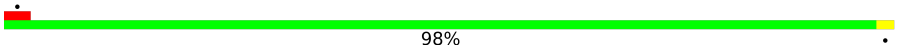
Chain Lg:

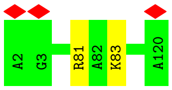




- Molecule 69: 60S ribosomal protein L35-A

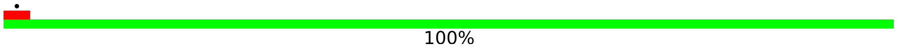
Chain Lh:

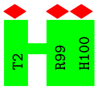




- Molecule 70: 60S ribosomal protein L36-A

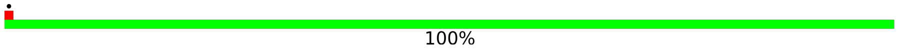
Chain Li:

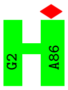




- Molecule 71: 60S ribosomal protein L37-A

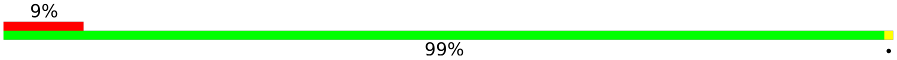
Chain Lj:

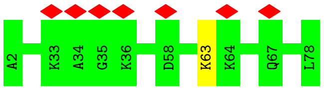




- Molecule 72: 60S ribosomal protein L38

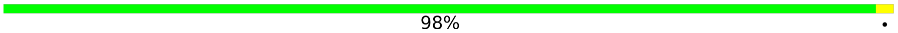
Chain Lk:

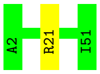




- Molecule 73: 60S ribosomal protein L39

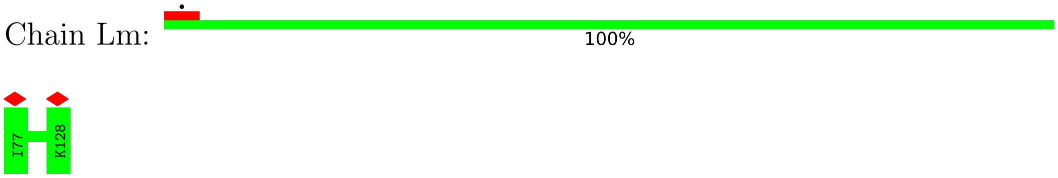
Chain Ll:





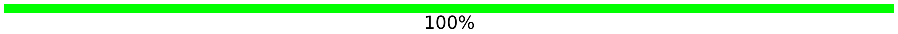
- Molecule 74: Ubiquitin-60S ribosomal protein L40

Chain Lm:



- Molecule 75: 60S ribosomal protein L41-A

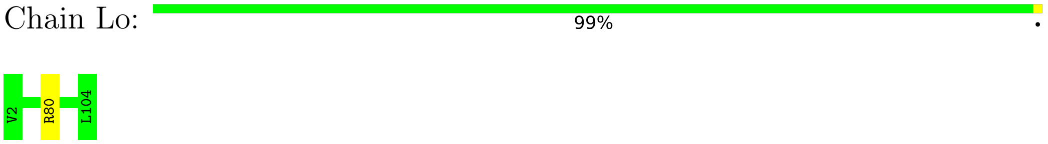
Chain Ln:



There are no outlier residues recorded for this chain.

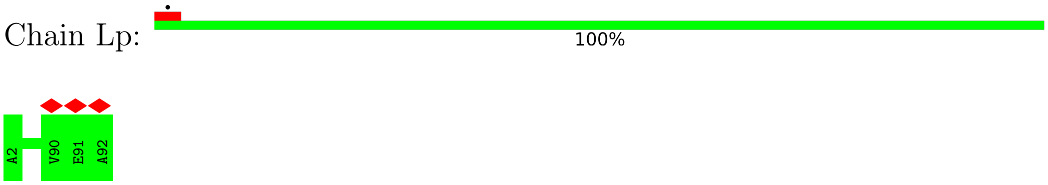
- Molecule 76: 60S ribosomal protein L42-A

Chain Lo:



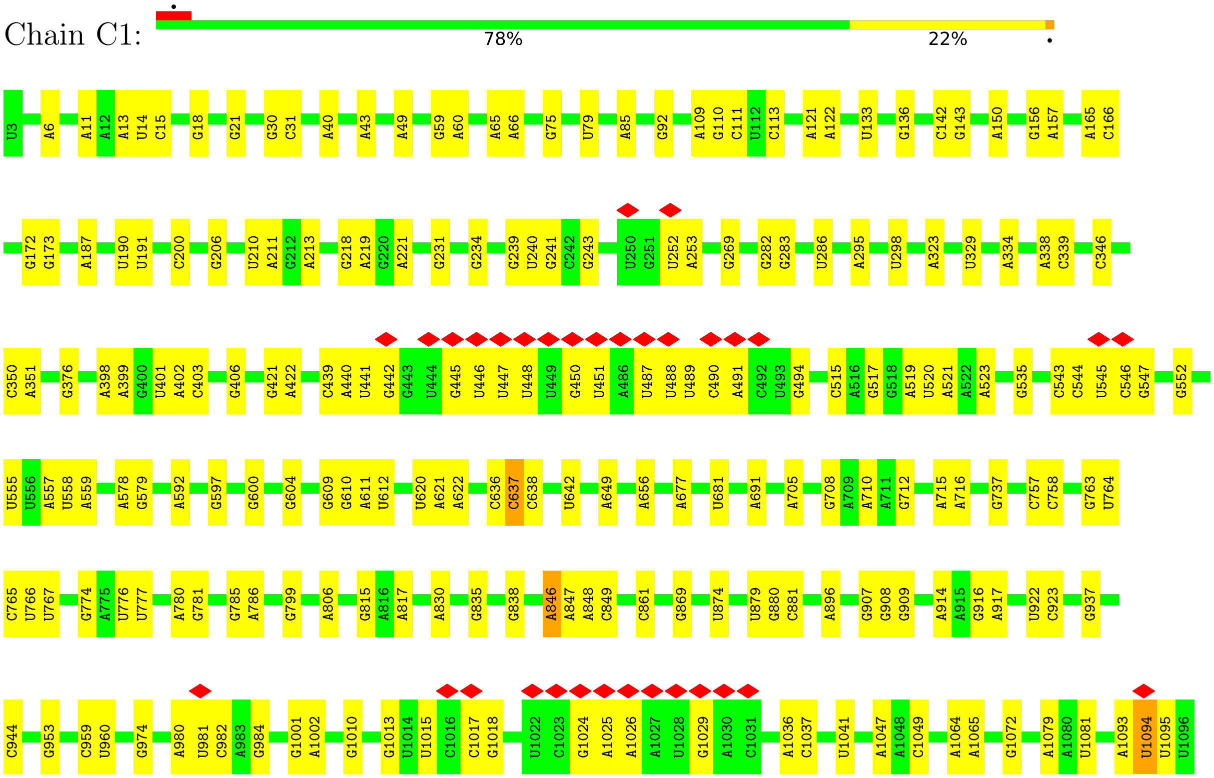
- Molecule 77: 60S ribosomal protein L43-A

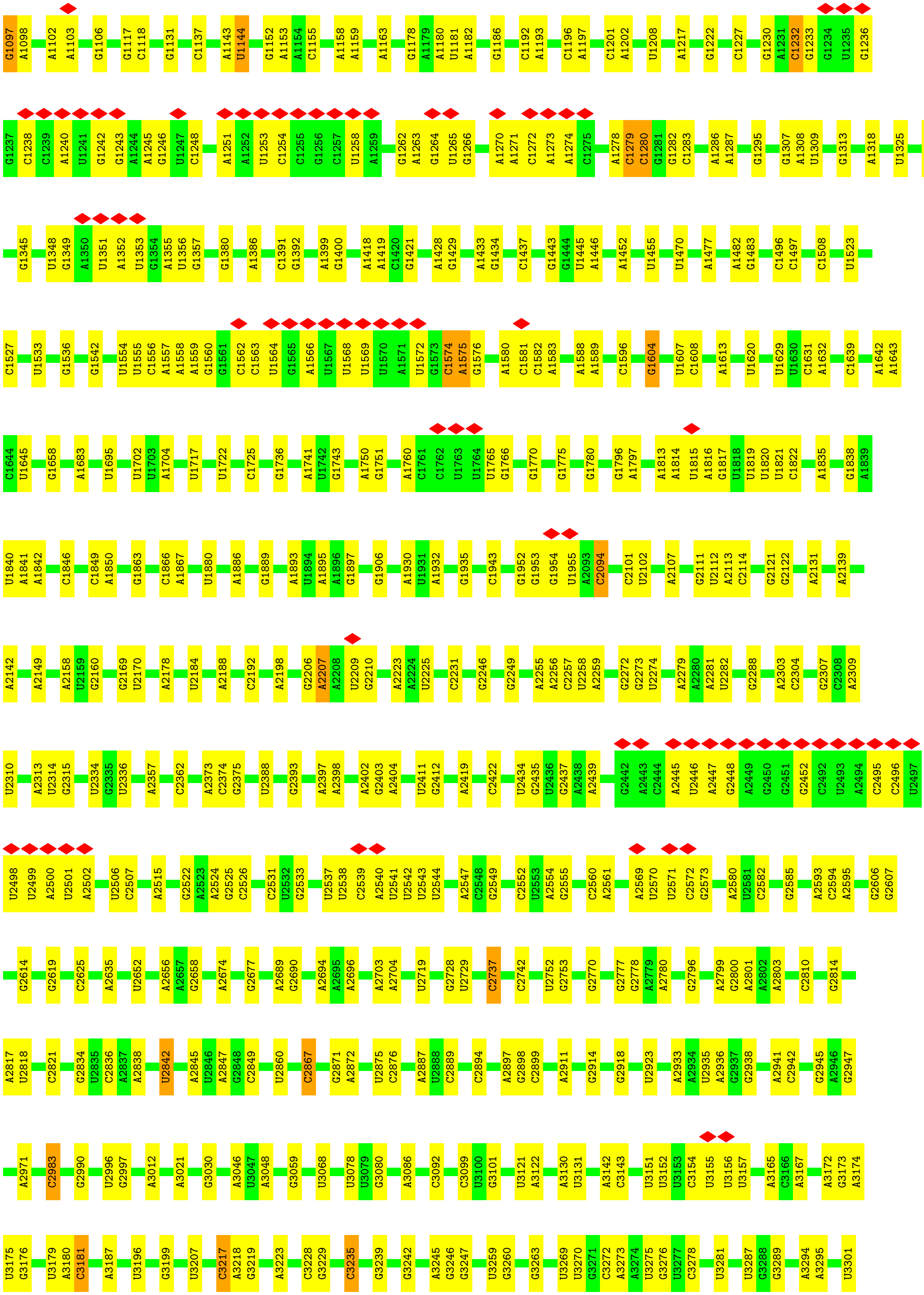
Chain Lp:



- Molecule 78: 25S rRNA

Chain C1:

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A1102
A1103
G1106
G1117
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G1131
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U1144
G1152
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A1154
C1155
A1158
A1159
A1163
G1178
A1179
A1180
U1181
A1182
G1186
C1192
A1193
C1196
A1197
C1201
A1202
U1208
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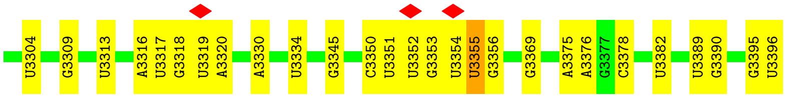
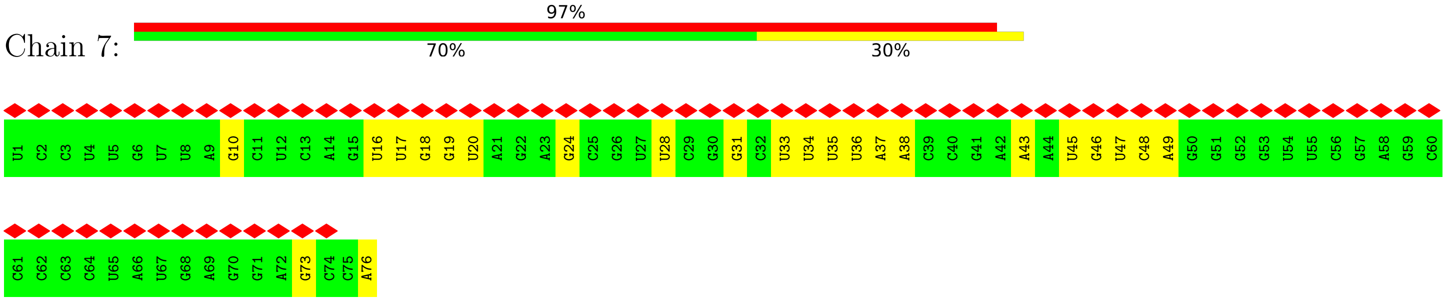
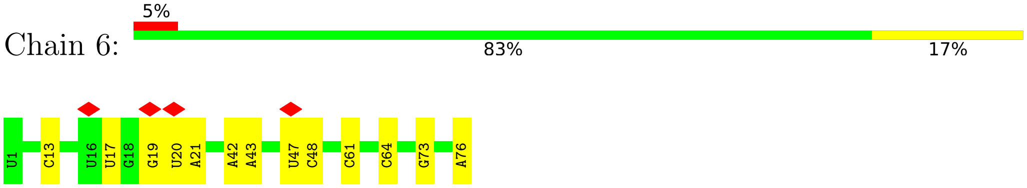


- Molecule 79: mRNA

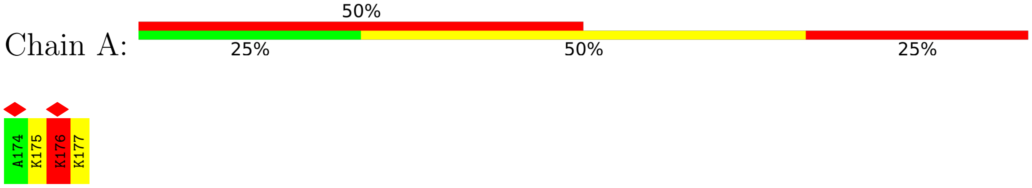
- Molecule 80: tRNA



- Molecule 80: tRNA



- Molecule 81: nascent chain



4 Experimental information ⓘ

Property	**Value**	**Source**
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	229084	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{Å}^2$)	2.5	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	FEI FALCON II (4k x 4k)	Depositor
Maximum map value	0.533	Depositor
Minimum map value	-0.254	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.017	Depositor
Recommended contour level	0.045	Depositor
Map size (Å)	433.6, 433.6, 433.6	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.084, 1.084, 1.084	Depositor

5 Model quality (i)

5.1 Standard geometry (i)

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	LA	0.61	0/1933	0.70	1/2598 (0.0%)
2	SA	0.33	0/1644	0.52	0/2249
3	LB	0.58	0/3146	0.65	0/4228
4	SB	0.38	0/1823	0.61	0/2447
5	C2	0.59	4/42053 (0.0%)	0.98	48/65522 (0.1%)
6	SP	0.31	0/936	0.51	0/1259
7	SC	0.38	0/1656	0.55	0/2251
8	SD	0.33	0/1754	0.55	0/2361
9	SE	0.36	0/2097	0.59	0/2823
10	SF	0.33	0/1625	0.57	0/2197
11	SG	0.33	0/1839	0.59	0/2460
12	SH	0.33	0/1498	0.56	0/2019
13	SI	0.41	0/1501	0.63	0/2006
14	SJ	0.34	0/1504	0.58	0/2016
15	SK	0.31	0/769	0.48	0/1039
16	SL	0.46	0/1185	0.57	0/1598
17	SM	0.29	0/883	0.63	0/1199
18	SN	0.42	0/1215	0.58	0/1638
19	SO	0.41	0/937	0.64	0/1261
20	SQ	0.34	0/1125	0.56	0/1510
21	SR	0.31	0/957	0.55	0/1283
22	SS	0.32	0/1211	0.59	0/1628
23	ST	0.32	0/1130	0.52	0/1517
24	SU	0.33	0/807	0.55	0/1091
25	SV	0.36	0/682	0.60	0/921
26	SW	0.41	0/1038	0.62	1/1395 (0.1%)
27	SX	0.44	0/1139	0.64	0/1518
28	SY	0.34	0/1087	0.57	0/1449
29	SZ	0.30	0/661	0.55	0/888
30	Sa	0.43	0/782	0.70	0/1047
31	Sb	0.36	0/620	0.60	0/838
32	Sd	0.38	0/452	0.53	0/600
33	Se	0.33	0/480	0.53	0/639
34	Sf	0.28	0/567	0.58	0/764

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$|Z|>5$	RMSZ	#$|Z|>5$
35	Sg	0.29	0/2436	0.54	0/3318
36	Sc	0.34	0/493	0.64	0/663
37	C4	0.78	0/2883	1.00	0/4491
38	C3	0.87	1/3746 (0.0%)	1.10	12/5832 (0.2%)
39	LC	0.56	0/2800	0.60	0/3790
40	LD	0.47	0/2400	0.58	0/3239
41	LE	0.46	0/1327	0.60	0/1790
42	LF	0.59	0/1821	0.59	0/2451
43	LG	0.48	0/1836	0.56	0/2481
44	LH	0.48	0/1529	0.56	0/2060
45	LI	0.54	0/1801	0.59	0/2416
46	LJ	0.42	0/1371	0.62	0/1838
47	LL	0.57	0/1568	0.67	0/2106
48	LM	0.48	0/1068	0.60	0/1438
49	LN	0.65	0/1757	0.67	0/2354
50	LO	0.59	0/1585	0.62	0/2128
51	LP	0.58	0/1439	0.65	0/1938
52	LQ	0.57	0/1465	0.67	0/1965
53	LR	0.50	0/1532	0.64	0/2043
54	LS	0.56	0/1473	0.61	0/1980
55	LT	0.60	0/1300	0.60	0/1743
56	LU	0.42	0/812	0.54	0/1099
57	LV	0.57	0/1018	0.62	0/1369
58	LW	0.44	0/850	0.53	0/1152
59	LX	0.53	0/979	0.55	0/1321
60	LY	0.48	0/995	0.62	0/1329
61	LZ	0.47	0/1118	0.58	0/1497
62	La	0.60	0/1204	0.62	0/1612
63	Lb	0.47	0/473	0.64	0/629
64	Lc	0.49	0/745	0.56	0/1001
65	Ld	0.53	0/890	0.61	0/1196
66	Le	0.54	0/1038	0.63	0/1390
67	Lf	0.64	0/868	0.65	0/1168
68	Lg	0.56	0/890	0.65	0/1189
69	Lh	0.48	0/978	0.58	0/1301
70	Li	0.44	0/772	0.58	0/1026
71	Lj	0.69	0/685	0.71	0/908
72	Lk	0.40	0/618	0.56	0/826
73	Ll	0.56	0/443	0.69	0/588
74	Lm	0.52	0/423	0.62	0/562
75	Ln	0.54	0/230	0.73	0/296
76	Lo	0.53	0/836	0.65	0/1104
77	Lp	0.59	0/701	0.65	0/934

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
78	C1	0.89	3/76214 (0.0%)	1.05	97/118821 (0.1%)
79	5	0.58	0/274	0.91	0/425
80	6	1.00	0/1804	0.97	1/2809 (0.0%)
80	7	0.29	0/1804	0.90	0/2809
81	A	1.59	1/39 (2.6%)	1.49	1/45 (2.2%)
All	All	0.68	9/218067 (0.0%)	0.89	161/320729 (0.1%)

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
3	LB	0	3
4	SB	0	4
9	SE	0	1
11	SG	0	1
12	SH	0	1
13	SI	0	1
14	SJ	0	1
16	SL	0	1
17	SM	0	4
19	SO	0	1
20	SQ	0	2
22	SS	0	1
26	SW	0	1
27	SX	0	1
29	SZ	0	1
30	Sa	0	3
31	Sb	0	1
34	Sf	0	1
39	LC	0	1
43	LG	0	2
48	LM	0	1
50	LO	0	1
53	LR	0	1
59	LX	0	1
60	LY	0	1
61	LZ	0	1
62	La	0	1
63	Lb	0	3
69	Lh	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
81	A	0	2
All	All	0	45

All (9) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
81	A	176	LYS	C-N	9.67	1.56	1.34
78	C1	21	G	C6-O6	-7.37	1.17	1.24
5	C2	629	U	C4-C5	-7.27	1.37	1.43
5	C2	629	U	C5-C6	-6.89	1.27	1.34
38	C3	106	C	N3-C4	-6.49	1.29	1.33
78	C1	2434	U	N3-C4	-6.46	1.32	1.38
5	C2	846	G	C6-N1	-6.17	1.35	1.39
78	C1	3301	U	C2-N3	-5.15	1.34	1.37
5	C2	350	U	C2-N3	-5.04	1.34	1.37

All (161) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
78	C1	21	G	N1-C6-O6	-20.33	107.70	119.90
38	C3	106	C	N3-C4-N4	-17.23	105.94	118.00
78	C1	2434	U	C5-C4-O4	14.89	134.83	125.90
5	C2	846	G	N1-C6-O6	-14.42	111.25	119.90
78	C1	2595	A	N1-C6-N6	-13.66	110.40	118.60
78	C1	2434	U	N3-C4-O4	-13.35	110.06	119.40
5	C2	846	G	C5-C6-O6	13.28	136.57	128.60
5	C2	629	U	C5-C4-O4	-12.03	118.68	125.90
38	C3	106	C	C5-C4-N4	11.91	128.54	120.20
78	C1	2434	U	N1-C2-N3	-11.65	107.91	114.90
5	C2	1784	C	N1-C2-O2	11.54	125.82	118.90
5	C2	629	U	N3-C4-O4	11.53	127.47	119.40
5	C2	629	U	C2-N1-C1’	11.37	131.34	117.70
78	C1	2434	U	C2-N3-C4	11.11	133.66	127.00
78	C1	2434	U	C2-N1-C1’	10.24	129.99	117.70
78	C1	1564	U	N3-C2-O2	-10.04	115.17	122.20
5	C2	629	U	N3-C2-O2	-9.75	115.38	122.20
78	C1	1280	C	N3-C2-O2	-9.58	115.19	121.90
78	C1	1496	C	C2-N1-C1’	9.57	129.32	118.80
78	C1	1574	C	N1-C2-O2	9.22	124.43	118.90
78	C1	846	A	C2-N3-C4	9.13	115.17	110.60
78	C1	2434	U	C6-N1-C1’	-9.02	108.58	121.20
38	C3	106	C	N3-C4-C5	8.71	125.38	121.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	C2	500	C	N3-C2-O2	-8.40	116.02	121.90
5	C2	629	U	N1-C2-O2	8.34	128.64	122.80
38	C3	125	U	C2-N1-C1'	8.34	127.70	117.70
5	C2	1527	C	C2-N1-C1'	8.25	127.87	118.80
78	C1	21	G	C5-C6-N1	8.19	115.59	111.50
78	C1	3278	C	C2-N1-C1'	8.12	127.74	118.80
78	C1	2737	C	N3-C2-O2	-7.93	116.35	121.90
78	C1	1564	U	N1-C2-O2	7.88	128.31	122.80
78	C1	637	C	C6-N1-C2	-7.78	117.19	120.30
78	C1	846	A	N1-C6-N6	-7.78	113.94	118.60
26	SW	28	ARG	C-N-CD	-7.70	103.67	120.60
78	C1	846	A	C8-N9-C4	-7.64	102.74	105.80
5	C2	1777	G	C4-C5-N7	7.63	113.85	110.80
78	C1	2094	C	N3-C2-O2	-7.62	116.56	121.90
78	C1	846	A	N3-C4-C5	-7.59	121.49	126.80
5	C2	629	U	C4-C5-C6	7.57	124.24	119.70
78	C1	21	G	C5-C6-O6	7.55	133.13	128.60
78	C1	3217	C	N1-C2-O2	7.53	123.42	118.90
78	C1	846	A	N9-C4-C5	7.53	108.81	105.80
78	C1	1496	C	C6-N1-C2	-7.46	117.31	120.30
78	C1	1280	C	N1-C2-O2	7.41	123.34	118.90
78	C1	1574	C	N3-C2-O2	-7.36	116.75	121.90
78	C1	79	U	C5-C4-O4	-7.32	121.51	125.90
78	C1	1496	C	N1-C2-O2	7.23	123.24	118.90
78	C1	3278	C	N1-C2-O2	7.12	123.17	118.90
5	C2	827	C	N3-C4-N4	-7.12	113.02	118.00
5	C2	629	U	C6-N1-C1'	-7.08	111.29	121.20
5	C2	827	C	N3-C4-C5	7.04	124.72	121.90
78	C1	637	C	C5-C6-N1	7.02	124.51	121.00
38	C3	148	G	C5-C6-O6	7.02	132.81	128.60
5	C2	1799	U	C2-N1-C1'	7.01	126.11	117.70
78	C1	2737	C	N1-C2-O2	6.95	123.07	118.90
78	C1	21	G	C6-N1-C2	-6.94	120.94	125.10
78	C1	1144	U	C5-C4-O4	-6.85	121.79	125.90
78	C1	1232	C	C2-N1-C1'	6.84	126.33	118.80
81	A	176	LYS	CA-C-N	-6.83	102.17	117.20
78	C1	3301	U	N3-C2-O2	-6.81	117.43	122.20
78	C1	3217	C	C2-N1-C1'	6.77	126.25	118.80
78	C1	1232	C	C6-N1-C2	-6.77	117.59	120.30
78	C1	1144	U	N3-C4-O4	6.73	124.11	119.40
38	C3	148	G	N1-C6-O6	-6.64	115.91	119.90
78	C1	2595	A	C5-C6-N6	6.64	129.01	123.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	C2	352	A	C6-N1-C2	-6.58	114.65	118.60
38	C3	125	U	N3-C2-O2	-6.57	117.60	122.20
5	C2	1458	G	C4-N9-C1'	6.35	134.76	126.50
78	C1	2304	C	N1-C2-O2	6.33	122.70	118.90
78	C1	1280	C	C6-N1-C2	-6.32	117.77	120.30
78	C1	922	U	C2-N1-C1'	6.30	125.26	117.70
78	C1	1496	C	C6-N1-C1'	-6.29	113.25	120.80
38	C3	125	U	N1-C2-O2	6.29	127.20	122.80
78	C1	3235	C	N3-C2-O2	-6.28	117.51	121.90
78	C1	1283	C	N3-C2-O2	-6.17	117.58	121.90
78	C1	79	U	N3-C4-O4	6.14	123.70	119.40
78	C1	846	A	O4'-C1'-N9	6.13	113.10	108.20
5	C2	500	C	N1-C2-O2	6.12	122.57	118.90
78	C1	757	C	N1-C2-O2	6.12	122.57	118.90
5	C2	629	U	C6-N1-C2	-6.12	117.33	121.00
78	C1	3278	C	C6-N1-C1'	-6.07	113.52	120.80
78	C1	2434	U	C5-C6-N1	6.06	125.73	122.70
78	C1	2595	A	C6-N1-C2	-6.05	114.97	118.60
78	C1	835	G	O4'-C1'-N9	5.92	112.94	108.20
78	C1	1838	G	C2-N3-C4	-5.91	108.95	111.90
5	C2	1527	C	C6-N1-C1'	-5.90	113.72	120.80
78	C1	406	G	O4'-C1'-N9	5.88	112.91	108.20
78	C1	2434	U	C4-C5-C6	-5.87	116.18	119.70
78	C1	1863	G	C2-N3-C4	-5.87	108.97	111.90
78	C1	3278	C	N3-C2-O2	-5.83	117.82	121.90
5	C2	1158	C	C6-N1-C2	-5.81	117.97	120.30
38	C3	4	C	N1-C2-O2	5.80	122.38	118.90
78	C1	3217	C	N3-C2-O2	-5.79	117.85	121.90
78	C1	142	C	C5-C4-N4	-5.77	116.16	120.20
78	C1	2983	C	C2-N1-C1'	5.77	125.15	118.80
5	C2	1542	G	O4'-C1'-N9	5.76	112.81	108.20
5	C2	1777	G	N9-C4-C5	-5.75	103.10	105.40
78	C1	2362	C	N1-C2-O2	5.75	122.35	118.90
78	C1	2595	A	C5-C6-N1	5.74	120.57	117.70
5	C2	827	C	C2-N3-C4	-5.71	117.04	119.90
78	C1	2836	C	N3-C2-O2	-5.67	117.93	121.90
5	C2	1458	G	C8-N9-C1'	-5.66	119.64	127.00
5	C2	656	G	C4-N9-C1'	5.66	133.85	126.50
5	C2	583	C	C2-N1-C1'	5.65	125.02	118.80
78	C1	2867	C	N1-C2-O2	5.63	122.28	118.90
78	C1	1496	C	C5-C6-N1	5.59	123.80	121.00
5	C2	1256	A	P-O3'-C3'	5.59	126.41	119.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
78	C1	637	C	N3-C4-N4	5.59	121.91	118.00
78	C1	1137	C	C2-N3-C4	-5.59	117.11	119.90
78	C1	3048	A	O4'-C1'-N9	5.53	112.63	108.20
5	C2	1784	C	N3-C2-O2	-5.53	118.03	121.90
38	C3	100	U	C2-N1-C1'	5.51	124.31	117.70
78	C1	2094	C	N1-C2-O2	5.49	122.19	118.90
78	C1	656	A	N7-C8-N9	5.47	116.53	113.80
5	C2	1771	U	C5-C4-O4	-5.46	122.62	125.90
78	C1	1604	G	C4-N9-C1'	5.45	133.58	126.50
78	C1	637	C	C5-C4-N4	-5.44	116.39	120.20
5	C2	1777	G	C5-N7-C8	-5.41	101.59	104.30
78	C1	2434	U	O4'-C1'-N1	5.40	112.52	108.20
78	C1	2304	C	N3-C2-O2	-5.39	118.12	121.90
5	C2	224	C	C6-N1-C2	-5.39	118.14	120.30
5	C2	322	G	P-O3'-C3'	5.38	126.15	119.70
78	C1	2207	A	N1-C6-N6	5.37	121.83	118.60
5	C2	144	U	C5-C4-O4	-5.35	122.69	125.90
78	C1	1433	A	O4'-C1'-N9	-5.35	103.92	108.20
78	C1	656	A	N1-C6-N6	5.34	121.80	118.60
38	C3	125	U	C6-N1-C1'	-5.33	113.74	121.20
5	C2	819	G	P-O3'-C3'	5.33	126.09	119.70
78	C1	656	A	C6-C5-N7	-5.31	128.58	132.30
5	C2	656	G	C8-N9-C1'	-5.31	120.10	127.00
38	C3	15	G	C2-N3-C4	-5.31	109.25	111.90
5	C2	230	C	N3-C2-O2	-5.30	118.19	121.90
78	C1	637	C	P-O3'-C3'	5.30	126.06	119.70
78	C1	1097	G	P-O3'-C3'	5.26	126.01	119.70
5	C2	1799	U	N3-C2-O2	-5.24	118.53	122.20
5	C2	1527	C	C6-N1-C2	-5.22	118.21	120.30
78	C1	543	C	N1-C2-O2	5.22	122.03	118.90
5	C2	1799	U	N1-C2-O2	5.21	126.45	122.80
78	C1	1575	A	N1-C6-N6	-5.21	115.48	118.60
78	C1	3355	U	C2-N1-C1'	5.19	123.93	117.70
78	C1	1094	U	P-O3'-C3'	5.19	125.92	119.70
5	C2	499	U	C6-N1-C2	-5.18	117.89	121.00
78	C1	3217	C	C6-N1-C1'	-5.18	114.58	120.80
5	C2	838	G	N3-C4-N9	-5.13	122.92	126.00
78	C1	1279	C	C2-N1-C1'	5.13	124.45	118.80
78	C1	2836	C	N1-C2-O2	5.13	121.98	118.90
78	C1	656	A	C5-N7-C8	-5.13	101.33	103.90
5	C2	1784	C	C2-N3-C4	5.13	122.47	119.90
78	C1	1695	U	O4'-C1'-N1	5.12	112.30	108.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
78	C1	1496	C	N3-C4-N4	5.12	121.58	118.00
78	C1	3181	C	N1-C2-O2	5.10	121.96	118.90
1	LA	9	ARG	NE-CZ-NH2	5.08	122.84	120.30
78	C1	2434	U	N1-C2-O2	5.07	126.35	122.80
78	C1	656	A	C4-C5-N7	5.06	113.23	110.70
78	C1	2842	U	C2-N1-C1’	5.05	123.76	117.70
5	C2	1573	A	P-O3’-C3’	5.04	125.75	119.70
80	6	61	C	N1-C2-O2	5.04	121.92	118.90
78	C1	2434	U	N3-C2-O2	5.04	125.73	122.20
5	C2	171	A	N3-C4-N9	5.03	131.43	127.40
5	C2	656	G	N3-C4-N9	5.03	129.02	126.00
5	C2	1258	U	N3-C2-O2	-5.02	118.69	122.20

There are no chirality outliers.

All (45) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
81	A	176	LYS	Mainchain
3	LB	127	LYS	Peptide
3	LB	139	GLN	Peptide
3	LB	141	GLY	Peptide
39	LC	318	LEU	Peptide
43	LG	30	THR	Peptide
43	LG	76	ALA	Peptide
48	LM	12	TRP	Peptide
50	LO	110[A]	PRO	Peptide
53	LR	52	LYS	Peptide
59	LX	43	ALA	Peptide
60	LY	51	ARG	Peptide
61	LZ	58	GLY	Peptide
62	La	116	GLY	Peptide
63	Lb	19	ASN	Peptide
63	Lb	20	GLY	Peptide
63	Lb	24	PRO	Peptide
69	Lh	83	LYS	Peptide
4	SB	151	LYS	Peptide
4	SB	211	HIS	Peptide
4	SB	44	GLY	Peptide
4	SB	81	PHE	Peptide
9	SE	42	LEU	Peptide
11	SG	68	LEU	Peptide
12	SH	64	VAL	Peptide

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Mol	Chain	Res	Type	Group
13	SI	9	HIS	Peptide
14	SJ	99	LEU	Peptide
16	SL	4	GLU	Peptide
17	SM	110	GLY	Peptide
17	SM	128	ALA	Peptide
17	SM	130	THR	Peptide
17	SM	84	ASN	Peptide
19	SO	90	ARG	Peptide
20	SQ	33	GLY	Peptide
20	SQ	40	GLU	Peptide
22	SS	90	ASN	Peptide
26	SW	54	ASP	Peptide
27	SX	41	SER	Peptide
29	SZ	67	ASP	Peptide
30	Sa	36	ILE	Peptide
30	Sa	84	VAL	Peptide
30	Sa	9	GLY	Peptide
31	Sb	61	THR	Peptide
34	Sf	144	CYS	Peptide

5.2 Too-close contacts ⓘ

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

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	LA	249/251 (99%)	231 (93%)	17 (7%)	1 (0%)	34	69
2	SA	204/206 (99%)	182 (89%)	20 (10%)	2 (1%)	15	49
3	LB	384/386 (100%)	347 (90%)	36 (9%)	1 (0%)	41	73
4	SB	222/232 (96%)	192 (86%)	27 (12%)	3 (1%)	11	40

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
6	SP	115/117 (98%)	101 (88%)	14 (12%)	0	100	100
7	SC	214/216 (99%)	197 (92%)	16 (8%)	1 (0%)	29	64
8	SD	220/222 (99%)	211 (96%)	9 (4%)	0	100	100
9	SE	256/258 (99%)	233 (91%)	22 (9%)	1 (0%)	34	69
10	SF	204/206 (99%)	183 (90%)	21 (10%)	0	100	100
11	SG	226/228 (99%)	204 (90%)	18 (8%)	4 (2%)	8	34
12	SH	182/184 (99%)	161 (88%)	19 (10%)	2 (1%)	14	46
13	SI	183/187 (98%)	165 (90%)	15 (8%)	3 (2%)	9	37
14	SJ	182/184 (99%)	165 (91%)	15 (8%)	2 (1%)	14	46
15	SK	90/92 (98%)	77 (86%)	13 (14%)	0	100	100
16	SL	142/144 (99%)	128 (90%)	14 (10%)	0	100	100
17	SM	119/121 (98%)	79 (66%)	35 (29%)	5 (4%)	3	16
18	SN	148/150 (99%)	134 (90%)	13 (9%)	1 (1%)	22	57
19	SO	125/127 (98%)	111 (89%)	14 (11%)	0	100	100
20	SQ	139/141 (99%)	122 (88%)	17 (12%)	0	100	100
21	SR	117/125 (94%)	107 (92%)	9 (8%)	1 (1%)	17	52
22	SS	143/145 (99%)	129 (90%)	10 (7%)	4 (3%)	5	25
23	ST	141/143 (99%)	126 (89%)	15 (11%)	0	100	100
24	SU	98/100 (98%)	90 (92%)	8 (8%)	0	100	100
25	SV	85/87 (98%)	72 (85%)	12 (14%)	1 (1%)	13	44
26	SW	127/129 (98%)	116 (91%)	11 (9%)	0	100	100
27	SX	142/144 (99%)	119 (84%)	22 (16%)	1 (1%)	22	57
28	SY	132/134 (98%)	120 (91%)	11 (8%)	1 (1%)	19	54
29	SZ	80/82 (98%)	67 (84%)	12 (15%)	1 (1%)	12	42
30	Sa	95/97 (98%)	72 (76%)	19 (20%)	4 (4%)	3	16
31	Sb	79/81 (98%)	71 (90%)	8 (10%)	0	100	100
32	Sd	51/53 (96%)	49 (96%)	2 (4%)	0	100	100
33	Se	58/60 (97%)	50 (86%)	8 (14%)	0	100	100
34	Sf	71/73 (97%)	47 (66%)	24 (34%)	0	100	100
35	Sg	310/312 (99%)	281 (91%)	29 (9%)	0	100	100
36	Sc	61/63 (97%)	57 (93%)	4 (7%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
39	LC	359/361 (99%)	332 (92%)	25 (7%)	2 (1%)	25	59
40	LD	292/294 (99%)	273 (94%)	18 (6%)	1 (0%)	41	73
41	LE	163/175 (93%)	147 (90%)	16 (10%)	0	100	100
42	LF	220/222 (99%)	209 (95%)	11 (5%)	0	100	100
43	LG	231/233 (99%)	209 (90%)	22 (10%)	0	100	100
44	LH	189/191 (99%)	172 (91%)	17 (9%)	0	100	100
45	LI	216/218 (99%)	205 (95%)	11 (5%)	0	100	100
46	LJ	167/169 (99%)	146 (87%)	20 (12%)	1 (1%)	25	59
47	LL	191/193 (99%)	164 (86%)	24 (13%)	3 (2%)	9	37
48	LM	134/136 (98%)	121 (90%)	13 (10%)	0	100	100
49	LN	201/203 (99%)	185 (92%)	16 (8%)	0	100	100
50	LO	195/197 (99%)	185 (95%)	8 (4%)	2 (1%)	15	49
51	LP	181/183 (99%)	166 (92%)	15 (8%)	0	100	100
52	LQ	183/185 (99%)	169 (92%)	14 (8%)	0	100	100
53	LR	186/188 (99%)	179 (96%)	5 (3%)	2 (1%)	14	46
54	LS	169/171 (99%)	162 (96%)	7 (4%)	0	100	100
55	LT	157/159 (99%)	143 (91%)	14 (9%)	0	100	100
56	LU	98/100 (98%)	90 (92%)	8 (8%)	0	100	100
57	LV	134/136 (98%)	124 (92%)	10 (8%)	0	100	100
58	LW	124/126 (98%)	109 (88%)	15 (12%)	0	100	100
59	LX	119/121 (98%)	109 (92%)	9 (8%)	1 (1%)	19	54
60	LY	123/125 (98%)	117 (95%)	6 (5%)	0	100	100
61	LZ	133/135 (98%)	118 (89%)	15 (11%)	0	100	100
62	La	146/148 (99%)	121 (83%)	23 (16%)	2 (1%)	11	40
63	Lb	56/58 (97%)	48 (86%)	7 (12%)	1 (2%)	8	34
64	Lc	94/96 (98%)	90 (96%)	4 (4%)	0	100	100
65	Ld	107/109 (98%)	95 (89%)	12 (11%)	0	100	100
66	Le	125/127 (98%)	117 (94%)	8 (6%)	0	100	100
67	Lf	104/106 (98%)	102 (98%)	2 (2%)	0	100	100
68	Lg	110/112 (98%)	107 (97%)	3 (3%)	0	100	100
69	Lh	117/119 (98%)	108 (92%)	9 (8%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
70	Li	97/99 (98%)	89 (92%)	8 (8%)	0	100	100
71	Lj	83/85 (98%)	78 (94%)	5 (6%)	0	100	100
72	Lk	75/77 (97%)	74 (99%)	1 (1%)	0	100	100
73	Ll	48/50 (96%)	43 (90%)	5 (10%)	0	100	100
74	Lm	50/52 (96%)	47 (94%)	3 (6%)	0	100	100
75	Ln	23/25 (92%)	23 (100%)	0	0	100	100
76	Lo	101/103 (98%)	94 (93%)	7 (7%)	0	100	100
77	Lp	89/91 (98%)	83 (93%)	6 (7%)	0	100	100
81	A	2/4 (50%)	1 (50%)	1 (50%)	0	100	100
All	All	10986/11162 (98%)	9950 (91%)	982 (9%)	54 (0%)	32	64

All (54) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
11	SG	68	LEU
13	SI	10	LYS
30	Sa	84	VAL
50	LO	111[A]	PRO
62	La	78	LEU
1	LA	126	LEU
3	LB	128	LYS
4	SB	212	VAL
9	SE	43	PRO
14	SJ	99	LEU
17	SM	130	THR
18	SN	28	LEU
21	SR	24	LEU
22	SS	91	ASP
47	LL	63	VAL
50	LO	110[A]	PRO
59	LX	44	PRO
2	SA	196	SER
4	SB	213	ARG
12	SH	158	ASP
14	SJ	100	LYS
30	Sa	62	TYR
39	LC	292	SER
40	LD	20	PHE
62	La	40	HIS

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Mol	Chain	Res	Type
12	SH	134	GLU
13	SI	9	HIS
13	SI	23	LYS
17	SM	109	GLU
17	SM	126	TRP
25	SV	81	ASN
28	SY	37	LYS
47	LL	5	LYS
47	LL	77	LEU
63	Lb	24	PRO
2	SA	157	ASP
4	SB	82	ARG
7	SC	147	ASN
11	SG	171	LYS
11	SG	173	PRO
17	SM	90	LYS
22	SS	7	GLU
29	SZ	69	LEU
30	Sa	9	GLY
39	LC	4	PRO
53	LR	52	LYS
53	LR	53	LYS
17	SM	85	LYS
22	SS	13	HIS
11	SG	67	VAL
22	SS	92	ILE
27	SX	42	PRO
46	LJ	8	PRO
30	Sa	83	ILE

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	LA	190/193 (98%)	190 (100%)	0	100	100
2	SA	170/173 (98%)	170 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	LB	320/322 (99%)	317 (99%)	3 (1%)	78	91
4	SB	200/205 (98%)	200 (100%)	0	100	100
6	SP	95/98 (97%)	95 (100%)	0	100	100
7	SC	175/175 (100%)	175 (100%)	0	100	100
8	SD	182/182 (100%)	180 (99%)	2 (1%)	73	89
9	SE	220/220 (100%)	220 (100%)	0	100	100
10	SF	172/173 (99%)	171 (99%)	1 (1%)	86	94
11	SG	189/195 (97%)	188 (100%)	1 (0%)	88	94
12	SH	163/165 (99%)	163 (100%)	0	100	100
13	SI	148/149 (99%)	147 (99%)	1 (1%)	84	93
14	SJ	156/157 (99%)	155 (99%)	1 (1%)	86	94
15	SK	77/85 (91%)	77 (100%)	0	100	100
16	SL	129/129 (100%)	128 (99%)	1 (1%)	81	92
17	SM	88/98 (90%)	88 (100%)	0	100	100
18	SN	127/127 (100%)	126 (99%)	1 (1%)	81	92
19	SO	91/96 (95%)	90 (99%)	1 (1%)	73	89
20	SQ	117/117 (100%)	117 (100%)	0	100	100
21	SR	101/113 (89%)	101 (100%)	0	100	100
22	SS	128/128 (100%)	127 (99%)	1 (1%)	81	92
23	ST	115/115 (100%)	115 (100%)	0	100	100
24	SU	93/93 (100%)	93 (100%)	0	100	100
25	SV	71/74 (96%)	71 (100%)	0	100	100
26	SW	110/110 (100%)	110 (100%)	0	100	100
27	SX	119/119 (100%)	119 (100%)	0	100	100
28	SY	112/112 (100%)	112 (100%)	0	100	100
29	SZ	67/73 (92%)	66 (98%)	1 (2%)	65	85
30	Sa	83/83 (100%)	83 (100%)	0	100	100
31	Sb	70/70 (100%)	70 (100%)	0	100	100
32	Sd	47/47 (100%)	47 (100%)	0	100	100
33	Se	50/51 (98%)	50 (100%)	0	100	100
34	Sf	56/64 (88%)	56 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
35	Sg	250/257 (97%)	249 (100%)	1 (0%)	91	96
36	Sc	55/56 (98%)	55 (100%)	0	100	100
39	LC	288/288 (100%)	286 (99%)	2 (1%)	84	93
40	LD	241/243 (99%)	241 (100%)	0	100	100
41	LE	138/154 (90%)	137 (99%)	1 (1%)	84	93
42	LF	186/186 (100%)	186 (100%)	0	100	100
43	LG	187/191 (98%)	187 (100%)	0	100	100
44	LH	168/171 (98%)	168 (100%)	0	100	100
45	LI	185/185 (100%)	183 (99%)	2 (1%)	73	89
46	LJ	146/147 (99%)	146 (100%)	0	100	100
47	LL	154/154 (100%)	153 (99%)	1 (1%)	86	94
48	LM	107/107 (100%)	107 (100%)	0	100	100
49	LN	175/175 (100%)	174 (99%)	1 (1%)	86	94
50	LO	160/160 (100%)	159 (99%)	1 (1%)	86	94
51	LP	138/145 (95%)	138 (100%)	0	100	100
52	LQ	150/150 (100%)	149 (99%)	1 (1%)	84	93
53	LR	152/153 (99%)	152 (100%)	0	100	100
54	LS	155/155 (100%)	155 (100%)	0	100	100
55	LT	136/136 (100%)	136 (100%)	0	100	100
56	LU	87/87 (100%)	87 (100%)	0	100	100
57	LV	104/104 (100%)	104 (100%)	0	100	100
58	LW	56/107 (52%)	56 (100%)	0	100	100
59	LX	104/105 (99%)	103 (99%)	1 (1%)	76	90
60	LY	108/108 (100%)	107 (99%)	1 (1%)	78	91
61	LZ	115/115 (100%)	114 (99%)	1 (1%)	78	91
62	La	118/118 (100%)	118 (100%)	0	100	100
63	Lb	46/46 (100%)	46 (100%)	0	100	100
64	Lc	81/81 (100%)	81 (100%)	0	100	100
65	Ld	92/96 (96%)	92 (100%)	0	100	100
66	Le	108/109 (99%)	108 (100%)	0	100	100
67	Lf	90/90 (100%)	90 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
68	Lg	95/95 (100%)	95 (100%)	0	100	100
69	Lh	104/104 (100%)	103 (99%)	1 (1%)	76	90
70	Li	80/81 (99%)	80 (100%)	0	100	100
71	Lj	69/69 (100%)	69 (100%)	0	100	100
72	Lk	68/68 (100%)	67 (98%)	1 (2%)	65	85
73	Ll	45/45 (100%)	44 (98%)	1 (2%)	52	78
74	Lm	47/47 (100%)	47 (100%)	0	100	100
75	Ln	22/23 (96%)	22 (100%)	0	100	100
76	Lo	87/88 (99%)	86 (99%)	1 (1%)	73	89
77	Lp	71/71 (100%)	71 (100%)	0	100	100
81	A	4/3 (133%)	0	4 (100%)	0	0
All	All	9203/9384 (98%)	9168 (100%)	35 (0%)	91	96

All (35) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	LB	10	ARG
3	LB	266	ARG
3	LB	332	ARG
8	SD	76	ARG
8	SD	148	LYS
10	SF	156	ARG
11	SG	98	ARG
13	SI	18	ARG
14	SJ	149	ARG
16	SL	67	ARG
18	SN	64	ARG
19	SO	136	ARG
22	SS	16	ARG
29	SZ	29	LYS
35	Sg	266	ASP
39	LC	93	MET
39	LC	203	ARG
41	LE	51	ARG
45	LI	90	ARG
45	LI	169	LYS
47	LL	104	ARG
49	LN	99	ARG

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Mol	Chain	Res	Type
50	LO	117[A]	ARG
52	LQ	12	ARG
59	LX	56	ARG
60	LY	17	LYS
61	LZ	3	LYS
69	Lh	81	ARG
72	Lk	63	LYS
73	Ll	21	ARG
76	Lo	80	ARG
81	A	175	LYS
81	A	176	LYS
81	A	177[A]	LYS
81	A	177[B]	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (58) such sidechains are listed below:

Mol	Chain	Res	Type
1	LA	79	ASN
1	LA	97	ASN
1	LA	132	ASN
1	LA	139	HIS
1	LA	218	HIS
2	SA	15	GLN
2	SA	83	GLN
2	SA	163	ASN
4	SB	146	GLN
6	SP	70	ASN
8	SD	67	ASN
9	SE	157	ASN
10	SF	34	GLN
10	SF	103	ASN
10	SF	200	ASN
10	SF	224	ASN
11	SG	189	HIS
12	SH	11	GLN
12	SH	42	GLN
12	SH	174	ASN
15	SK	9	ASN
17	SM	143	GLN
19	SO	65	GLN
20	SQ	77	GLN
22	SS	89	GLN

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Mol	Chain	Res	Type
27	SX	21	ASN
27	SX	27	ASN
27	SX	79	ASN
27	SX	89	ASN
28	SY	31	ASN
31	Sb	5	GLN
35	Sg	148	ASN
35	Sg	174	ASN
35	Sg	198	ASN
35	Sg	237	GLN
36	Sc	27	GLN
36	Sc	43	ASN
39	LC	58	HIS
43	LG	33	ASN
44	LH	5	GLN
44	LH	169	ASN
45	LI	208	ASN
46	LJ	68	HIS
49	LN	182	ASN
51	LP	28	ASN
51	LP	96	GLN
51	LP	116	HIS
52	LQ	126	GLN
53	LR	34	GLN
54	LS	49	HIS
57	LV	98	ASN
63	Lb	19	ASN
63	Lb	42	ASN
68	Lg	108	GLN
69	Lh	104	GLN
69	Lh	113	GLN
71	Lj	76	ASN
73	Ll	20	ASN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
37	C4	120/121 (99%)	14 (11%)	1 (0%)
38	C3	157/158 (99%)	35 (22%)	2 (1%)
5	C2	1768/1771 (99%)	524 (29%)	54 (3%)
78	C1	3180/3184 (99%)	669 (21%)	44 (1%)

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Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
79	5	10/11 (90%)	5 (50%)	0
80	6	75/76 (98%)	12 (16%)	0
80	7	75/76 (98%)	22 (29%)	4 (5%)
All	All	5385/5397 (99%)	1281 (23%)	105 (1%)

All (1281) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
5	C2	2	A
5	C2	4	C
5	C2	17	C
5	C2	25	C
5	C2	26	A
5	C2	34	G
5	C2	43	A
5	C2	47	A
5	C2	48	G
5	C2	51	A
5	C2	56	U
5	C2	57	G
5	C2	62	A
5	C2	63	G
5	C2	65	A
5	C2	66	U
5	C2	68	A
5	C2	69	G
5	C2	71	A
5	C2	73	U
5	C2	74	U
5	C2	75	U
5	C2	76	A
5	C2	78	A
5	C2	79	C
5	C2	80	A
5	C2	81	G
5	C2	90	C
5	C2	93	A
5	C2	104	A
5	C2	111	U
5	C2	114	C
5	C2	116	U
5	C2	121	U

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Mol	Chain	Res	Type
5	C2	126	A
5	C2	127	G
5	C2	129	U
5	C2	130	C
5	C2	131	C
5	C2	132	U
5	C2	133	U
5	C2	134	U
5	C2	135	A
5	C2	136	C
5	C2	138	A
5	C2	140	A
5	C2	141	U
5	C2	142	G
5	C2	145	A
5	C2	153	G
5	C2	155	U
5	C2	156	A
5	C2	159	U
5	C2	161	U
5	C2	166	C
5	C2	168	A
5	C2	171	A
5	C2	172	C
5	C2	174	U
5	C2	176	C
5	C2	178	U
5	C2	179	A
5	C2	180	A
5	C2	185	U
5	C2	186	C
5	C2	187	G
5	C2	188	A
5	C2	191	C
5	C2	192	U
5	C2	193	U
5	C2	195	G
5	C2	216	U
5	C2	217	A
5	C2	218	A
5	C2	220	A
5	C2	223	U

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Mol	Chain	Res	Type
5	C2	225	A
5	C2	227	U
5	C2	228	G
5	C2	230	C
5	C2	231	U
5	C2	232	U
5	C2	233	C
5	C2	234	G
5	C2	235	G
5	C2	236	A
5	C2	237	C
5	C2	238	U
5	C2	240	U
5	C2	241	U
5	C2	242	U
5	C2	243	G
5	C2	250	C
5	C2	255	U
5	C2	257	A
5	C2	260	U
5	C2	261	U
5	C2	262	U
5	C2	265	A
5	C2	267	U
5	C2	272	U
5	C2	274	G
5	C2	276	C
5	C2	277	U
5	C2	278	U
5	C2	279	G
5	C2	280	U
5	C2	281	G
5	C2	287	G
5	C2	299	A
5	C2	302	U
5	C2	311	U
5	C2	314	C
5	C2	316	A
5	C2	320	U
5	C2	321	C
5	C2	322	G
5	C2	323	A

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Mol	Chain	Res	Type
5	C2	324	U
5	C2	330	G
5	C2	333	A
5	C2	334	G
5	C2	337	G
5	C2	338	C
5	C2	352	A
5	C2	353	A
5	C2	359	A
5	C2	360	A
5	C2	361	C
5	C2	370	A
5	C2	373	G
5	C2	388	G
5	C2	400	A
5	C2	401	A
5	C2	402	C
5	C2	404	G
5	C2	405	C
5	C2	417	A
5	C2	419	G
5	C2	423	G
5	C2	424	C
5	C2	425	A
5	C2	426	G
5	C2	428	A
5	C2	432	G
5	C2	434	G
5	C2	436	A
5	C2	437	A
5	C2	439	U
5	C2	444	C
5	C2	445	A
5	C2	446	A
5	C2	460	A
5	C2	468	A
5	C2	471	A
5	C2	477	A
5	C2	480	G
5	C2	482	U
5	C2	483	A
5	C2	485	A

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Mol	Chain	Res	Type
5	C2	487	G
5	C2	489	C
5	C2	491	C
5	C2	492	A
5	C2	493	U
5	C2	494	U
5	C2	496	G
5	C2	498	G
5	C2	499	U
5	C2	500	C
5	C2	502	U
5	C2	503	G
5	C2	505	A
5	C2	506	A
5	C2	507	U
5	C2	510	G
5	C2	511	A
5	C2	514	G
5	C2	527	A
5	C2	534	A
5	C2	538	A
5	C2	539	G
5	C2	540	G
5	C2	541	A
5	C2	542	A
5	C2	543	C
5	C2	544	A
5	C2	549	G
5	C2	554	C
5	C2	555	A
5	C2	556	A
5	C2	557	G
5	C2	558	U
5	C2	559	C
5	C2	565	C
5	C2	568	G
5	C2	579	A
5	C2	580	A
5	C2	594	A
5	C2	595	G
5	C2	606	A
5	C2	609	U

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Mol	Chain	Res	Type
5	C2	610	G
5	C2	611	U
5	C2	619	A
5	C2	620	A
5	C2	622	A
5	C2	623	A
5	C2	624	G
5	C2	629	U
5	C2	639	U
5	C2	640	U
5	C2	641	G
5	C2	643	G
5	C2	645	C
5	C2	648	G
5	C2	650	U
5	C2	651	G
5	C2	653	C
5	C2	655	G
5	C2	657	U
5	C2	658	C
5	C2	677	G
5	C2	680	U
5	C2	681	U
5	C2	683	C
5	C2	687	G
5	C2	694	U
5	C2	696	C
5	C2	697	C
5	C2	698	U
5	C2	699	U
5	C2	700	C
5	C2	702	G
5	C2	703	G
5	C2	704	C
5	C2	705	U
5	C2	706	A
5	C2	707	A
5	C2	708	C
5	C2	709	C
5	C2	710	U
5	C2	711	U
5	C2	712	G

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Mol	Chain	Res	Type
5	C2	713	A
5	C2	714	G
5	C2	728	U
5	C2	729	G
5	C2	730	G
5	C2	731	C
5	C2	732	G
5	C2	733	A
5	C2	734	A
5	C2	736	C
5	C2	738	G
5	C2	741	C
5	C2	742	U
5	C2	743	U
5	C2	745	U
5	C2	753	A
5	C2	756	A
5	C2	765	G
5	C2	766	U
5	C2	767	U
5	C2	771	A
5	C2	774	A
5	C2	775	G
5	C2	778	G
5	C2	779	U
5	C2	780	A
5	C2	781	U
5	C2	782	U
5	C2	783	G
5	C2	787	G
5	C2	789	A
5	C2	804	A
5	C2	812	A
5	C2	813	U
5	C2	814	A
5	C2	815	G
5	C2	819	G
5	C2	820	U
5	C2	821	U
5	C2	823	G
5	C2	832	U
5	C2	833	U

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Mol	Chain	Res	Type
5	C2	835	U
5	C2	837	G
5	C2	838	G
5	C2	840	U
5	C2	841	U
5	C2	846	G
5	C2	852	C
5	C2	855	A
5	C2	856	A
5	C2	857	U
5	C2	863	A
5	C2	873	U
5	C2	876	G
5	C2	899	G
5	C2	901	G
5	C2	902	G
5	C2	912	U
5	C2	913	G
5	C2	915	A
5	C2	921	U
5	C2	926	A
5	C2	929	A
5	C2	932	U
5	C2	933	A
5	C2	934	C
5	C2	935	U
5	C2	940	A
5	C2	942	G
5	C2	945	U
5	C2	960	U
5	C2	964	U
5	C2	966	A
5	C2	970	A
5	C2	973	A
5	C2	988	A
5	C2	992	A
5	C2	1004	U
5	C2	1005	A
5	C2	1012	U
5	C2	1021	C
5	C2	1023	A
5	C2	1024	U

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Mol	Chain	Res	Type
5	C2	1028	C
5	C2	1029	U
5	C2	1031	U
5	C2	1032	G
5	C2	1039	A
5	C2	1052	U
5	C2	1053	G
5	C2	1057	U
5	C2	1058	U
5	C2	1059	U
5	C2	1060	U
5	C2	1061	A
5	C2	1066	C
5	C2	1074	G
5	C2	1076	A
5	C2	1080	U
5	C2	1082	C
5	C2	1092	A
5	C2	1096	C
5	C2	1100	G
5	C2	1109	G
5	C2	1113	A
5	C2	1115	U
5	C2	1138	A
5	C2	1143	A
5	C2	1150	G
5	C2	1156	C
5	C2	1158	C
5	C2	1160	A
5	C2	1164	G
5	C2	1167	G
5	C2	1170	G
5	C2	1185	U
5	C2	1186	U
5	C2	1191	U
5	C2	1194	A
5	C2	1196	A
5	C2	1199	G
5	C2	1200	G
5	C2	1201	G
5	C2	1212	G
5	C2	1217	A

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Mol	Chain	Res	Type
5	C2	1218	G
5	C2	1227	A
5	C2	1229	G
5	C2	1241	G
5	C2	1242	A
5	C2	1243	G
5	C2	1244	A
5	C2	1245	G
5	C2	1246	C
5	C2	1251	U
5	C2	1252	C
5	C2	1256	A
5	C2	1257	U
5	C2	1258	U
5	C2	1274	C
5	C2	1275	A
5	C2	1276	U
5	C2	1284	C
5	C2	1285	U
5	C2	1286	U
5	C2	1291	G
5	C2	1301	U
5	C2	1312	A
5	C2	1314	U
5	C2	1315	U
5	C2	1316	G
5	C2	1321	A
5	C2	1322	A
5	C2	1325	A
5	C2	1337	A
5	C2	1341	A
5	C2	1344	A
5	C2	1345	A
5	C2	1346	A
5	C2	1348	A
5	C2	1349	G
5	C2	1354	G
5	C2	1360	A
5	C2	1361	U
5	C2	1363	U
5	C2	1364	G
5	C2	1367	G

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Mol	Chain	Res	Type
5	C2	1370	U
5	C2	1371	A
5	C2	1373	C
5	C2	1382	A
5	C2	1383	G
5	C2	1389	C
5	C2	1390	U
5	C2	1398	U
5	C2	1399	C
5	C2	1400	A
5	C2	1402	G
5	C2	1410	A
5	C2	1413	U
5	C2	1414	U
5	C2	1425	A
5	C2	1427	A
5	C2	1428	G
5	C2	1431	C
5	C2	1432	U
5	C2	1433	G
5	C2	1437	U
5	C2	1444	A
5	C2	1446	A
5	C2	1448	G
5	C2	1458	G
5	C2	1459	C
5	C2	1466	G
5	C2	1469	A
5	C2	1472	C
5	C2	1473	U
5	C2	1479	A
5	C2	1483	A
5	C2	1491	U
5	C2	1492	A
5	C2	1493	A
5	C2	1496	U
5	C2	1506	G
5	C2	1515	A
5	C2	1516	A
5	C2	1517	U
5	C2	1518	C
5	C2	1520	U

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Mol	Chain	Res	Type
5	C2	1521	G
5	C2	1523	G
5	C2	1524	A
5	C2	1528	U
5	C2	1531	G
5	C2	1535	U
5	C2	1537	C
5	C2	1540	G
5	C2	1543	A
5	C2	1554	U
5	C2	1557	U
5	C2	1558	U
5	C2	1559	A
5	C2	1569	A
5	C2	1572	G
5	C2	1573	A
5	C2	1574	G
5	C2	1575	G
5	C2	1576	A
5	C2	1583	A
5	C2	1584	G
5	C2	1590	G
5	C2	1601	G
5	C2	1602	C
5	C2	1607	G
5	C2	1611	A
5	C2	1616	G
5	C2	1619	C
5	C2	1622	G
5	C2	1631	A
5	C2	1634	C
5	C2	1635	A
5	C2	1637	C
5	C2	1657	U
5	C2	1658	G
5	C2	1681	A
5	C2	1682	U
5	C2	1688	U
5	C2	1689	A
5	C2	1696	G
5	C2	1697	G
5	C2	1698	G

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Mol	Chain	Res	Type
5	C2	1699	G
5	C2	1700	C
5	C2	1701	A
5	C2	1702	A
5	C2	1706	C
5	C2	1707	A
5	C2	1708	U
5	C2	1715	G
5	C2	1716	C
5	C2	1717	G
5	C2	1736	G
5	C2	1742	U
5	C2	1743	U
5	C2	1760	G
5	C2	1762	A
5	C2	1766	A
5	C2	1767	G
5	C2	1769	U
5	C2	1770	U
5	C2	1780	G
5	C2	1782	A
5	C2	1783	C
5	C2	1792	G
5	C2	1793	G
5	C2	1794	A
5	C2	1795	U
5	C2	1796	C
5	C2	1799	U
37	C4	7	G
37	C4	9	C
37	C4	53	U
37	C4	54	U
37	C4	55	A
37	C4	65	G
37	C4	73	C
37	C4	74	C
37	C4	76	A
37	C4	95	A
37	C4	102	A
37	C4	112	G
37	C4	120	C
37	C4	121	U

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Mol	Chain	Res	Type
38	C3	23	U
38	C3	34	U
38	C3	35	C
38	C3	51	G
38	C3	59	A
38	C3	62	C
38	C3	63	G
38	C3	69	U
38	C3	80	A
38	C3	81	U
38	C3	82	U
38	C3	83	C
38	C3	84	C
38	C3	85	G
38	C3	86	U
38	C3	87	G
38	C3	90	U
38	C3	91	C
38	C3	95	G
38	C3	99	C
38	C3	104	A
38	C3	106	C
38	C3	111	A
38	C3	112	U
38	C3	113	U
38	C3	116	G
38	C3	125	U
38	C3	126	A
38	C3	129	C
38	C3	138	A
38	C3	148	G
38	C3	151	C
38	C3	152	G
38	C3	157	U
38	C3	158	U
78	C1	6	A
78	C1	11	A
78	C1	13	A
78	C1	14	U
78	C1	15	C
78	C1	18	G
78	C1	30	G

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Mol	Chain	Res	Type
78	C1	31	C
78	C1	40	A
78	C1	43	A
78	C1	49	A
78	C1	59	G
78	C1	60	A
78	C1	65	A
78	C1	66	A
78	C1	75	G
78	C1	85	A
78	C1	92	G
78	C1	109	A
78	C1	110	G
78	C1	111	C
78	C1	113	C
78	C1	121	A
78	C1	122	A
78	C1	133	U
78	C1	136	G
78	C1	143	G
78	C1	150	A
78	C1	156	G
78	C1	157	A
78	C1	165	A
78	C1	166	C
78	C1	172	G
78	C1	173	G
78	C1	187	A
78	C1	190	U
78	C1	191	U
78	C1	200	C
78	C1	206	G
78	C1	210	U
78	C1	211	A
78	C1	213	A
78	C1	218	G
78	C1	219	A
78	C1	221	A
78	C1	231	G
78	C1	234	G
78	C1	240	U
78	C1	241	G

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Mol	Chain	Res	Type
78	C1	243	G
78	C1	252	U
78	C1	253	A
78	C1	269	G
78	C1	283	G
78	C1	286	U
78	C1	295	A
78	C1	298	U
78	C1	323	A
78	C1	329	U
78	C1	334	A
78	C1	338	A
78	C1	339	C
78	C1	346	C
78	C1	350	C
78	C1	351	A
78	C1	376	G
78	C1	398	A
78	C1	399	A
78	C1	401	U
78	C1	402	A
78	C1	403	C
78	C1	421	G
78	C1	422	A
78	C1	439	C
78	C1	440	A
78	C1	441	U
78	C1	442	G
78	C1	445	G
78	C1	446	U
78	C1	447	U
78	C1	448	U
78	C1	450	G
78	C1	451	U
78	C1	487	U
78	C1	488	U
78	C1	489	U
78	C1	490	C
78	C1	491	A
78	C1	494	G
78	C1	515	C
78	C1	517	G

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Mol	Chain	Res	Type
78	C1	519	A
78	C1	520	U
78	C1	521	A
78	C1	523	A
78	C1	535	G
78	C1	544	C
78	C1	545	U
78	C1	546	C
78	C1	547	G
78	C1	552	G
78	C1	555	U
78	C1	557	A
78	C1	558	U
78	C1	559	A
78	C1	578	A
78	C1	579	G
78	C1	592	A
78	C1	597	G
78	C1	600	G
78	C1	604	G
78	C1	609	G
78	C1	610	G
78	C1	611	A
78	C1	612	U
78	C1	620	U
78	C1	621	A
78	C1	622	A
78	C1	636	C
78	C1	637	C
78	C1	638	C
78	C1	642	U
78	C1	649	A
78	C1	677	A
78	C1	681	U
78	C1	691	A
78	C1	705	A
78	C1	708	G
78	C1	710	A
78	C1	712	G
78	C1	715	A
78	C1	716	A
78	C1	737	G

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Mol	Chain	Res	Type
78	C1	758	C
78	C1	763	G
78	C1	764	U
78	C1	765	C
78	C1	766	U
78	C1	767	U
78	C1	774	G
78	C1	776	U
78	C1	777	U
78	C1	780	A
78	C1	781	G
78	C1	785	G
78	C1	786	A
78	C1	799	G
78	C1	806	A
78	C1	815	G
78	C1	817	A
78	C1	830	A
78	C1	838	G
78	C1	846	A
78	C1	847	A
78	C1	848	A
78	C1	849	C
78	C1	861	C
78	C1	869	G
78	C1	874	U
78	C1	879	U
78	C1	881	C
78	C1	896	A
78	C1	907	G
78	C1	908	G
78	C1	909	G
78	C1	914	A
78	C1	916	G
78	C1	917	A
78	C1	923	C
78	C1	937	G
78	C1	944	C
78	C1	953	G
78	C1	959	C
78	C1	960	U
78	C1	974	G

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Mol	Chain	Res	Type
78	C1	980	A
78	C1	981	U
78	C1	982	C
78	C1	984	G
78	C1	1001	G
78	C1	1002	A
78	C1	1010	G
78	C1	1013	G
78	C1	1015	U
78	C1	1017	C
78	C1	1018	G
78	C1	1024	G
78	C1	1025	A
78	C1	1026	A
78	C1	1029	G
78	C1	1036	A
78	C1	1037	C
78	C1	1041	U
78	C1	1047	A
78	C1	1049	C
78	C1	1064	A
78	C1	1065	A
78	C1	1072	G
78	C1	1079	A
78	C1	1081	U
78	C1	1093	A
78	C1	1094	U
78	C1	1095	U
78	C1	1097	G
78	C1	1098	A
78	C1	1102	A
78	C1	1103	A
78	C1	1106	G
78	C1	1117	G
78	C1	1118	C
78	C1	1131	G
78	C1	1143	A
78	C1	1144	U
78	C1	1152	G
78	C1	1153	A
78	C1	1155	C
78	C1	1158	A

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Mol	Chain	Res	Type
78	C1	1159	A
78	C1	1163	A
78	C1	1178	G
78	C1	1180	A
78	C1	1181	U
78	C1	1182	A
78	C1	1186	G
78	C1	1192	C
78	C1	1193	A
78	C1	1196	C
78	C1	1197	A
78	C1	1201	C
78	C1	1202	A
78	C1	1208	U
78	C1	1217	A
78	C1	1222	G
78	C1	1227	C
78	C1	1230	G
78	C1	1232	C
78	C1	1233	G
78	C1	1236	G
78	C1	1238	C
78	C1	1240	A
78	C1	1242	G
78	C1	1243	G
78	C1	1245	A
78	C1	1246	G
78	C1	1248	C
78	C1	1251	A
78	C1	1253	U
78	C1	1254	C
78	C1	1258	U
78	C1	1262	G
78	C1	1263	A
78	C1	1264	G
78	C1	1265	U
78	C1	1266	G
78	C1	1270	A
78	C1	1271	A
78	C1	1272	C
78	C1	1274	A
78	C1	1278	A

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Mol	Chain	Res	Type
78	C1	1279	C
78	C1	1280	C
78	C1	1282	G
78	C1	1286	A
78	C1	1287	A
78	C1	1295	G
78	C1	1307	G
78	C1	1308	A
78	C1	1309	U
78	C1	1313	G
78	C1	1318	A
78	C1	1325	U
78	C1	1330	A
78	C1	1331	U
78	C1	1345	G
78	C1	1348	U
78	C1	1349	G
78	C1	1351	U
78	C1	1352	A
78	C1	1353	U
78	C1	1356	U
78	C1	1357	G
78	C1	1380	G
78	C1	1386	A
78	C1	1391	C
78	C1	1392	G
78	C1	1399	A
78	C1	1400	G
78	C1	1418	A
78	C1	1419	A
78	C1	1421	G
78	C1	1428	A
78	C1	1429	G
78	C1	1434	G
78	C1	1437	C
78	C1	1443	G
78	C1	1445	U
78	C1	1446	A
78	C1	1452	A
78	C1	1455	U
78	C1	1470	U
78	C1	1477	A

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Mol	Chain	Res	Type
78	C1	1482	A
78	C1	1483	G
78	C1	1497	C
78	C1	1508	C
78	C1	1523	U
78	C1	1527	C
78	C1	1533	U
78	C1	1536	G
78	C1	1542	G
78	C1	1555	U
78	C1	1556	C
78	C1	1557	A
78	C1	1558	A
78	C1	1559	A
78	C1	1560	G
78	C1	1562	C
78	C1	1563	C
78	C1	1566	A
78	C1	1568	U
78	C1	1569	U
78	C1	1572	U
78	C1	1574	C
78	C1	1575	A
78	C1	1576	G
78	C1	1580	A
78	C1	1581	C
78	C1	1582	C
78	C1	1583	A
78	C1	1588	A
78	C1	1589	A
78	C1	1596	C
78	C1	1604	G
78	C1	1607	U
78	C1	1608	C
78	C1	1613	A
78	C1	1620	U
78	C1	1629	U
78	C1	1631	C
78	C1	1632	A
78	C1	1639	C
78	C1	1642	A
78	C1	1643	A

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Mol	Chain	Res	Type
78	C1	1645	U
78	C1	1658	G
78	C1	1683	A
78	C1	1702	U
78	C1	1704	A
78	C1	1717	U
78	C1	1722	U
78	C1	1725	C
78	C1	1736	G
78	C1	1741	A
78	C1	1743	G
78	C1	1750	A
78	C1	1751	G
78	C1	1760	A
78	C1	1765	U
78	C1	1766	G
78	C1	1770	G
78	C1	1775	G
78	C1	1780	G
78	C1	1796	G
78	C1	1797	A
78	C1	1813	A
78	C1	1814	A
78	C1	1816	A
78	C1	1817	G
78	C1	1819	U
78	C1	1820	U
78	C1	1821	U
78	C1	1822	C
78	C1	1835	A
78	C1	1840	U
78	C1	1841	A
78	C1	1842	A
78	C1	1846	C
78	C1	1849	C
78	C1	1850	A
78	C1	1866	C
78	C1	1867	A
78	C1	1880	U
78	C1	1886	A
78	C1	1889	G
78	C1	1893	A

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Mol	Chain	Res	Type
78	C1	1895	A
78	C1	1897	G
78	C1	1906	G
78	C1	1930	A
78	C1	1932	A
78	C1	1935	G
78	C1	1943	C
78	C1	1952	G
78	C1	1953	G
78	C1	1954	G
78	C1	1955	U
78	C1	2094	C
78	C1	2101	C
78	C1	2102	U
78	C1	2107	A
78	C1	2111	G
78	C1	2112	U
78	C1	2113	A
78	C1	2114	C
78	C1	2121	G
78	C1	2122	G
78	C1	2131	A
78	C1	2139	A
78	C1	2142	A
78	C1	2149	A
78	C1	2158	A
78	C1	2160	G
78	C1	2169	G
78	C1	2170	U
78	C1	2178	A
78	C1	2184	U
78	C1	2188	A
78	C1	2192	C
78	C1	2198	A
78	C1	2206	G
78	C1	2207	A
78	C1	2209	U
78	C1	2210	G
78	C1	2223	A
78	C1	2225	U
78	C1	2231	C
78	C1	2246	G

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Mol	Chain	Res	Type
78	C1	2249	G
78	C1	2255	A
78	C1	2256	A
78	C1	2257	C
78	C1	2258	U
78	C1	2259	A
78	C1	2272	G
78	C1	2273	G
78	C1	2274	U
78	C1	2279	A
78	C1	2281	A
78	C1	2282	U
78	C1	2288	G
78	C1	2303	A
78	C1	2307	G
78	C1	2309	A
78	C1	2310	U
78	C1	2313	A
78	C1	2314	U
78	C1	2315	G
78	C1	2334	U
78	C1	2336	U
78	C1	2357	A
78	C1	2373	A
78	C1	2374	C
78	C1	2375	G
78	C1	2388	U
78	C1	2393	G
78	C1	2397	A
78	C1	2398	A
78	C1	2402	A
78	C1	2403	G
78	C1	2404	A
78	C1	2411	U
78	C1	2412	G
78	C1	2419	A
78	C1	2422	C
78	C1	2435	G
78	C1	2437	G
78	C1	2439	A
78	C1	2445	A
78	C1	2446	U

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Mol	Chain	Res	Type
78	C1	2447	A
78	C1	2448	G
78	C1	2452	G
78	C1	2496	C
78	C1	2498	U
78	C1	2499	U
78	C1	2501	U
78	C1	2502	A
78	C1	2506	U
78	C1	2507	C
78	C1	2515	A
78	C1	2522	G
78	C1	2524	A
78	C1	2526	C
78	C1	2531	C
78	C1	2533	G
78	C1	2537	U
78	C1	2538	U
78	C1	2539	C
78	C1	2540	A
78	C1	2541	U
78	C1	2542	U
78	C1	2543	U
78	C1	2544	U
78	C1	2547	A
78	C1	2549	G
78	C1	2552	C
78	C1	2554	A
78	C1	2555	G
78	C1	2560	C
78	C1	2561	A
78	C1	2569	A
78	C1	2570	U
78	C1	2571	U
78	C1	2572	C
78	C1	2573	G
78	C1	2580	A
78	C1	2582	C
78	C1	2585	G
78	C1	2593	A
78	C1	2594	C
78	C1	2606	G

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Mol	Chain	Res	Type
78	C1	2607	G
78	C1	2614	G
78	C1	2619	G
78	C1	2625	C
78	C1	2635	A
78	C1	2652	U
78	C1	2656	A
78	C1	2658	G
78	C1	2674	A
78	C1	2677	G
78	C1	2689	A
78	C1	2690	G
78	C1	2694	A
78	C1	2696	A
78	C1	2703	A
78	C1	2704	A
78	C1	2719	U
78	C1	2728	G
78	C1	2729	U
78	C1	2737	C
78	C1	2742	C
78	C1	2752	U
78	C1	2753	G
78	C1	2770	G
78	C1	2777	G
78	C1	2778	G
78	C1	2780	A
78	C1	2796	G
78	C1	2799	A
78	C1	2800	G
78	C1	2801	A
78	C1	2803	A
78	C1	2810	C
78	C1	2814	G
78	C1	2817	A
78	C1	2818	U
78	C1	2821	C
78	C1	2834	G
78	C1	2838	A
78	C1	2842	U
78	C1	2845	A
78	C1	2847	A

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Mol	Chain	Res	Type
78	C1	2849	C
78	C1	2860	U
78	C1	2867	C
78	C1	2871	G
78	C1	2872	A
78	C1	2875	U
78	C1	2876	C
78	C1	2887	A
78	C1	2889	C
78	C1	2894	C
78	C1	2897	A
78	C1	2898	G
78	C1	2899	C
78	C1	2911	A
78	C1	2914	G
78	C1	2918	G
78	C1	2923	U
78	C1	2933	A
78	C1	2935	U
78	C1	2936	A
78	C1	2938	G
78	C1	2941	A
78	C1	2942	C
78	C1	2945	G
78	C1	2947	G
78	C1	2971	A
78	C1	2983	C
78	C1	2990	G
78	C1	2996	U
78	C1	2997	G
78	C1	3012	A
78	C1	3021	A
78	C1	3030	G
78	C1	3046	A
78	C1	3059	G
78	C1	3068	U
78	C1	3078	U
78	C1	3080	G
78	C1	3086	A
78	C1	3092	C
78	C1	3099	C
78	C1	3101	G

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Mol	Chain	Res	Type
78	C1	3122	A
78	C1	3130	A
78	C1	3131	U
78	C1	3142	A
78	C1	3143	C
78	C1	3151	U
78	C1	3152	U
78	C1	3154	C
78	C1	3155	U
78	C1	3156	U
78	C1	3157	U
78	C1	3165	A
78	C1	3167	A
78	C1	3172	A
78	C1	3173	G
78	C1	3174	A
78	C1	3175	U
78	C1	3176	G
78	C1	3179	U
78	C1	3180	A
78	C1	3181	C
78	C1	3187	A
78	C1	3196	U
78	C1	3199	G
78	C1	3207	U
78	C1	3217	C
78	C1	3218	A
78	C1	3219	G
78	C1	3223	A
78	C1	3229	G
78	C1	3235	C
78	C1	3239	G
78	C1	3242	G
78	C1	3245	A
78	C1	3246	G
78	C1	3247	G
78	C1	3259	U
78	C1	3260	G
78	C1	3263	G
78	C1	3270	U
78	C1	3272	C
78	C1	3273	A

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Mol	Chain	Res	Type
78	C1	3276	G
78	C1	3281	U
78	C1	3287	U
78	C1	3289	G
78	C1	3294	A
78	C1	3295	A
78	C1	3304	U
78	C1	3309	G
78	C1	3313	U
78	C1	3316	A
78	C1	3317	U
78	C1	3318	G
78	C1	3319	U
78	C1	3320	A
78	C1	3330	A
78	C1	3334	U
78	C1	3345	G
78	C1	3351	U
78	C1	3352	U
78	C1	3353	G
78	C1	3354	U
78	C1	3355	U
78	C1	3356	G
78	C1	3369	G
78	C1	3375	A
78	C1	3376	A
78	C1	3378	C
78	C1	3382	U
78	C1	3389	U
78	C1	3390	G
78	C1	3395	G
78	C1	3396	U
79	5	43	A
79	5	44	A
79	5	46	A
79	5	49	A
79	5	52	A
80	7	10	G
80	7	16	U
80	7	17	U
80	7	18	G
80	7	19	G

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Mol	Chain	Res	Type
80	7	20	U
80	7	24	G
80	7	28	U
80	7	31	G
80	7	33	U
80	7	34	U
80	7	36	U
80	7	37	A
80	7	38	A
80	7	43	A
80	7	45	U
80	7	46	G
80	7	47	U
80	7	48	C
80	7	49	A
80	7	73	G
80	7	76	A
80	6	13	C
80	6	17	U
80	6	19	G
80	6	20	U
80	6	21	A
80	6	42	A
80	6	43	A
80	6	47	U
80	6	48	C
80	6	64	C
80	6	73	G
80	6	76	A

All (105) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
5	C2	68	A
5	C2	77	U
5	C2	139	C
5	C2	141	U
5	C2	177	U
5	C2	215	A
5	C2	224	C
5	C2	235	G
5	C2	237	C

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Mol	Chain	Res	Type
5	C2	261	U
5	C2	278	U
5	C2	280	U
5	C2	313	U
5	C2	322	G
5	C2	352	A
5	C2	387	A
5	C2	400	A
5	C2	539	G
5	C2	541	A
5	C2	555	A
5	C2	609	U
5	C2	639	U
5	C2	640	U
5	C2	705	U
5	C2	711	U
5	C2	755	A
5	C2	765	G
5	C2	803	A
5	C2	813	U
5	C2	819	G
5	C2	912	U
5	C2	928	U
5	C2	1023	A
5	C2	1226	A
5	C2	1245	G
5	C2	1251	U
5	C2	1256	A
5	C2	1273	G
5	C2	1274	C
5	C2	1344	A
5	C2	1382	A
5	C2	1427	A
5	C2	1430	U
5	C2	1471	A
5	C2	1556	A
5	C2	1558	U
5	C2	1573	A
5	C2	1601	G
5	C2	1615	C
5	C2	1633	A
5	C2	1636	C

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Mol	Chain	Res	Type
5	C2	1680	G
5	C2	1681	A
5	C2	1742	U
37	C4	52	G
38	C3	85	G
38	C3	125	U
78	C1	13	A
78	C1	65	A
78	C1	239	G
78	C1	282	G
78	C1	439	C
78	C1	545	U
78	C1	637	C
78	C1	763	G
78	C1	846	A
78	C1	880	G
78	C1	916	G
78	C1	1064	A
78	C1	1094	U
78	C1	1097	G
78	C1	1273	A
78	C1	1307	G
78	C1	1352	A
78	C1	1355	A
78	C1	1554	U
78	C1	1562	C
78	C1	1607	U
78	C1	1815	U
78	C1	1819	U
78	C1	1820	U
78	C1	2112	U
78	C1	2255	A
78	C1	2256	A
78	C1	2257	C
78	C1	2258	U
78	C1	2495	C
78	C1	2500	A
78	C1	2501	U
78	C1	2525	G
78	C1	2537	U
78	C1	2541	U
78	C1	3121	U

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Mol	Chain	Res	Type
78	C1	3218	A
78	C1	3228	C
78	C1	3269	U
78	C1	3275	U
78	C1	3316	A
78	C1	3319	U
78	C1	3350	C
78	C1	3351	U
80	7	35	U
80	7	36	U
80	7	37	A
80	7	46	G

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 ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

There are no ligands in this entry.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

The following chains have linkage breaks:

Mol	Chain	Number of breaks
78	C1	3
5	C2	2
13	SI	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	C1	1955:U	O3’	2093:A	P	26.47
1	SI	123:LYS	C	135:LYS	N	20.93
1	C1	2452:G	O3’	2492:C	P	17.29
1	C2	658:C	O3’	676:G	P	16.25
1	C2	714:G	O3’	726:C	P	10.98
1	C1	451:U	O3’	486:A	P	10.24

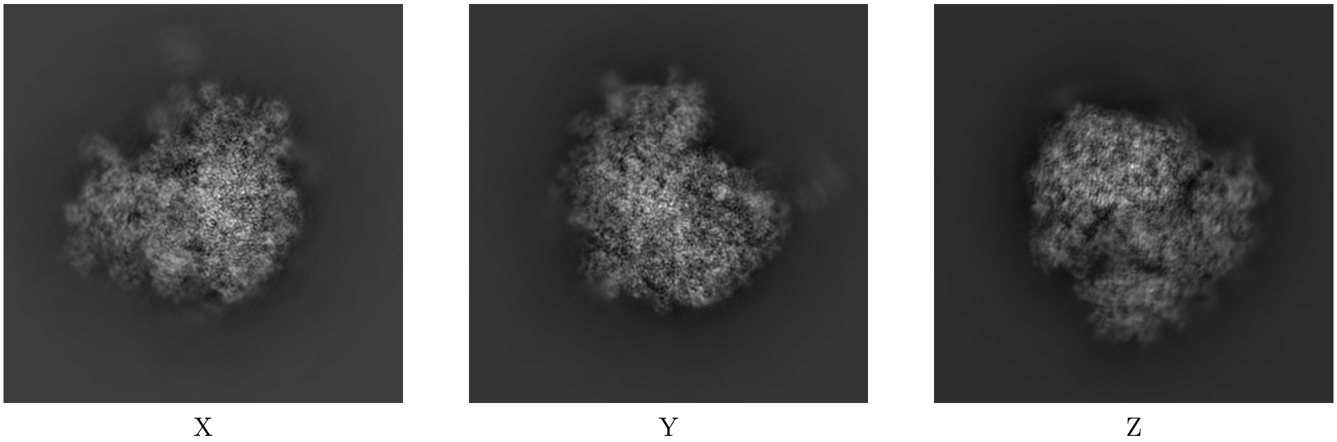
6 Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-10397. These allow visual inspection of the internal detail of the map and identification of artifacts.

No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections ⓘ

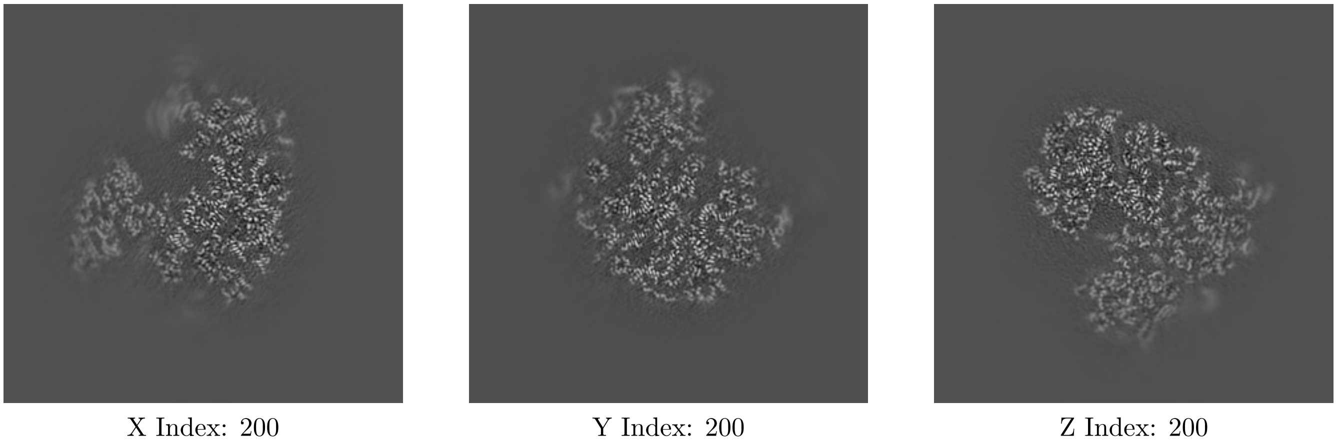
6.1.1 Primary map



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

6.2 Central slices ⓘ

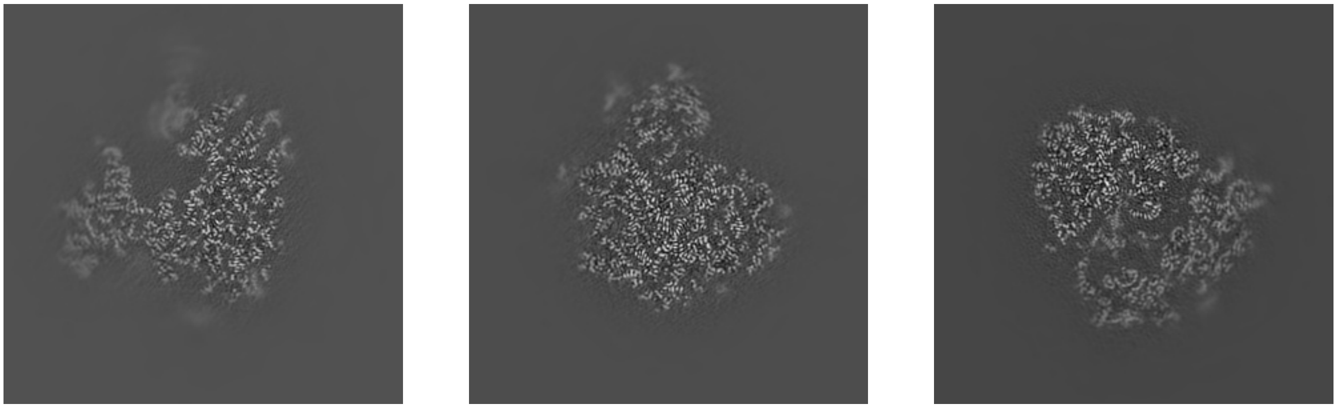
6.2.1 Primary map



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

6.3 Largest variance slices ⓘ

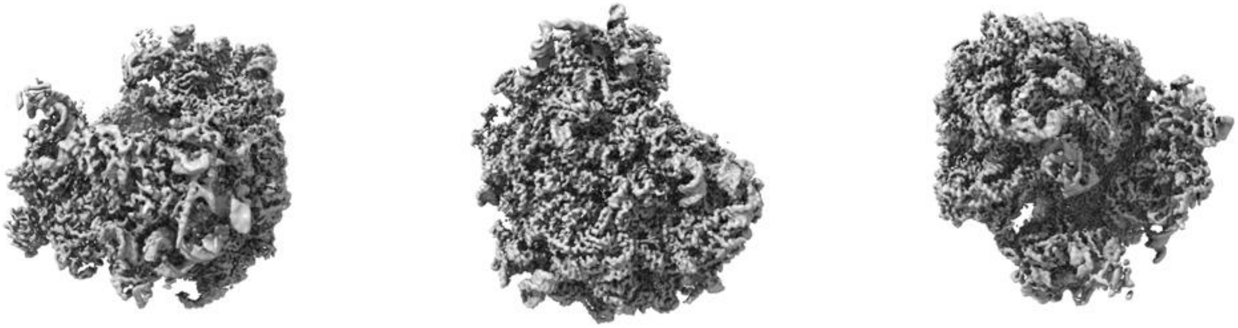
6.3.1 Primary map


X Index: 207 Y Index: 215 Z Index: 210

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

6.4 Orthogonal surface views ⓘ

6.4.1 Primary map


X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.045. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

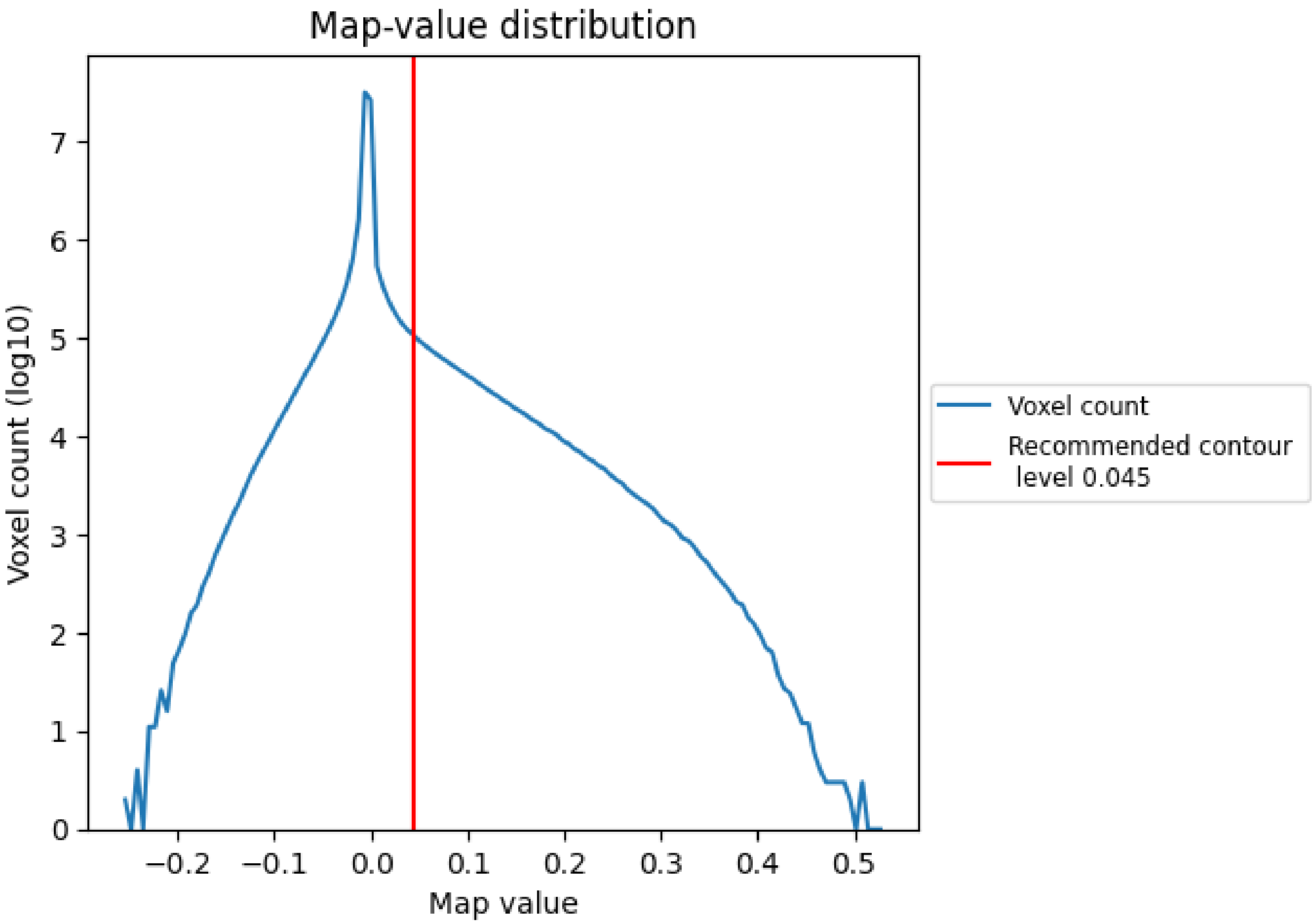
6.5 Mask visualisation ⓘ

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

7 Map analysis ⓘ

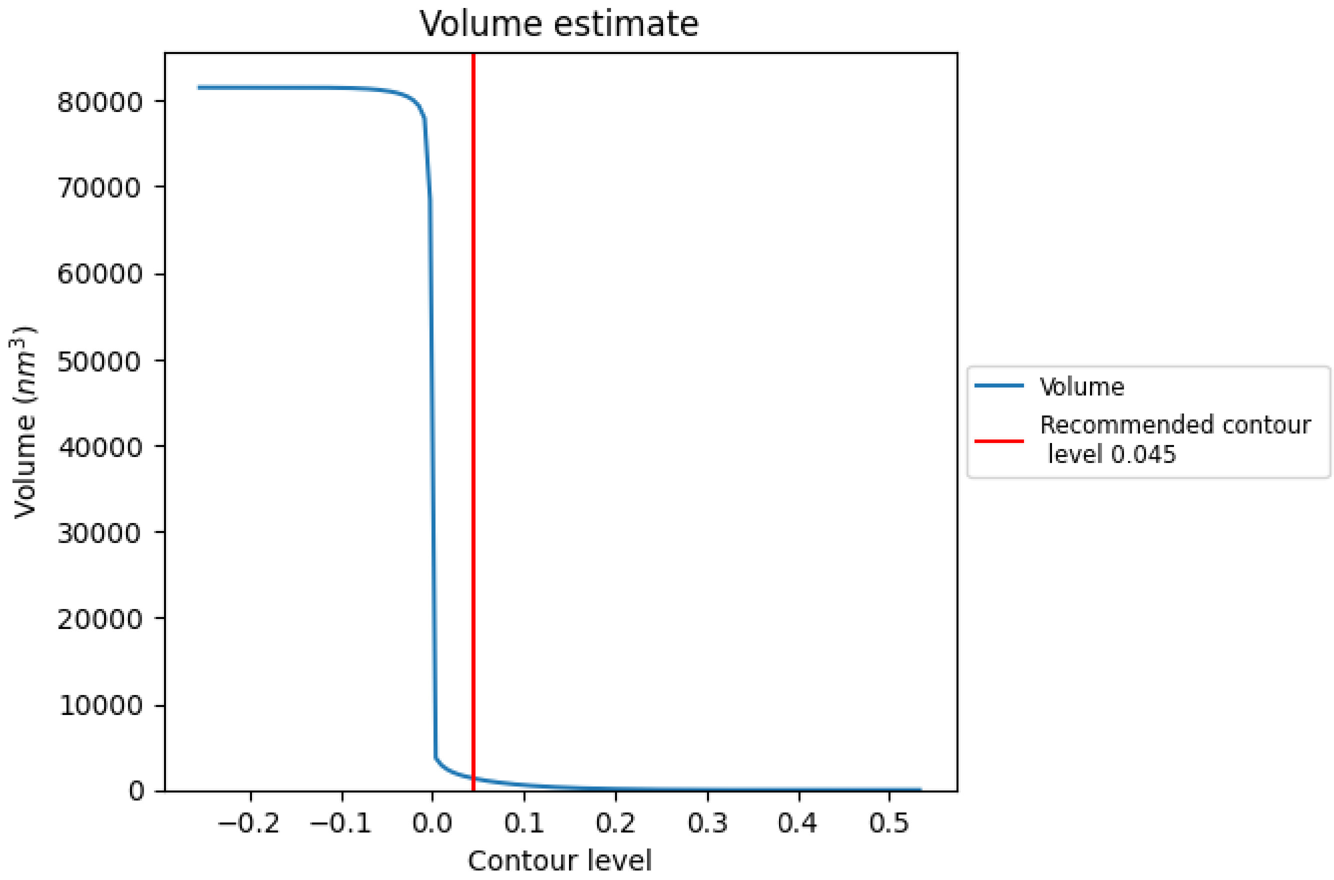
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution ⓘ



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

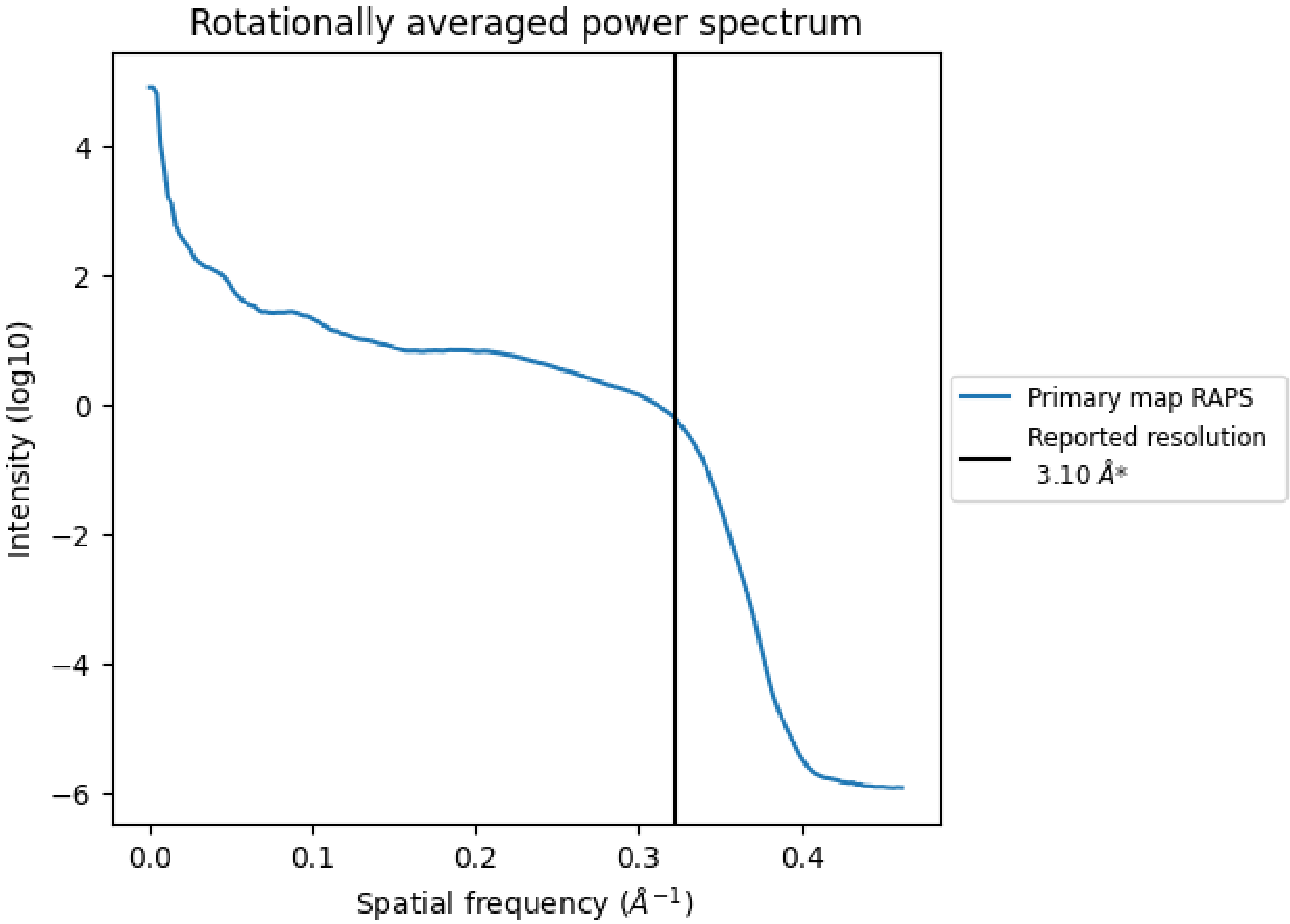
7.2 Volume estimate ⓘ



The volume at the recommended contour level is 1348 nm^3; this corresponds to an approximate mass of 1218 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 ⓘ

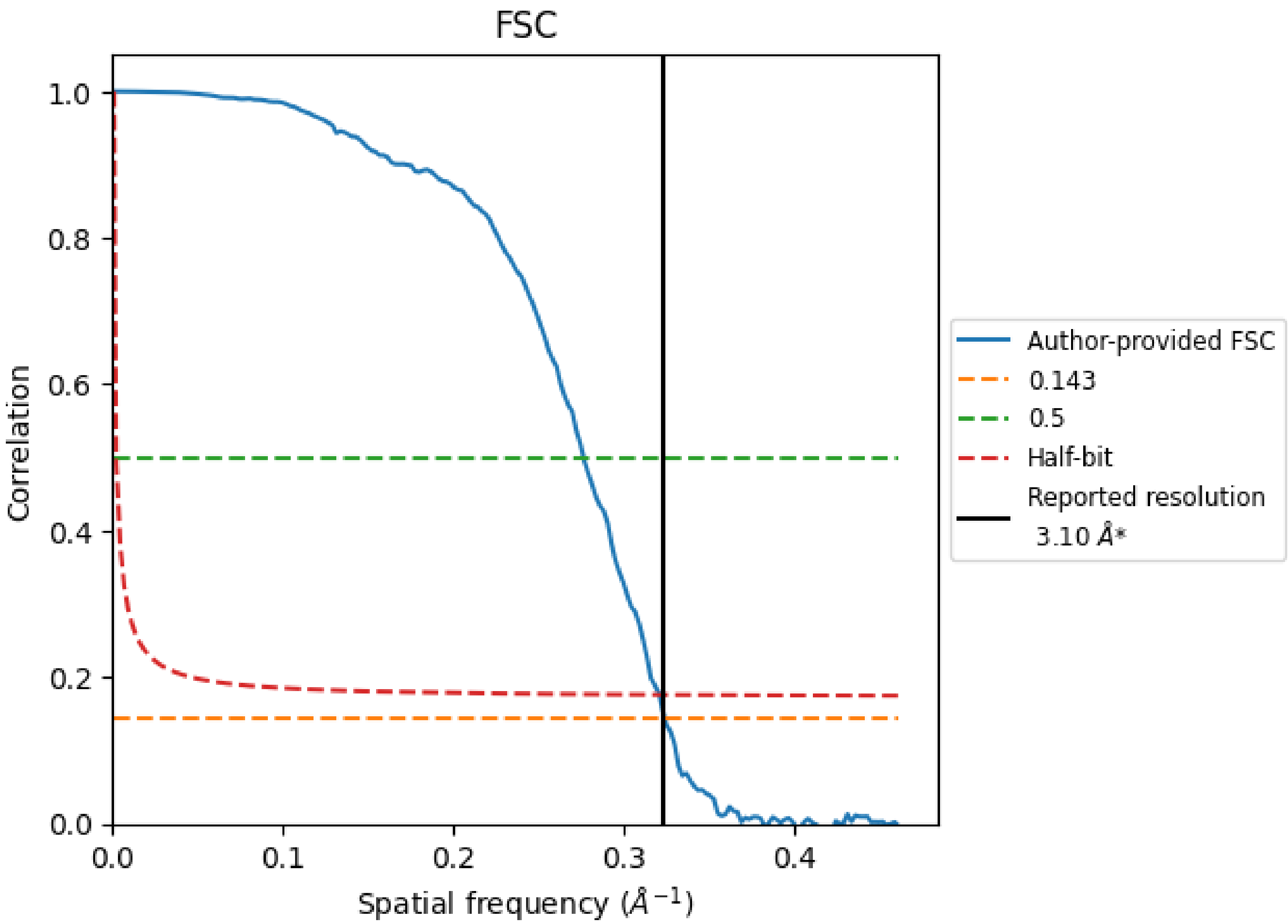


*Reported resolution corresponds to spatial frequency of 0.323 $Å^{-1}$

8 Fourier-Shell correlation ⓘ

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

8.1 FSC ⓘ



*Reported resolution corresponds to spatial frequency of 0.323 $\AA^{-1}$

8.2 Resolution estimates ⓘ

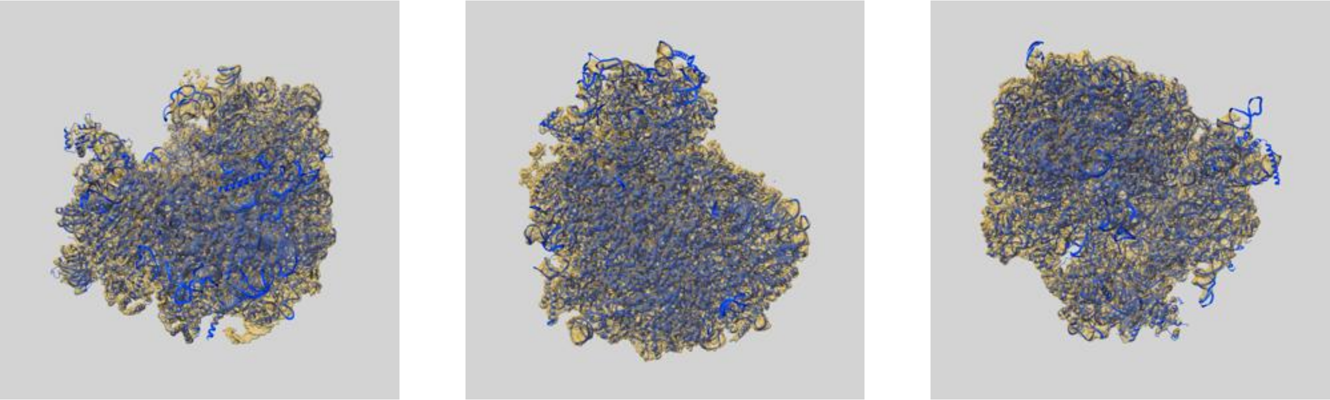
Resolution estimate (Å)	**Estimation criterion (FSC cut-off)**		
	0.143	0.5	Half-bit
Reported by author	3.10	-	-
Author-provided FSC curve	3.09	3.62	3.12
Unmasked-calculated*	-	-	-

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-10397 and PDB model 6T7T. Per-residue inclusion information can be found in section 3 on page 18.

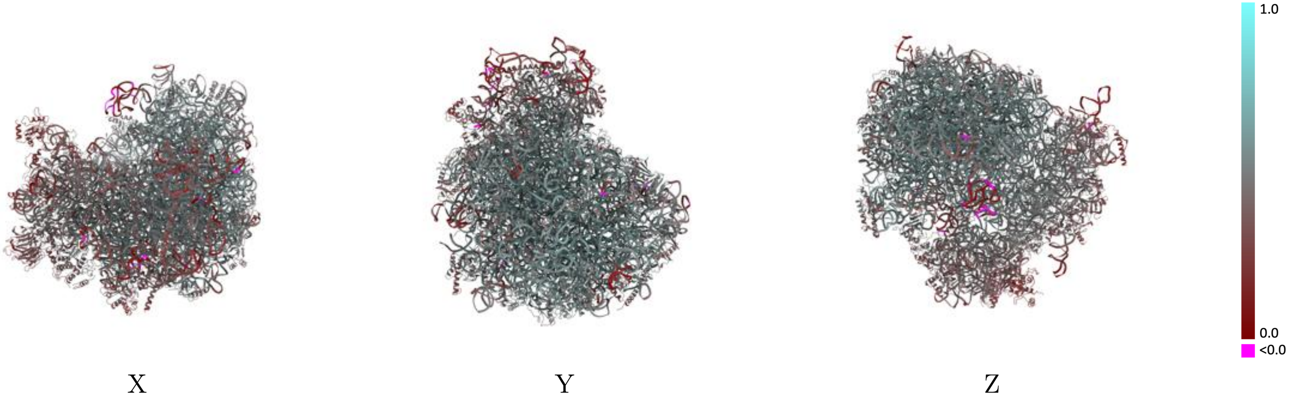
9.1 Map-model overlay ⓘ



X Y Z

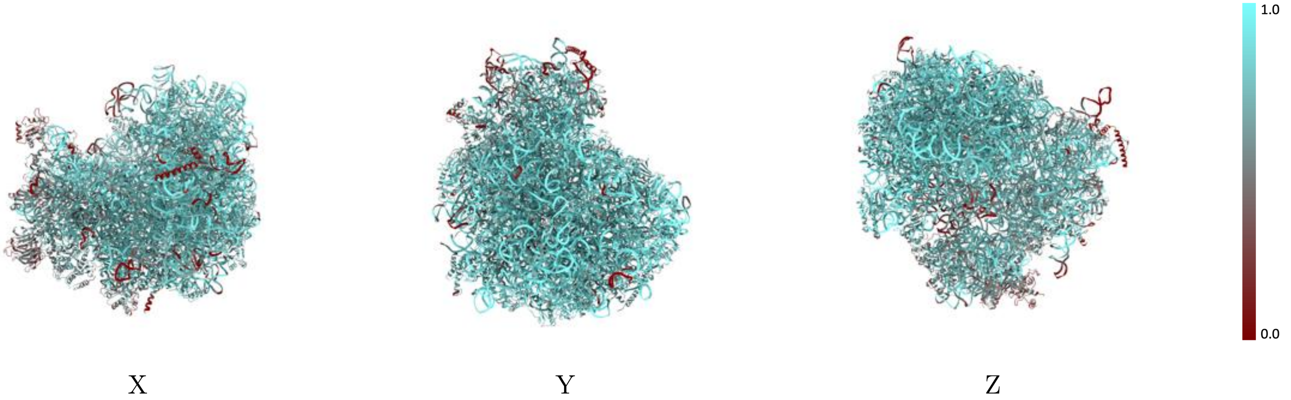
The images above show the 3D surface view of the map at the recommended contour level 0.045 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model



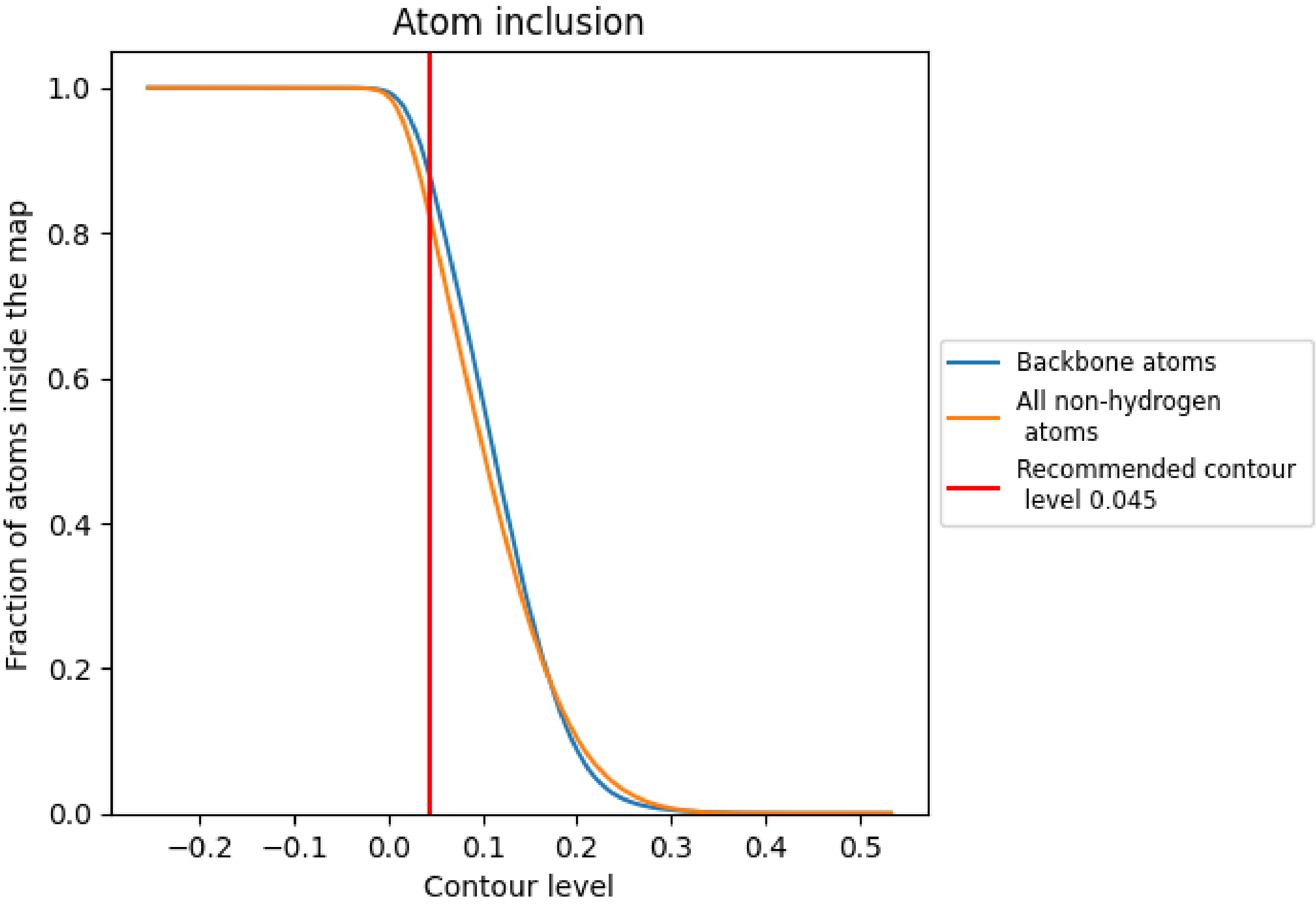
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

9.3 Atom inclusion mapped to coordinate model



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 (0.045).

9.4 Atom inclusion ⓘ



At the recommended contour level, 87% of all backbone atoms, 82% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (0.045) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8181	0.4880
5	0.8430	0.5060
6	0.8905	0.4990
7	0.0309	0.2020
A	0.5312	0.5220
C1	0.9244	0.5340
C2	0.8576	0.4450
C3	0.9439	0.5450
C4	0.9608	0.5380
LA	0.8472	0.5610
LB	0.8532	0.5390
LC	0.8254	0.5300
LD	0.7697	0.4760
LE	0.7733	0.4820
LF	0.8266	0.5200
LG	0.7427	0.4690
LH	0.7818	0.5080
LI	0.7923	0.5190
LJ	0.7439	0.4700
LL	0.8083	0.5200
LM	0.8109	0.5020
LN	0.8638	0.5640
LO	0.8355	0.5370
LP	0.8146	0.5320
LQ	0.8502	0.5470
LR	0.7381	0.4850
LS	0.8293	0.5370
LT	0.8266	0.5460
LU	0.7148	0.4460
LV	0.8110	0.5470
LW	0.4963	0.4240
LX	0.7728	0.5030
LY	0.7868	0.5040
LZ	0.7712	0.4760
La	0.8503	0.5500

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Chain	Atom inclusion	Q-score
Lb	0.7743	0.5080
Lc	0.7669	0.4810
Ld	0.7694	0.5160
Le	0.8295	0.5490
Lf	0.8770	0.5640
Lg	0.7873	0.5170
Lh	0.7762	0.4820
Li	0.7608	0.4920
Lj	0.8789	0.5590
Lk	0.6861	0.4610
Ll	0.8506	0.5480
Lm	0.7940	0.5330
Ln	0.7308	0.5130
Lo	0.8161	0.5350
Lp	0.7758	0.5390
SA	0.6324	0.4080
SB	0.6653	0.4520
SC	0.6861	0.4600
SD	0.5487	0.3990
SE	0.6528	0.4390
SF	0.6158	0.3990
SG	0.6205	0.3900
SH	0.5789	0.3820
SI	0.7252	0.4780
SJ	0.6375	0.4120
SK	0.5461	0.3440
SL	0.7349	0.5000
SM	0.2566	0.2250
SN	0.7333	0.4700
SO	0.7310	0.4770
SP	0.5697	0.3820
SQ	0.6126	0.4130
SR	0.6052	0.3810
SS	0.6239	0.3970
ST	0.5911	0.3820
SU	0.5524	0.3820
SV	0.6600	0.4370
SW	0.7325	0.4850
SX	0.7267	0.5050
SY	0.6158	0.3820
SZ	0.5142	0.3660
Sa	0.7673	0.4950

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Chain	Atom inclusion	Q-score
Sb	0.6672	0.4460
Sc	0.6025	0.4290
Sd	0.7494	0.4550
Se	0.6009	0.4280
Sf	0.3333	0.2360
Sg	0.4431	0.3320