Full wwPDB EM Validation Report ⓘ

May 18, 2024 – 09:15 pm BST

PDB ID	:	6Z6K
EMDB ID	:	EMD-11097
Title	:	Cryo-EM structure of yeast reconstituted Lso2 bound to 80S ribosomes
Authors	:	Wells, J.N.; Buschauer, R.; Mackens-Kiani, T.; Best, K.; Kratzat, H.; Berninghausen, O.; Becker, T.; Cheng, J.; Beckmann, R.
Deposited on	:	2020-05-28
Resolution	:	3.40 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

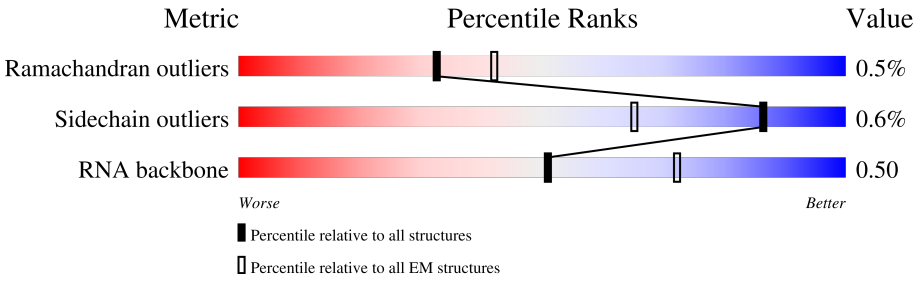
EMDB validation analysis	:	0.0.1.dev92
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36.2

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.40 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	C2	1800	5% 68% 25% · 6%
2	C5	91	· 87% 13%
3	C1	3396	· 71% 20% · 8%
4	C4	121	86% 14%
5	C3	158	· 78% 21% ··
6	SA	252	· 81% · 18%
7	SB	255	· 83% · 15%
8	SC	254	· 85% 15%

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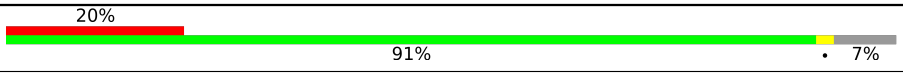
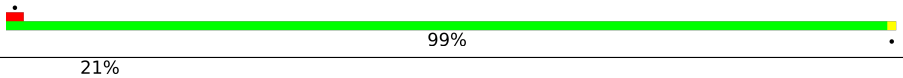
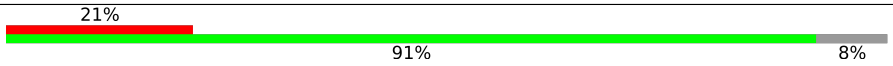
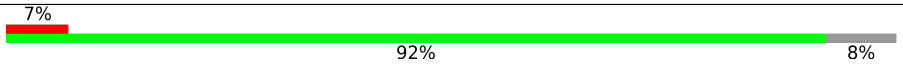
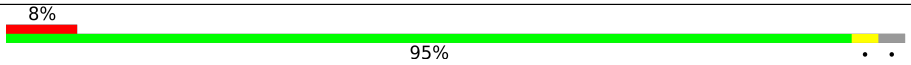
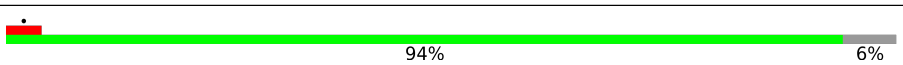
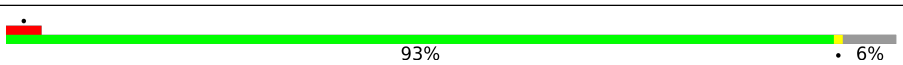
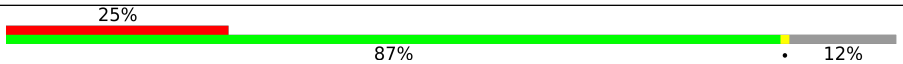
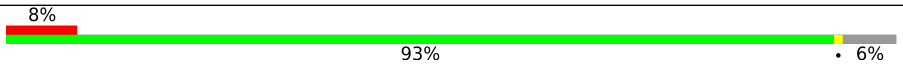
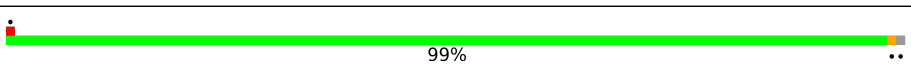
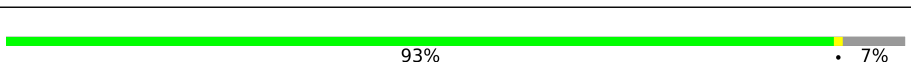
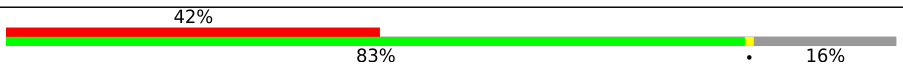
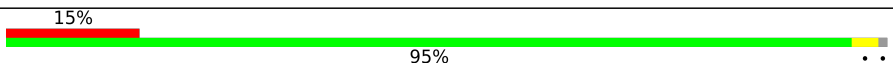
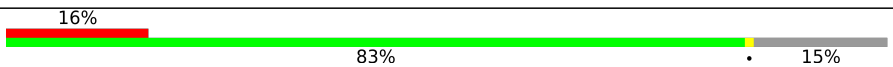
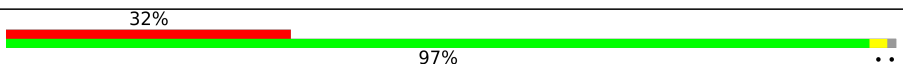
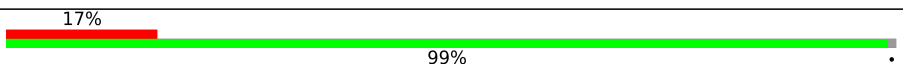
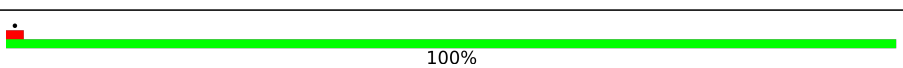
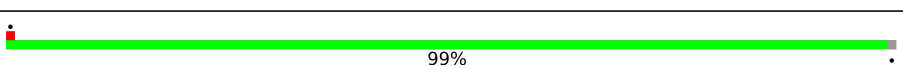
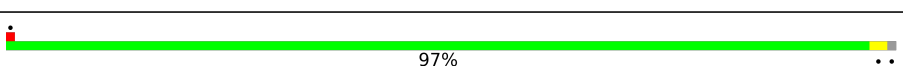
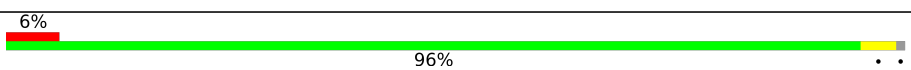
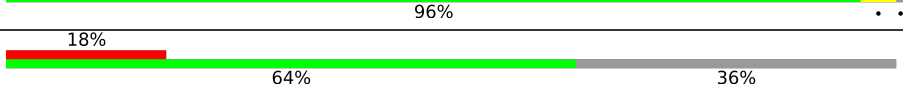
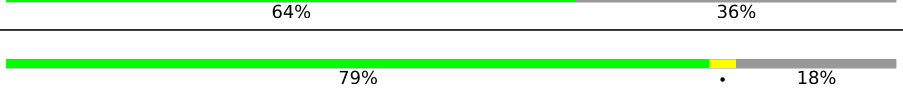
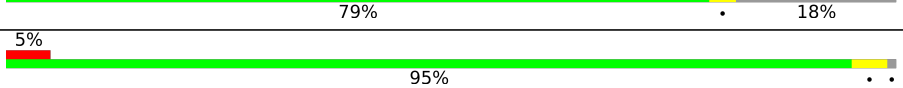
Mol	Chain	Length	Quality of chain
9	SD	240	
10	SE	261	
11	SF	225	
12	SG	236	
13	SH	190	
14	SI	200	
15	SJ	197	
16	SK	105	
17	SL	156	
18	SM	143	
19	SN	151	
20	SO	137	
21	SP	142	
22	SQ	143	
23	SR	136	
24	SS	146	
25	ST	144	
26	SU	121	
27	SV	87	
28	SW	130	
29	SX	145	
30	SY	135	
31	SZ	108	
32	Sa	119	
33	Sb	82	

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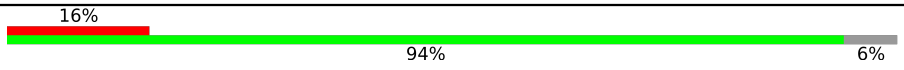
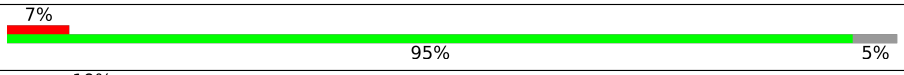
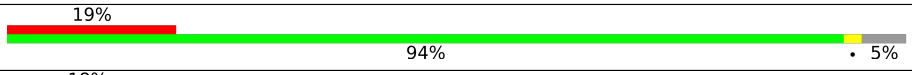
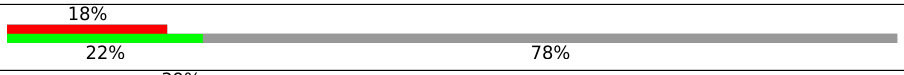
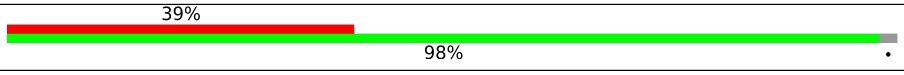
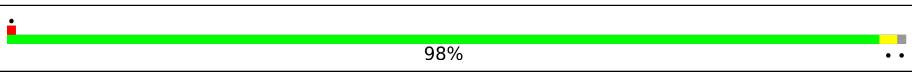
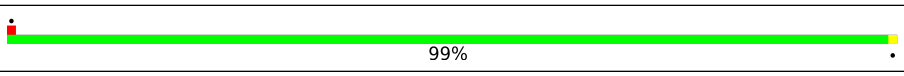
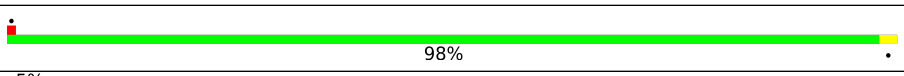
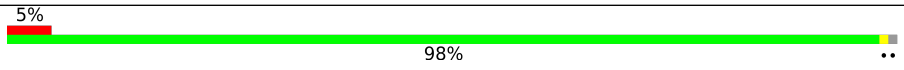
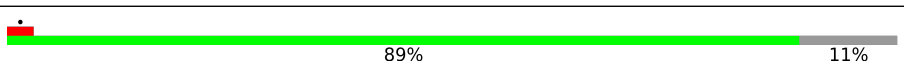
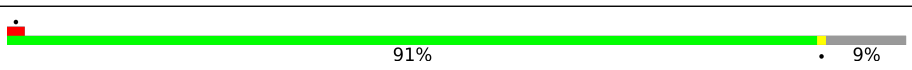
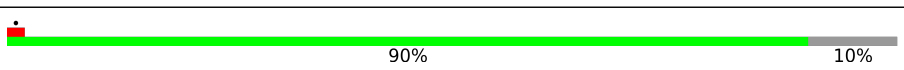
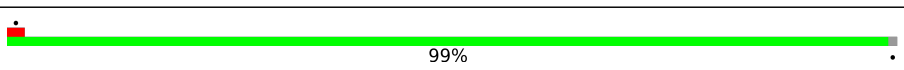
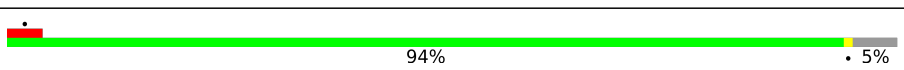
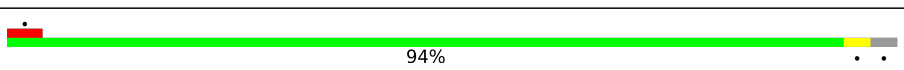
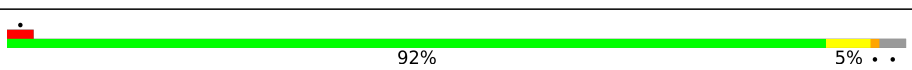
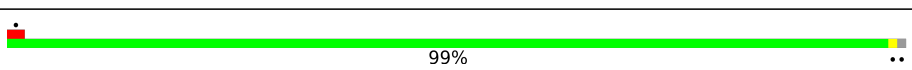
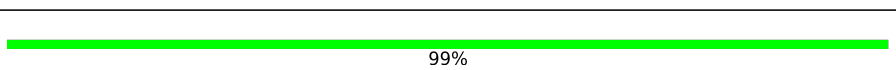
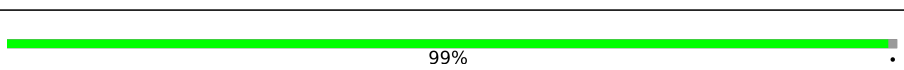
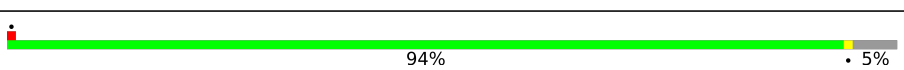
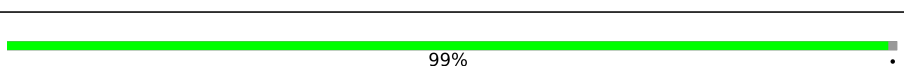
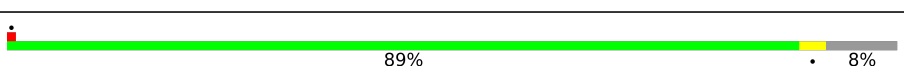
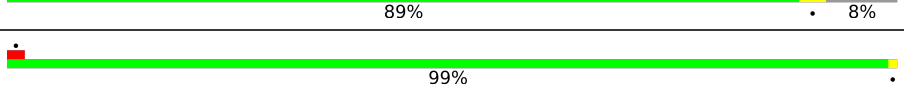
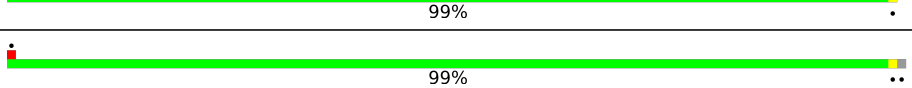
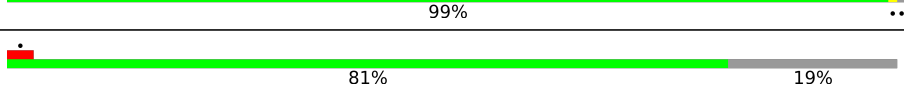
Mol	Chain	Length	Quality of chain
34	Sc	67	
35	Sd	56	
36	Se	63	
37	Sf	152	
38	Sg	319	
39	LA	254	
40	LB	387	
41	LC	362	
42	LD	297	
43	LE	176	
44	LF	244	
45	LG	256	
46	LH	191	
47	LI	221	
48	LJ	174	
49	LL	199	
50	LM	138	
51	LN	204	
52	LO	199	
53	LP	184	
54	LQ	186	
55	LR	189	
56	LS	172	
57	LT	160	
58	LU	121	

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Mol	Chain	Length	Quality of chain
59	LV	137	97%
60	LW	155	41% 59%
61	LX	142	85% 15%
62	LY	127	98%
63	LZ	136	96%
64	La	149	95%
65	Lb	59	5% 93%
66	Lc	105	5% 95% 5%
67	Ld	113	6% 96%
68	Le	130	97%
69	Lf	107	98%
70	Lg	121	5% 93% 7%
71	Lh	120	98%
72	Li	100	97%
73	Lj	88	93% 7%
74	Lk	78	97%
75	Ll	51	98%
76	Lm	128	40% 59%
77	Ln	25	20% 100%
78	Lo	106	98%
79	Lp	92	5% 98%

2 Entry composition

There are 80 unique types of molecules in this entry. The entry contains 196360 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a RNA chain called 18S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	C2	1700	36234	16201	6426	11907	1700	0	0

- Molecule 2 is a protein called Protein LSO2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	C5	79	633	379	128	125	1	0	0

- Molecule 3 is a RNA chain called 25S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
3	C1	3127	66891	29878	12066	21820	3127	0	0

- Molecule 4 is a RNA chain called 5S rRNA.

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

- Molecule 5 is a RNA chain called 5.8S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
5	C3	157	3333	1491	584	1101	157	0	0

- Molecule 6 is a protein called 40S ribosomal protein S0-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	SA	206	1583	1017	281	283	2	0	0

- Molecule 7 is a protein called 40S ribosomal protein S1-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	SB	216	Total	C	N	O	S	0	0
			1722	1091	312	315	4		

- Molecule 8 is a protein called 40S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	SC	217	Total	C	N	O	S	0	0
			1635	1047	289	297	2		

- Molecule 9 is a protein called 40S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	SD	223	Total	C	N	O	S	0	0
			1734	1101	313	314	6		

- Molecule 10 is a protein called 40S ribosomal protein S4-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	SE	260	Total	C	N	O	S	0	0
			2068	1316	389	360	3		

- Molecule 11 is a protein called Rps5p.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	SF	206	Total	C	N	O	S	0	0
			1609	1007	300	299	3		

- Molecule 12 is a protein called 40S ribosomal protein S6-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	SG	218	Total	C	N	O	S	0	0
			1755	1102	337	313	3		

- Molecule 13 is a protein called 40S ribosomal protein S7-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
13	SH	185	Total	C	N	O	0	0
			1486	954	266	266		

- Molecule 14 is a protein called 40S ribosomal protein S8-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	SI	188	Total	C	N	O	S	0	0
			1489	925	298	264	2		

- Molecule 15 is a protein called 40S ribosomal protein S9-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	SJ	185	Total	C	N	O	S	0	0
			1494	943	289	261	1		

- Molecule 16 is a protein called 40S ribosomal protein S10-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	SK	92	Total	C	N	O	S	0	0
			741	478	121	140	2		

- Molecule 17 is a protein called 40S ribosomal protein S11-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	SL	146	Total	C	N	O	S	0	0
			1168	747	221	197	3		

- Molecule 18 is a protein called 40S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	SM	124	Total	C	N	O	S	0	0
			890	560	156	172	2		

- Molecule 19 is a protein called 40S ribosomal protein S13.

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

- Molecule 20 is a protein called 40S ribosomal protein S14-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	SO	128	Total	C	N	O	S	0	0
			949	582	188	176	3		

- Molecule 21 is a protein called 40S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	SP	119	Total	C	N	O	S	0	0
			939	595	176	161	7		

- Molecule 22 is a protein called 40S ribosomal protein S16-A.

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

- Molecule 23 is a protein called 40S ribosomal protein S17-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	SR	115	Total	C	N	O	S	0	0
			896	557	172	165	2		

- Molecule 24 is a protein called 40S ribosomal protein S18-A.

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

- Molecule 25 is a protein called 40S ribosomal protein S19-A.

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

- Molecule 26 is a protein called 40S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	SU	101	Total	C	N	O	S	0	0
			805	512	145	147	1		

- Molecule 27 is a protein called 40S ribosomal protein S21-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	SV	87	Total	C	N	O	S	0	0
			684	420	125	137	2		

- Molecule 28 is a protein called 40S ribosomal protein S22-A.

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

- Molecule 29 is a protein called 40S ribosomal protein S23-A.

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

- Molecule 30 is a protein called 40S ribosomal protein S24-A.

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

- Molecule 31 is a protein called 40S ribosomal protein S25-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
31	SZ	69	Total	C	N	O	0	0
			558	357	103	98		

- Molecule 32 is a protein called 40S ribosomal protein S26-B.

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

- Molecule 33 is a protein called 40S ribosomal protein S27-A.

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

- Molecule 34 is a protein called 40S ribosomal protein S28-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	Sc	63	Total	C	N	O	S	0	0
			497	306	99	91	1		

- Molecule 35 is a protein called 40S ribosomal protein S29-A.

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

- Molecule 36 is a protein called 40S ribosomal protein S30-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	Se	60	Total	C	N	O	S	0	0
			475	299	98	77	1		

- Molecule 37 is a protein called Ubiquitin-40S ribosomal protein S31.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	Sf	33	Total	C	N	O	S	0	0
			248	153	46	45	4		

- Molecule 38 is a protein called Guanine nucleotide-binding protein subunit beta-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	Sg	313	Total	C	N	O	S	0	0
			2403	1521	411	463	8		

- Molecule 39 is a protein called 60S ribosomal protein L2-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	LA	252	Total	C	N	O	S	0	0
			1912	1190	388	333	1		

- Molecule 40 is a protein called 60S ribosomal protein L3.

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

- Molecule 41 is a protein called 60S ribosomal protein L4-A.

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

- Molecule 42 is a protein called 60S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	LD	294	Total	C	N	O	S	0	0
			2359	1489	412	456	2		

- Molecule 43 is a protein called 60S ribosomal protein L6-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	LE	157	Total	C	N	O	S	0	0
			1248	806	224	217	1		

- Molecule 44 is a protein called 60S ribosomal protein L7-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	LF	223	Total	C	N	O	S	0	0
			1791	1155	325	310	1		

- Molecule 45 is a protein called 60S ribosomal protein L8-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	LG	231	Total	C	N	O	S	0	0
			1763	1130	316	314	3		

- Molecule 46 is a protein called 60S ribosomal protein L9-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	LH	190	Total	C	N	O	S	0	0
			1510	957	273	276	4		

- Molecule 47 is a protein called 60S ribosomal protein L10.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	LI	209	Total	C	N	O	S	0	0
			1696	1077	321	293	5		

- Molecule 48 is a protein called 60S ribosomal protein L11-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	LJ	169	Total	C	N	O	S	0	0
			1353	847	253	249	4		

- Molecule 49 is a protein called 60S ribosomal protein L13-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
49	LL	194	Total	C	N	O	0	0
			1548	965	316	267		

- Molecule 50 is a protein called 60S ribosomal protein L14-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	LM	137	Total	C	N	O	S	0	0
			1059	678	200	179	2		

- Molecule 51 is a protein called 60S ribosomal protein L15-A.

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

- Molecule 52 is a protein called 60S ribosomal protein L16-A.

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

- Molecule 53 is a protein called 60S ribosomal protein L17-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
53	LP	175	Total	C	N	O	0	0
			1378	856	273	249		

- Molecule 54 is a protein called 60S ribosomal protein L18-A.

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

- Molecule 55 is a protein called 60S ribosomal protein L19-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
55	LR	174	Total	C	N	O	0	0
			1365	843	286	236		

- Molecule 56 is a protein called 60S ribosomal protein L20-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	LS	172	Total	C	N	O	S	0	0
			1445	930	267	244	4		

- Molecule 57 is a protein called 60S ribosomal protein L21-A.

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

- Molecule 58 is a protein called 60S ribosomal protein L22-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
58	LU	98	Total	C	N	O	0	0
			778	505	127	146		

- Molecule 59 is a protein called 60S ribosomal protein L23-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
59	LV	134	Total	C	N	O	S	0	0
			993	623	187	176	7		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
60	LW	63	Total	C	N	O	S	0	0
			521	336	102	82	1		

- Molecule 61 is a protein called 60S ribosomal protein L25.

Mol	Chain	Residues	Atoms					AltConf	Trace
61	LX	120	Total	C	N	O	S	0	0
			959	617	168	172	2		

- Molecule 62 is a protein called 60S ribosomal protein L26-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
62	LY	124	Total	C	N	O	0	0
			976	614	190	172		

- Molecule 63 is a protein called 60S ribosomal protein L27-A.

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

- Molecule 64 is a protein called 60S ribosomal protein L28.

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

- Molecule 65 is a protein called 60S ribosomal protein L29.

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

- Molecule 66 is a protein called 60S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
66	Lc	100	Total	C	N	O	S	0	0
			767	492	128	146	1		

- Molecule 67 is a protein called 60S ribosomal protein L31-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
67	Ld	109	Total	C	N	O	S	0	0
			883	559	167	156	1		

- Molecule 68 is a protein called 60S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
68	Le	127	Total	C	N	O	S	0	0
			1020	647	205	167	1		

- Molecule 69 is a protein called 60S ribosomal protein L33-A.

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

- Molecule 70 is a protein called 60S ribosomal protein L34-A.

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

- Molecule 71 is a protein called 60S ribosomal protein L35-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
71	Lh	119	Total	C	N	O	S	0	0
			965	612	185	167	1		

- Molecule 72 is a protein called 60S ribosomal protein L36-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
72	Li	99	Total	C	N	O	S	0	0
			770	481	156	131	2		

- Molecule 73 is a protein called 60S ribosomal protein L37-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
73	Lj	82	Total	C	N	O	S	0	0
			650	396	142	107	5		

- Molecule 74 is a protein called 60S ribosomal protein L38.

Mol	Chain	Residues	Atoms				AltConf	Trace
74	Lk	77	Total	C	N	O	0	0
			608	388	114	106		

- Molecule 75 is a protein called 60S ribosomal protein L39.

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

- Molecule 76 is a protein called Ubiquitin-60S ribosomal protein L40.

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

- Molecule 77 is a protein called 60S ribosomal protein L41-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
77	Ln	25	Total	C	N	O	S	0	0
			233	142	63	27	1		

- Molecule 78 is a protein called 60S ribosomal protein L42-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
78	Lo	105	Total	C	N	O	S	0	0
			847	534	170	138	5		

- Molecule 79 is a protein called 60S ribosomal protein L43-A.

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

- Molecule 80 is ZINC ION (three-letter code: ZN) (formula: Zn).

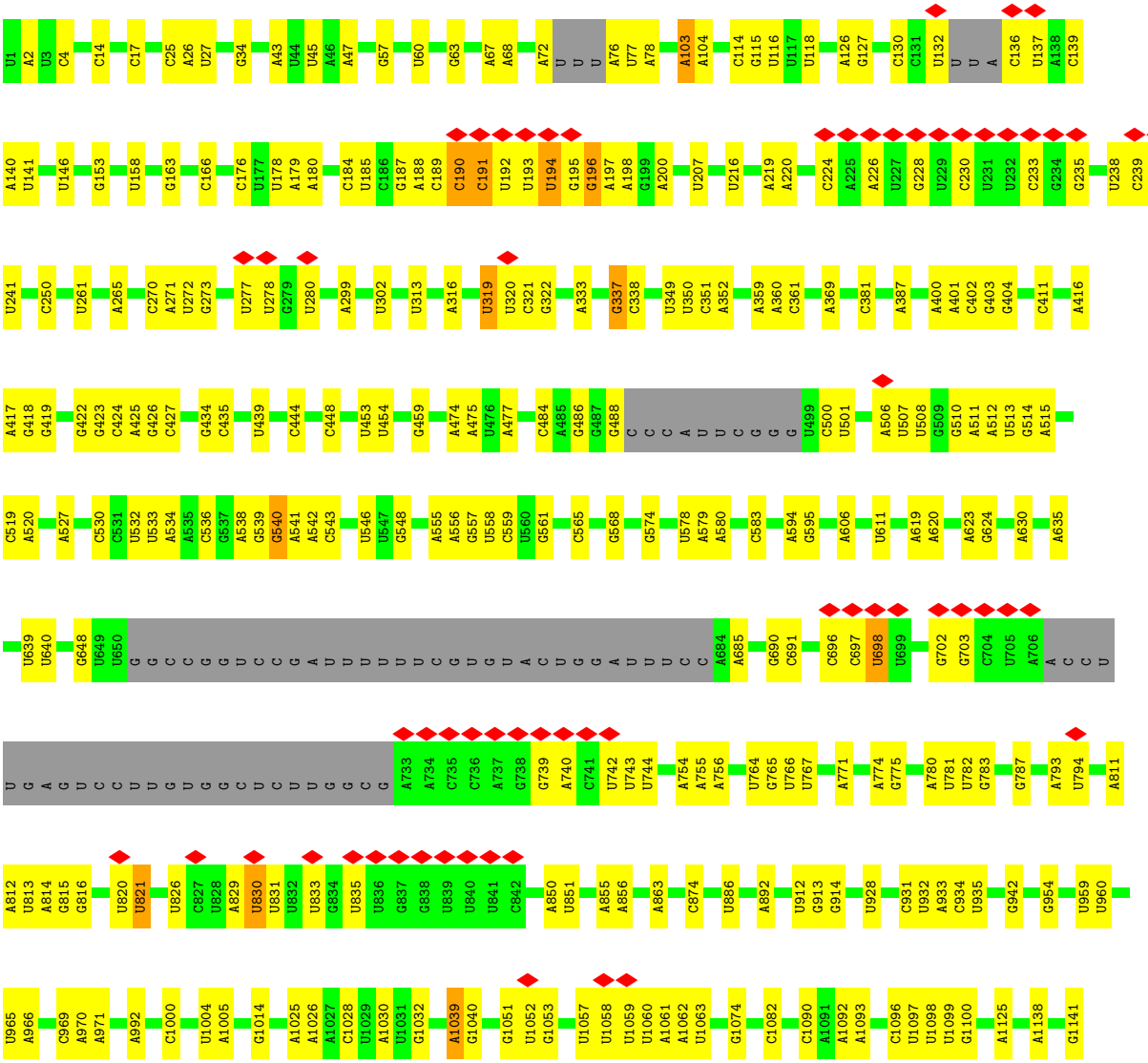
Mol	Chain	Residues	Atoms		AltConf
80	C2	1	Total	Zn	0
			1	1	
80	Sa	1	Total	Zn	0
			1	1	
80	Sb	1	Total	Zn	0
			1	1	
80	Sf	1	Total	Zn	0
			1	1	
80	Lg	1	Total	Zn	0
			1	1	
80	Lj	1	Total	Zn	0
			1	1	
80	Lm	1	Total	Zn	0
			1	1	
80	Lo	1	Total	Zn	0
			1	1	
80	Lp	1	Total	Zn	0
			1	1	

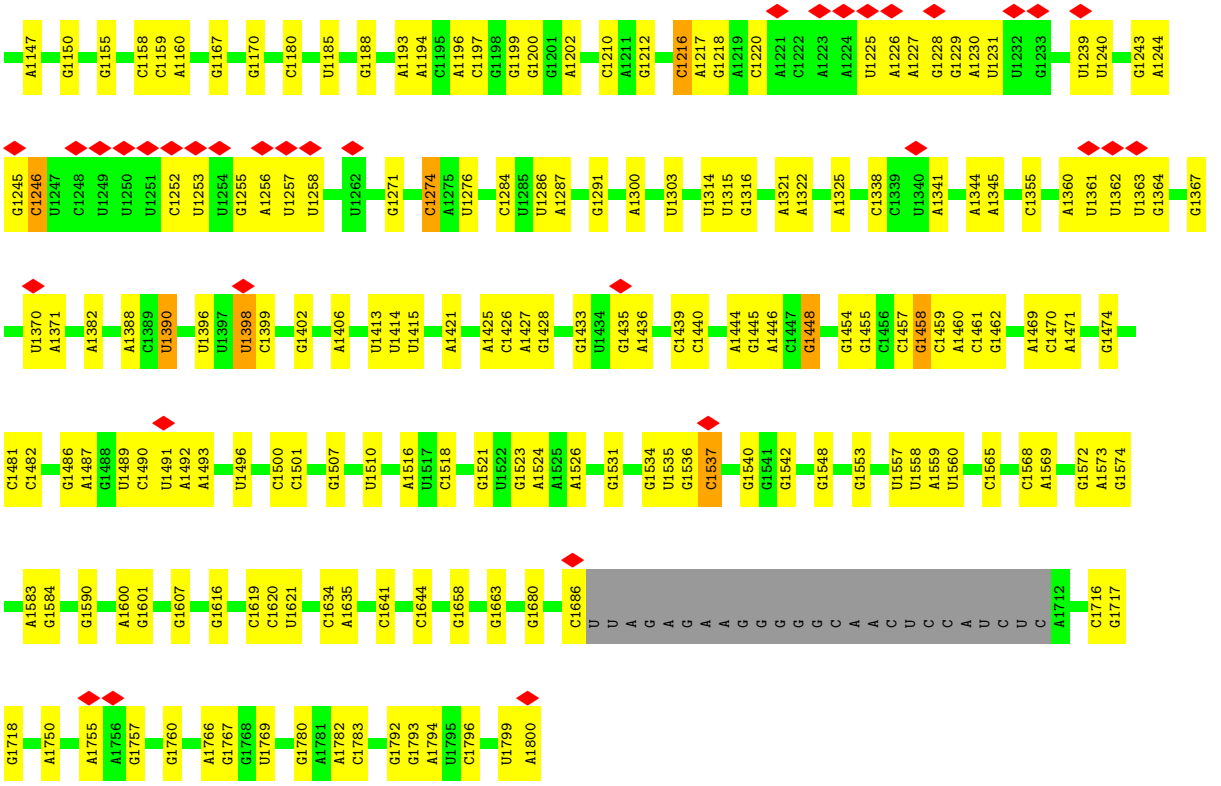
3 Residue-property plots (i)

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

- Molecule 1: 18S rRNA

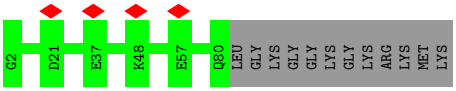
Chain C2:





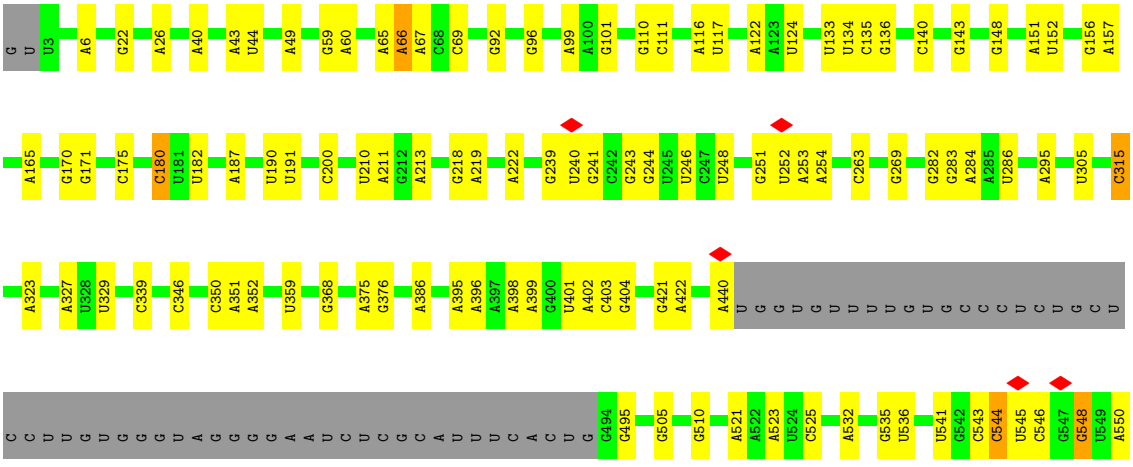
• Molecule 2: Protein LSO2

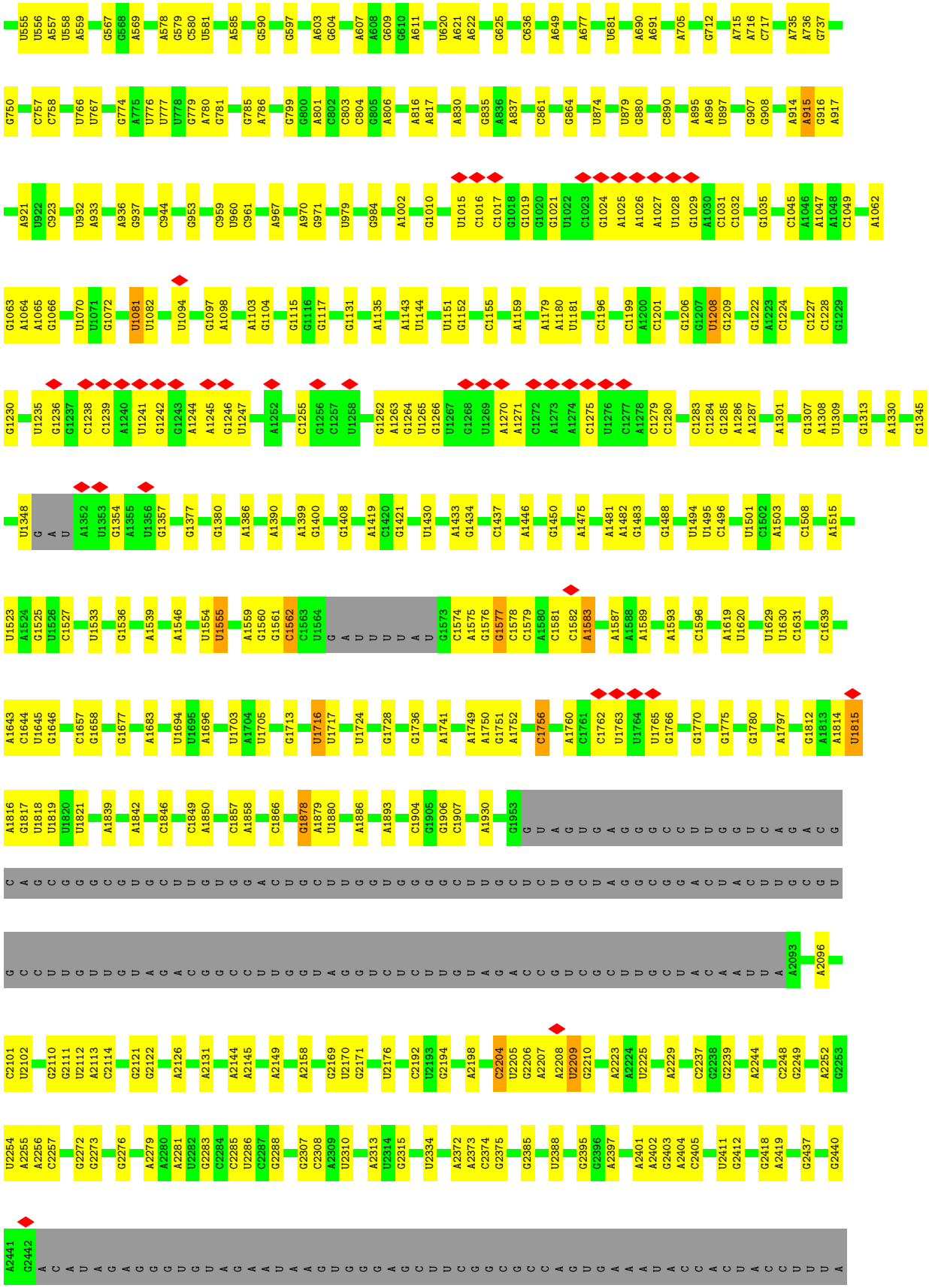
Chain C5:

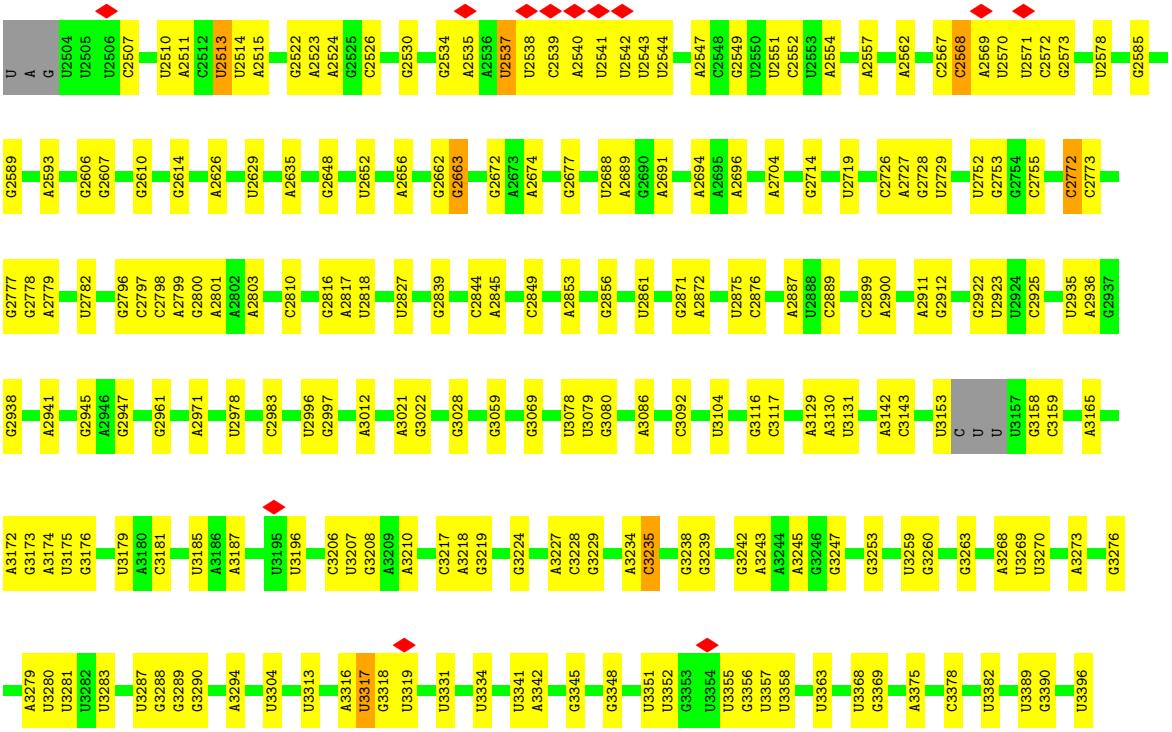


• Molecule 3: 25S rRNA

Chain C1:





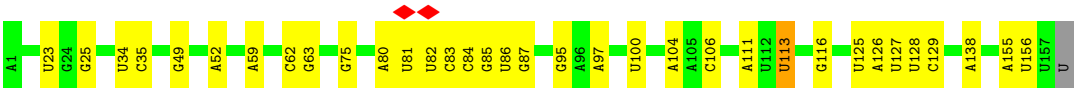


• Molecule 4: 5S rRNA

Chain C4:

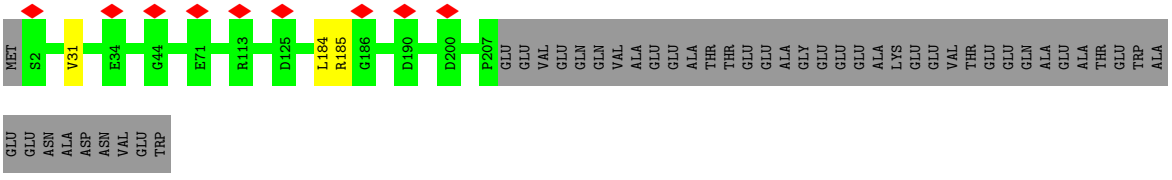
• Molecule 5: 5.8S rRNA

Chain C3:



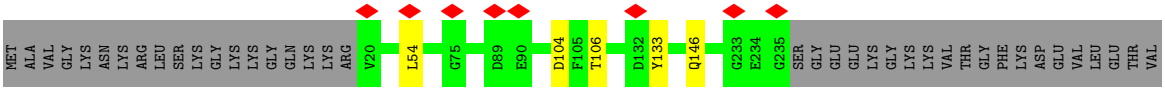
• Molecule 6: 40S ribosomal protein S0-A

Chain SA:

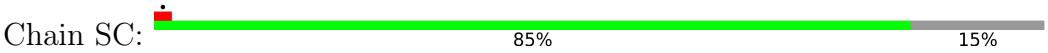


• Molecule 7: 40S ribosomal protein S1-A

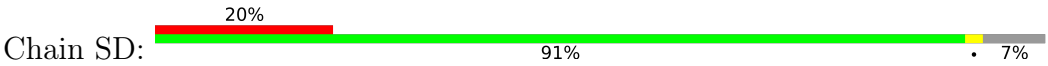
Chain SB:

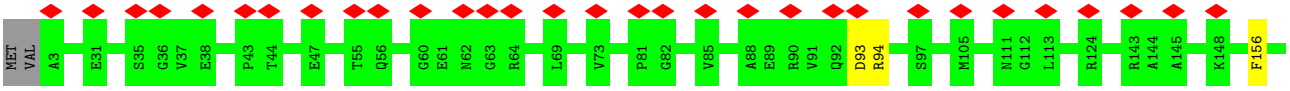


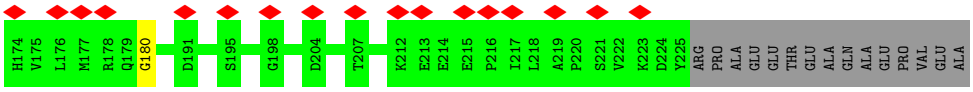
• Molecule 8: 40S ribosomal protein S2



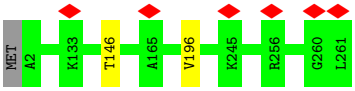
• Molecule 9: 40S ribosomal protein S3



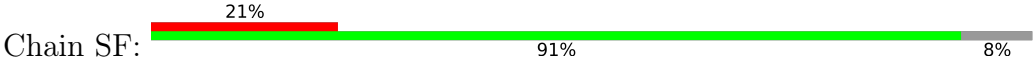


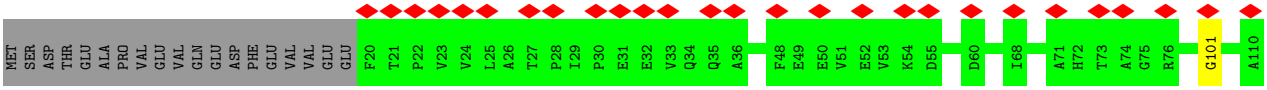


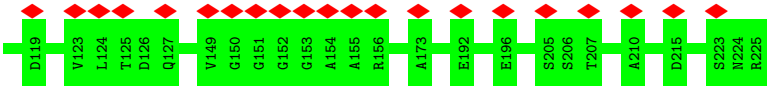
• Molecule 10: 40S ribosomal protein S4-A



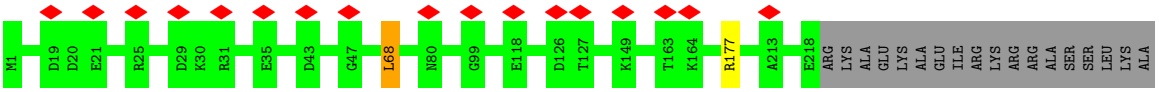
• Molecule 11: Rps5p





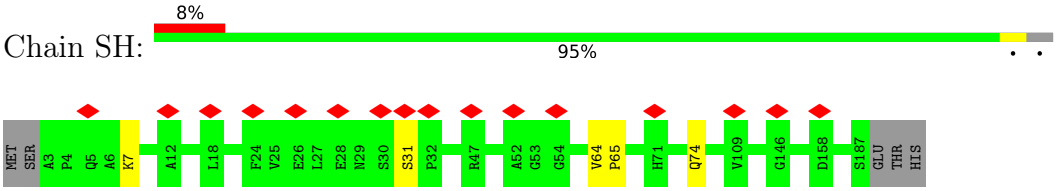


• Molecule 12: 40S ribosomal protein S6-A



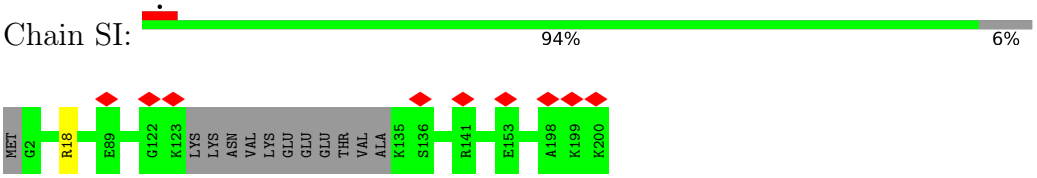
• Molecule 13: 40S ribosomal protein S7-A

Chain SH:



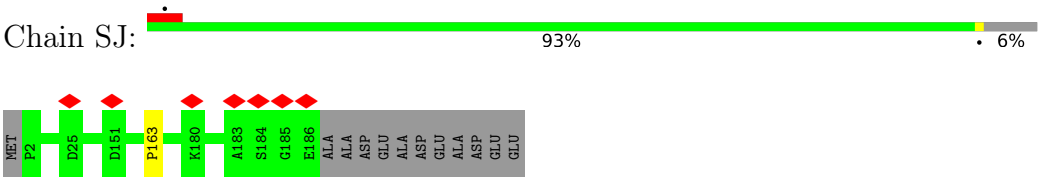
• Molecule 14: 40S ribosomal protein S8-A

Chain SI:



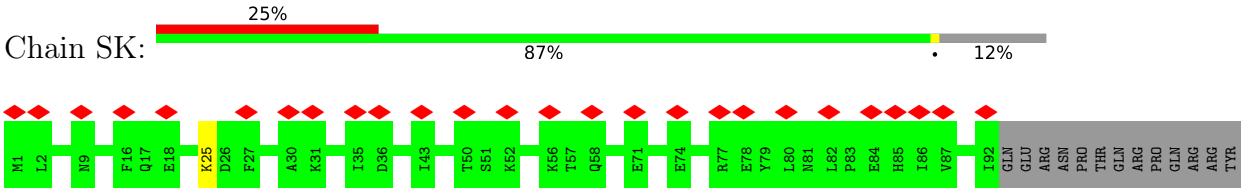
• Molecule 15: 40S ribosomal protein S9-A

Chain SJ:



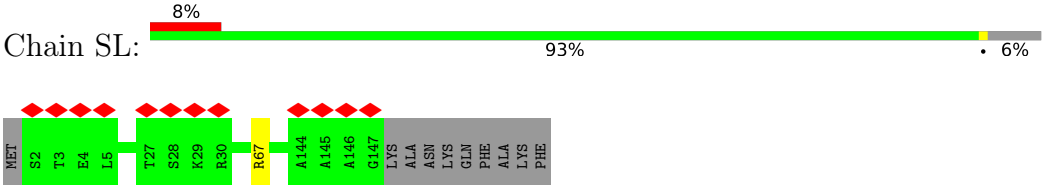
• Molecule 16: 40S ribosomal protein S10-A

Chain SK:



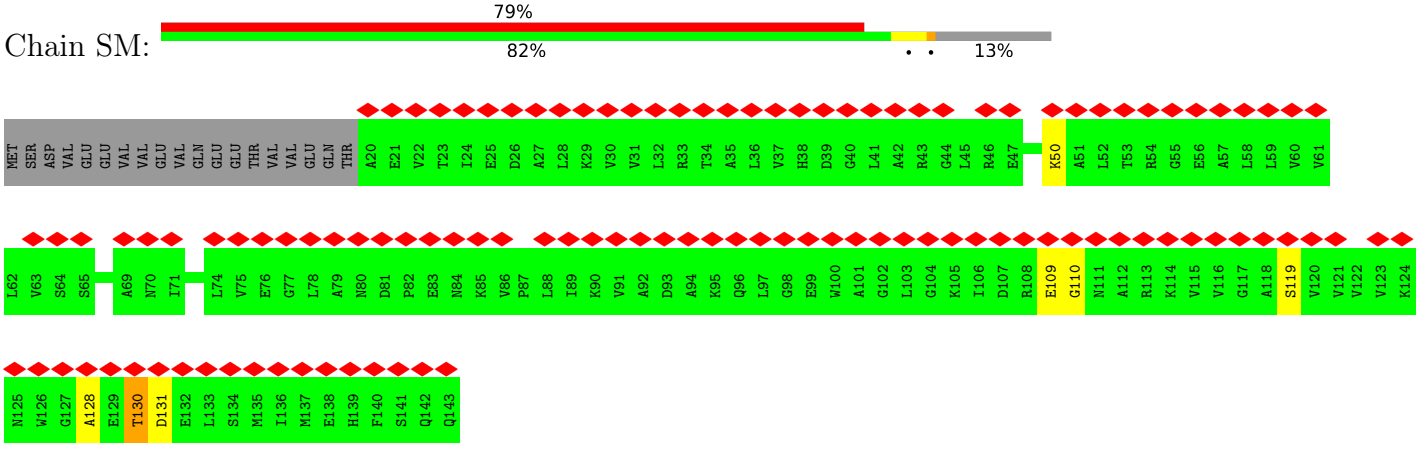
• Molecule 17: 40S ribosomal protein S11-A

Chain SL:



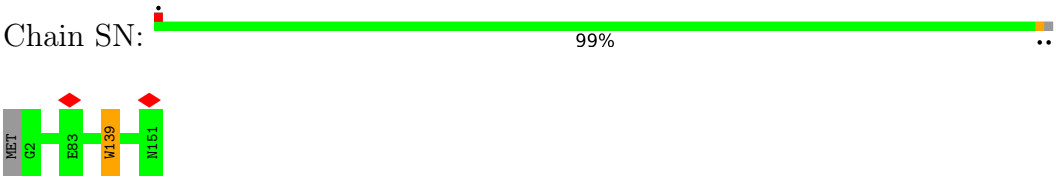
• Molecule 18: 40S ribosomal protein S12

Chain SM:



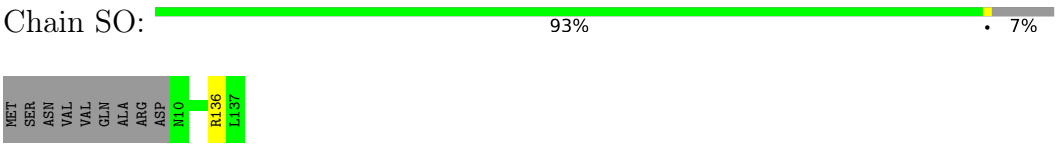
• Molecule 19: 40S ribosomal protein S13

Chain SN:



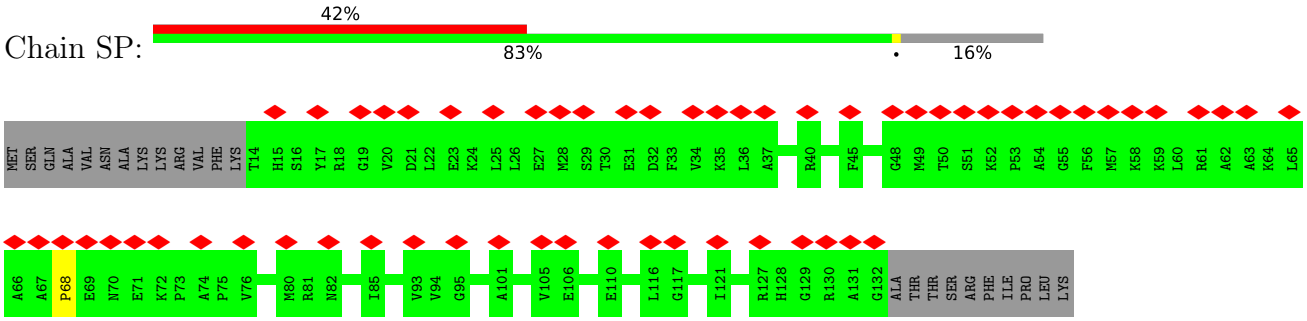
• Molecule 20: 40S ribosomal protein S14-A

Chain SO:



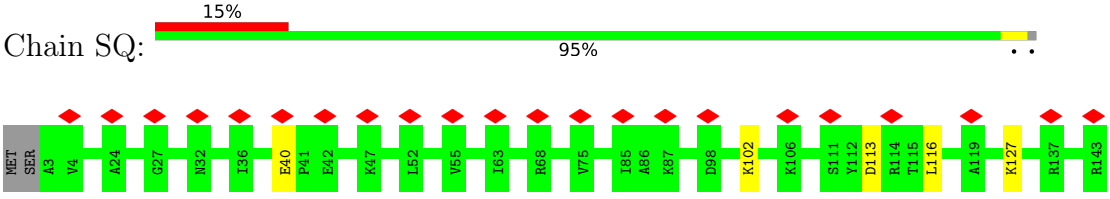
• Molecule 21: 40S ribosomal protein S15

Chain SP:



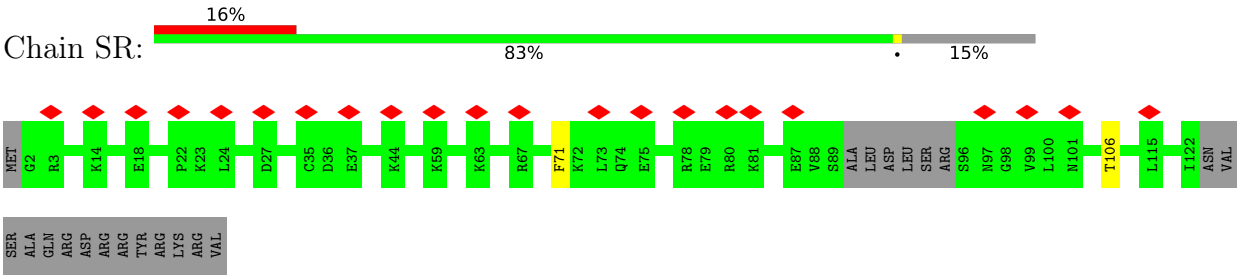
• Molecule 22: 40S ribosomal protein S16-A

Chain SQ:



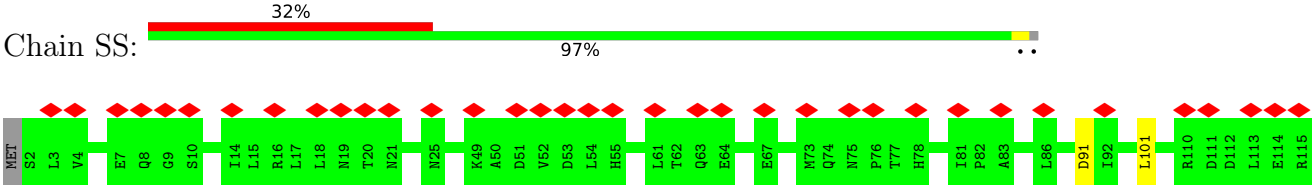
• Molecule 23: 40S ribosomal protein S17-A

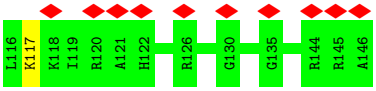
Chain SR:



• Molecule 24: 40S ribosomal protein S18-A

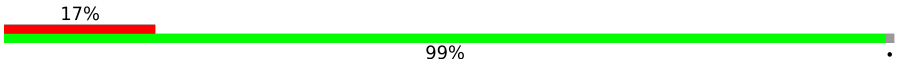
Chain SS:

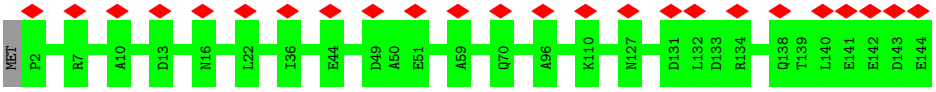




• Molecule 25: 40S ribosomal protein S19-A

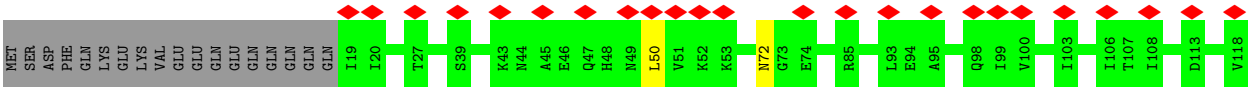
Chain ST:





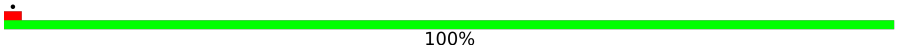
• Molecule 26: 40S ribosomal protein S20

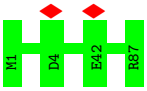
Chain SU:



• Molecule 27: 40S ribosomal protein S21-A

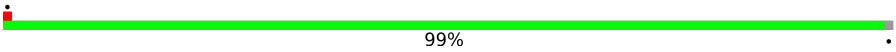
Chain SV:

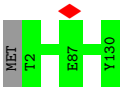




• Molecule 28: 40S ribosomal protein S22-A

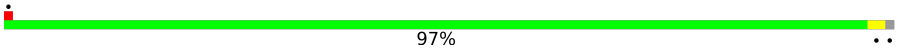
Chain SW:

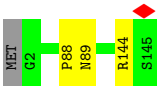




• Molecule 29: 40S ribosomal protein S23-A

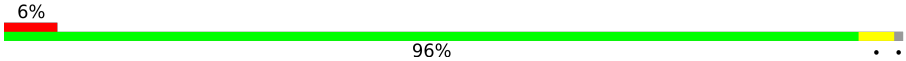
Chain SX:

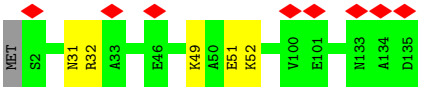




• Molecule 30: 40S ribosomal protein S24-A

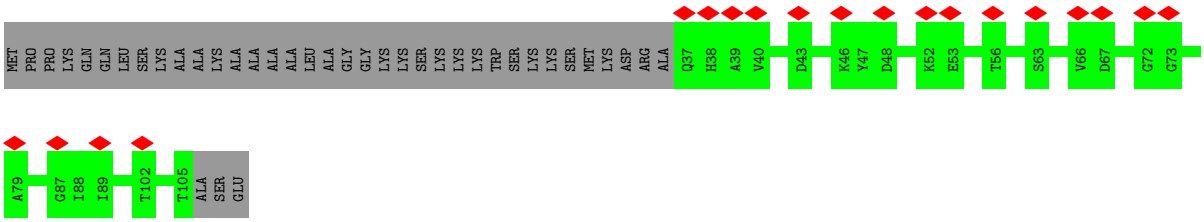
Chain SY:





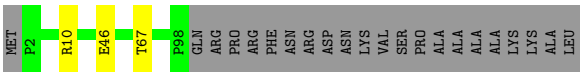
• Molecule 31: 40S ribosomal protein S25-A

Chain SZ:



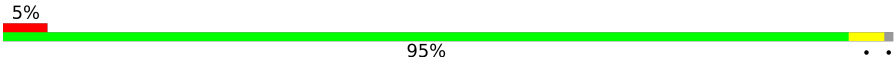
• Molecule 32: 40S ribosomal protein S26-B

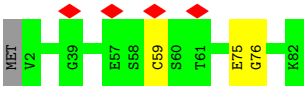
Chain Sa:



• Molecule 33: 40S ribosomal protein S27-A

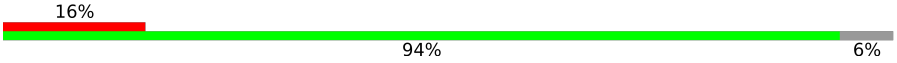
Chain Sb:

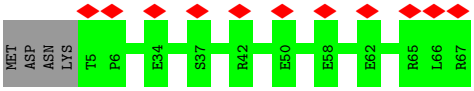




• Molecule 34: 40S ribosomal protein S28-A

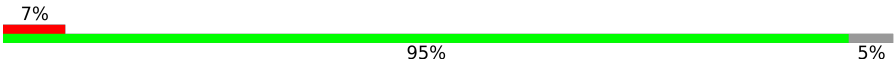
Chain Sc:

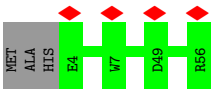




• Molecule 35: 40S ribosomal protein S29-A

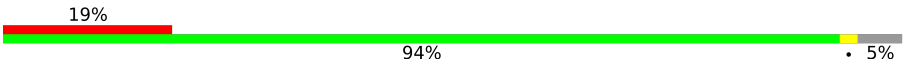
Chain Sd:

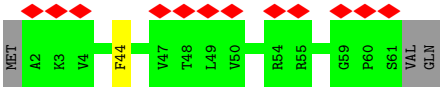




• Molecule 36: 40S ribosomal protein S30-A

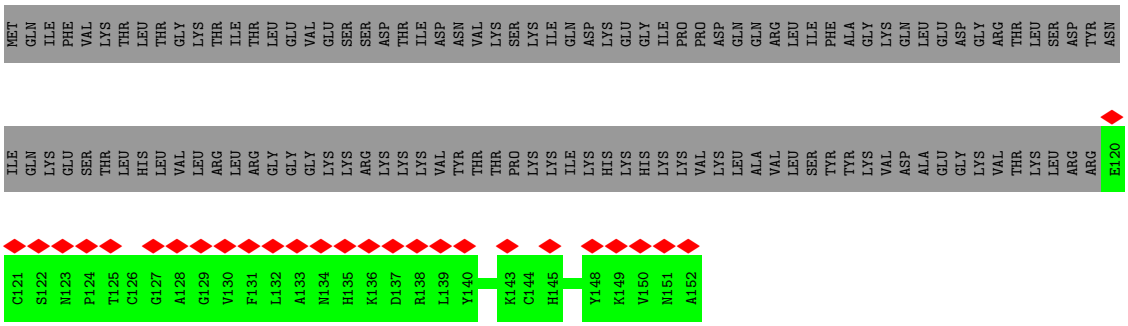
Chain Se:





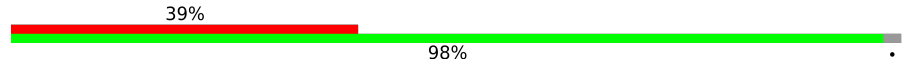
• Molecule 37: Ubiquitin-40S ribosomal protein S31

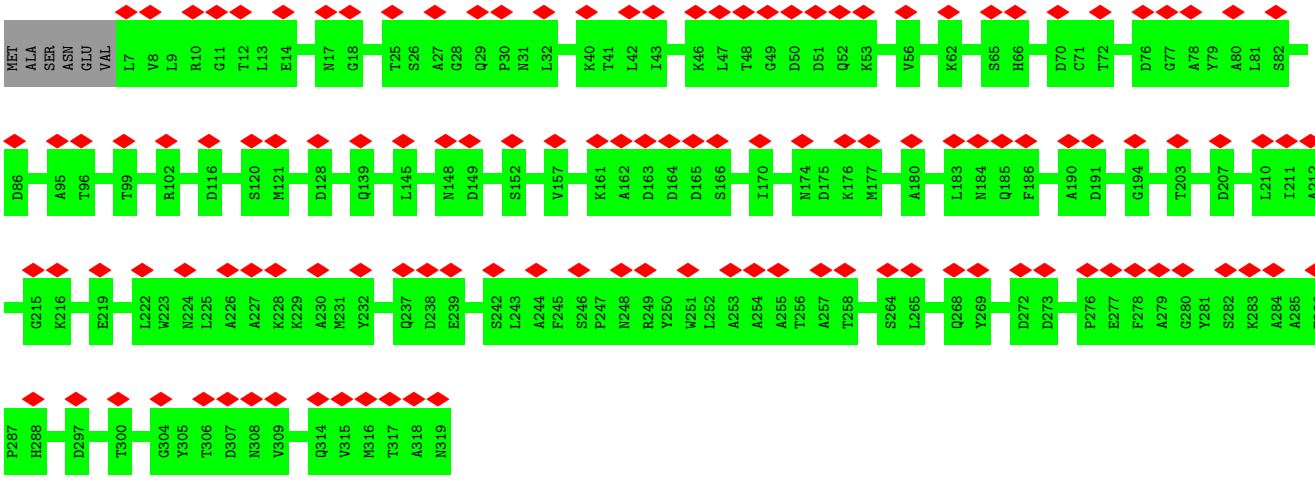
Chain Sf:



• Molecule 38: Guanine nucleotide-binding protein subunit beta-like protein

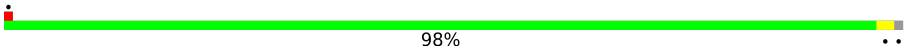
Chain Sg:





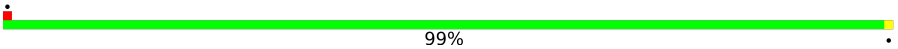
• Molecule 39: 60S ribosomal protein L2-A

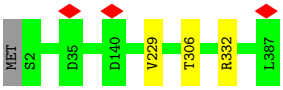
Chain LA:



• Molecule 40: 60S ribosomal protein L3

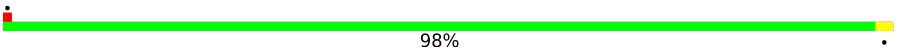
Chain LB:

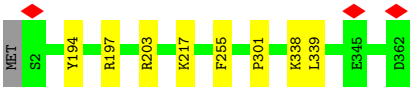




• Molecule 41: 60S ribosomal protein L4-A

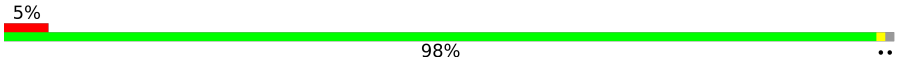
Chain LC:

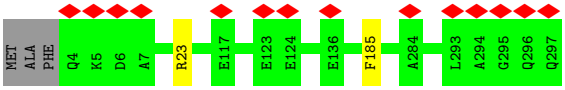




• Molecule 42: 60S ribosomal protein L5

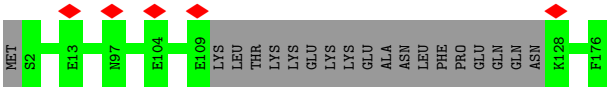
Chain LD:





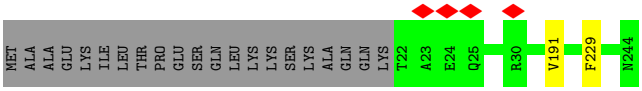
• Molecule 43: 60S ribosomal protein L6-A

Chain LE:



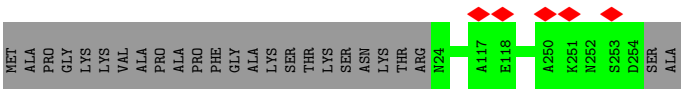
• Molecule 44: 60S ribosomal protein L7-A

Chain LF:



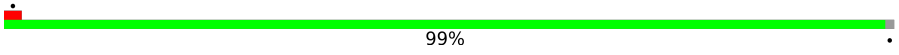
• Molecule 45: 60S ribosomal protein L8-A

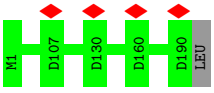
Chain LG:



• Molecule 46: 60S ribosomal protein L9-A

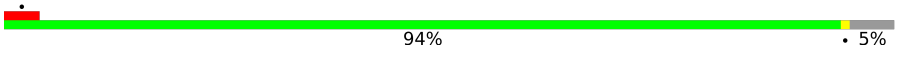
Chain LH:

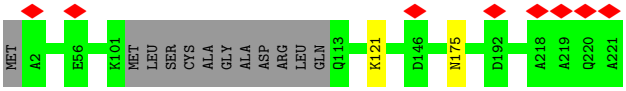




• Molecule 47: 60S ribosomal protein L10

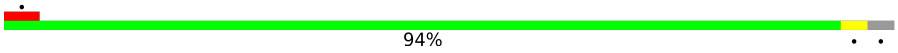
Chain LI:

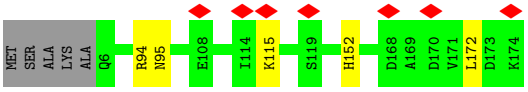




• Molecule 48: 60S ribosomal protein L11-A

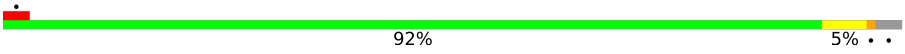
Chain LJ:

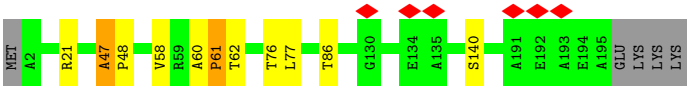




• Molecule 49: 60S ribosomal protein L13-A

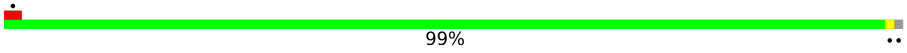
Chain LL:

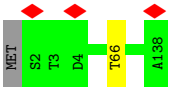




• Molecule 50: 60S ribosomal protein L14-A

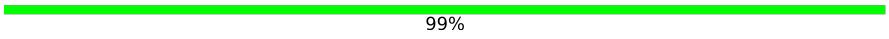
Chain LM:

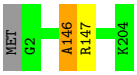




• Molecule 51: 60S ribosomal protein L15-A

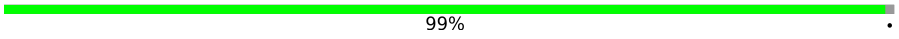
Chain LN:





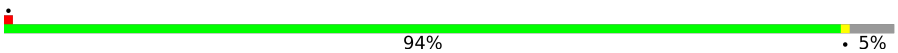
• Molecule 52: 60S ribosomal protein L16-A

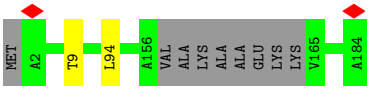
Chain LO:



• Molecule 53: 60S ribosomal protein L17-A

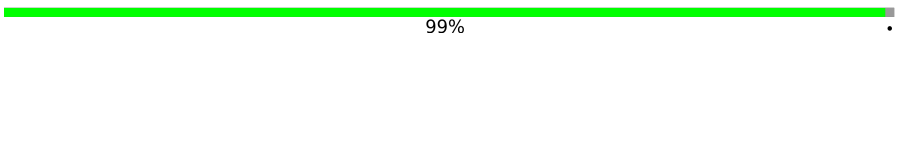
Chain LP:





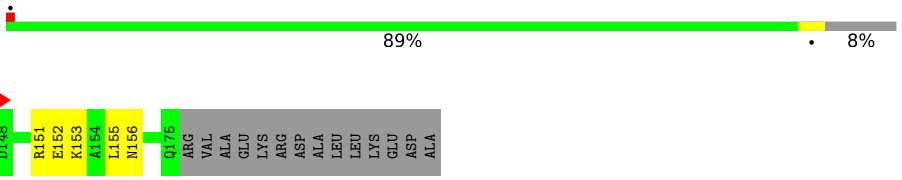
• Molecule 54: 60S ribosomal protein L18-A

Chain LQ:



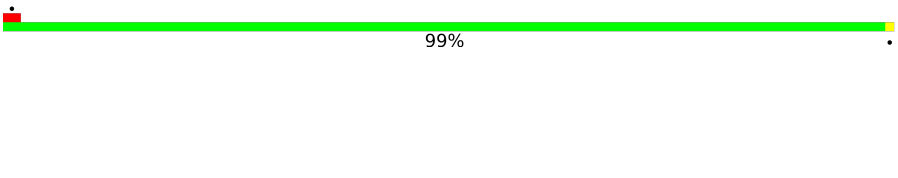
• Molecule 55: 60S ribosomal protein L19-A

Chain LR:



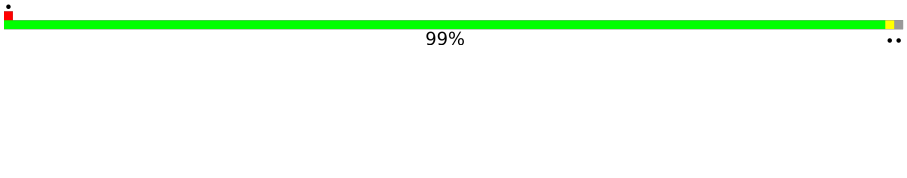
• Molecule 56: 60S ribosomal protein L20-A

Chain LS:



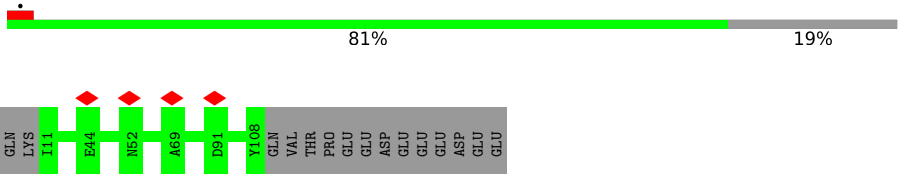
• Molecule 57: 60S ribosomal protein L21-A

Chain LT:



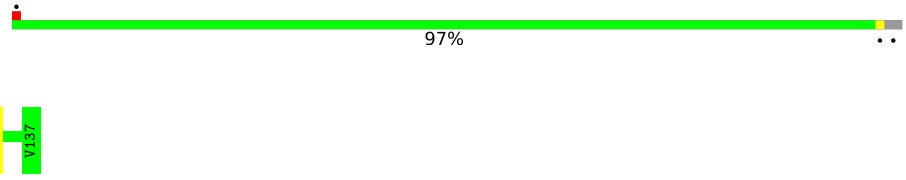
• Molecule 58: 60S ribosomal protein L22-A

Chain LU:



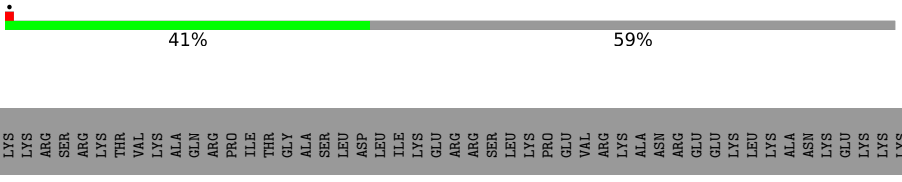
• Molecule 59: 60S ribosomal protein L23-A

Chain LV:



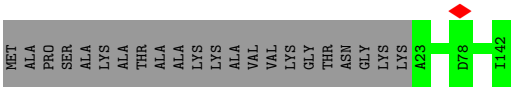
• Molecule 60: 60S ribosomal protein L24-A

Chain LW:



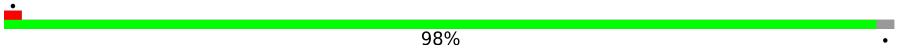
• Molecule 61: 60S ribosomal protein L25

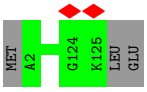
Chain LX:



• Molecule 62: 60S ribosomal protein L26-A

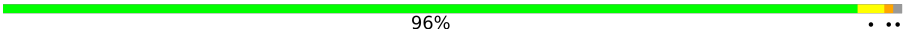
Chain LY:





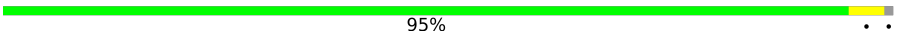
• Molecule 63: 60S ribosomal protein L27-A

Chain LZ:



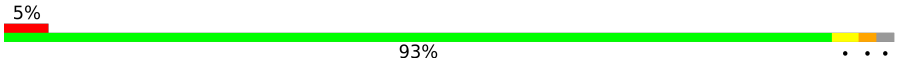
• Molecule 64: 60S ribosomal protein L28

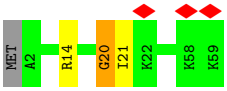
Chain La:



• Molecule 65: 60S ribosomal protein L29

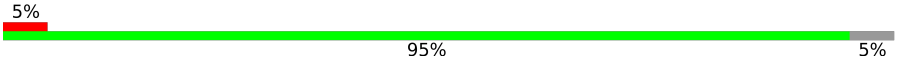
Chain Lb:

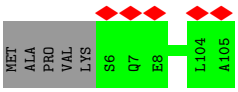




• Molecule 66: 60S ribosomal protein L30

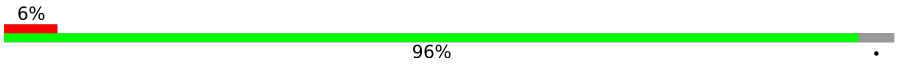
Chain Lc:

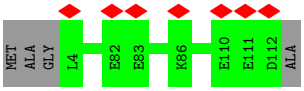




• Molecule 67: 60S ribosomal protein L31-A

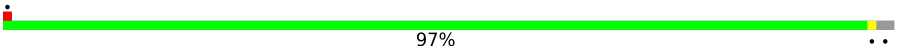
Chain Ld:

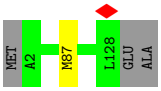




• Molecule 68: 60S ribosomal protein L32

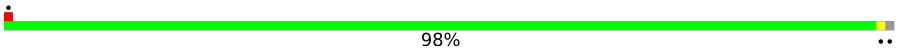
Chain Le:

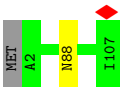




• Molecule 69: 60S ribosomal protein L33-A

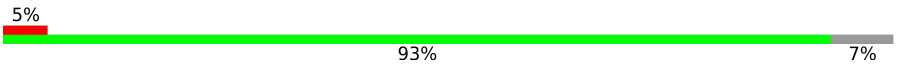
Chain Lf:

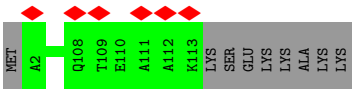




• Molecule 70: 60S ribosomal protein L34-A

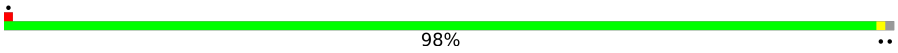
Chain Lg:

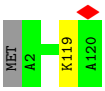




• Molecule 71: 60S ribosomal protein L35-A

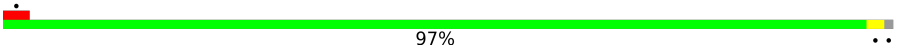
Chain Lh:

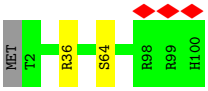




• Molecule 72: 60S ribosomal protein L36-A

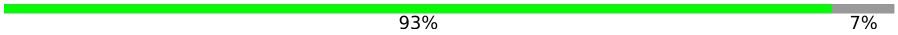
Chain Li:

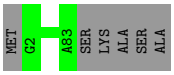




• Molecule 73: 60S ribosomal protein L37-A

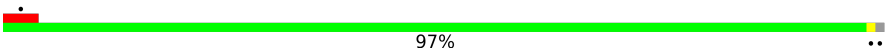
Chain Lj:

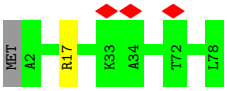




• Molecule 74: 60S ribosomal protein L38

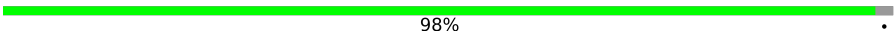
Chain Lk:





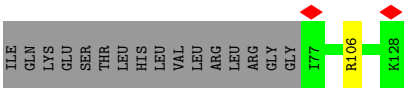
• Molecule 75: 60S ribosomal protein L39

Chain Ll:



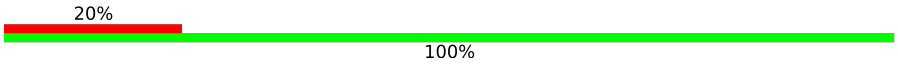
• Molecule 76: Ubiquitin-60S ribosomal protein L40

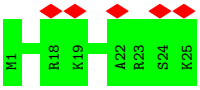
Chain Lm:



• Molecule 77: 60S ribosomal protein L41-A

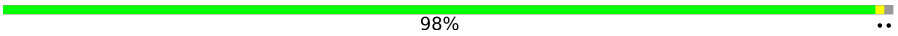
Chain Ln:

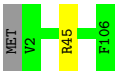




• Molecule 78: 60S ribosomal protein L42-A

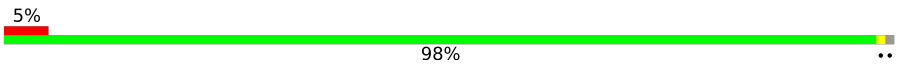
Chain Lo:

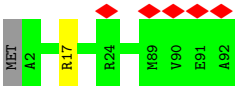




• Molecule 79: 60S ribosomal protein L43-A

Chain Lp:





4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	88523	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 ($e^-/Å^2$)	28	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	0.283	Depositor
Minimum map value	-0.173	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.010	Depositor
Recommended contour level	0.03	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

5.1 Standard geometry

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

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|$ >5	RMSZ	#$\|Z\|$ >5
1	C2	0.90	4/40528 (0.0%)	1.01	104/63141 (0.2%)
2	C5	0.37	0/636	0.47	0/837
3	C1	1.18	6/74873 (0.0%)	1.01	117/116727 (0.1%)
4	C4	1.02	0/2883	0.94	0/4491
5	C3	1.22	0/3724	0.95	1/5798 (0.0%)
6	SA	0.41	0/1623	0.53	0/2222
7	SB	0.45	0/1748	0.60	1/2352 (0.0%)
8	SC	0.47	0/1665	0.60	0/2263
9	SD	0.37	0/1759	0.55	0/2368
10	SE	0.47	0/2109	0.57	0/2839
11	SF	0.35	0/1629	0.51	0/2202
12	SG	0.38	0/1779	0.52	0/2379
13	SH	0.38	0/1511	0.58	0/2036
14	SI	0.50	0/1514	0.51	0/2021
15	SJ	0.43	0/1519	0.53	0/2035
16	SK	0.36	0/757	0.50	0/1022
17	SL	0.58	0/1194	0.53	0/1610
18	SM	0.27	0/898	0.61	0/1220
19	SN	0.47	0/1215	0.54	0/1638
20	SO	0.47	0/960	0.60	0/1290
21	SP	0.34	0/959	0.57	0/1288
22	SQ	0.36	0/1125	0.54	0/1510
23	SR	0.34	0/904	0.53	0/1210
24	SS	0.31	0/1211	0.55	0/1628
25	ST	0.35	0/1130	0.49	0/1517
26	SU	0.37	0/815	0.58	0/1102
27	SV	0.45	0/693	0.55	0/935
28	SW	0.52	0/1038	0.56	0/1395
29	SX	0.51	0/1139	0.59	0/1518
30	SY	0.40	0/1087	0.54	0/1449
31	SZ	0.34	0/566	0.56	0/761
32	Sa	0.52	0/782	0.53	0/1047

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
33	Sb	0.41	0/620	0.58	0/838
34	Sc	0.37	0/499	0.58	0/670
35	Sd	0.42	0/452	0.51	0/600
36	Se	0.37	0/483	0.54	0/643
37	Sf	0.31	0/253	0.49	0/340
38	Sg	0.33	0/2456	0.56	0/3343
39	LA	0.64	0/1946	0.63	0/2614
40	LB	0.59	0/3146	0.55	0/4228
41	LC	0.58	0/2800	0.58	0/3790
42	LD	0.49	0/2408	0.52	0/3248
43	LE	0.48	0/1269	0.51	0/1705
44	LF	0.59	0/1828	0.55	0/2461
45	LG	0.57	0/1795	0.56	0/2429
46	LH	0.49	0/1531	0.54	0/2062
47	LI	0.55	0/1732	0.55	0/2323
48	LJ	0.46	0/1374	0.58	0/1842
49	LL	0.56	0/1573	0.63	0/2113
50	LM	0.46	0/1074	0.52	0/1446
51	LN	0.70	0/1757	0.60	0/2354
52	LO	0.56	0/1585	0.54	0/2128
53	LP	0.60	0/1400	0.55	0/1882
54	LQ	0.58	0/1465	0.58	0/1965
55	LR	0.57	1/1382 (0.1%)	0.58	0/1849
56	LS	0.55	0/1481	0.52	0/1990
57	LT	0.56	0/1300	0.54	0/1743
58	LU	0.49	0/794	0.51	0/1076
59	LV	0.53	0/1008	0.56	0/1356
60	LW	0.54	0/533	0.52	0/707
61	LX	0.60	0/974	0.60	0/1314
62	LY	0.49	0/987	0.55	0/1318
63	LZ	0.59	0/1118	0.57	0/1497
64	La	0.61	0/1204	0.57	1/1612 (0.1%)
65	Lb	0.46	0/473	0.53	0/629
66	Lc	0.52	0/775	0.54	0/1040
67	Ld	0.55	0/897	0.57	0/1205
68	Le	0.57	0/1041	0.55	0/1394
69	Lf	0.70	0/868	0.61	1/1168 (0.1%)
70	Lg	0.59	0/890	0.56	0/1189
71	Lh	0.52	0/974	0.52	0/1297
72	Li	0.48	0/777	0.55	0/1033
73	Lj	0.69	0/665	0.61	0/882
74	Lk	0.41	0/614	0.55	0/822
75	Ll	0.60	0/443	0.57	0/588

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
76	Lm	0.53	0/423	0.54	0/562
77	Ln	0.42	0/234	0.46	0/300
78	Lo	0.51	0/860	0.53	0/1136
79	Lp	0.67	0/701	0.60	0/934
All	All	0.89	11/210835 (0.0%)	0.86	225/309516 (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
6	SA	0	1
7	SB	0	2
8	SC	0	1
13	SH	0	2
18	SM	0	3
19	SN	0	1
22	SQ	0	2
24	SS	0	1
26	SU	0	1
30	SY	0	2
32	Sa	0	1
33	Sb	0	1
36	Se	0	1
39	LA	0	1
41	LC	0	1
48	LJ	0	2
49	LL	0	2
51	LN	0	1
63	LZ	0	2
64	La	0	2
65	Lb	0	2
72	Li	0	1
All	All	0	33

All (11) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C2	474	A	N9-C4	-6.10	1.34	1.37
1	C2	1141	G	N3-C4	-5.63	1.31	1.35
1	C2	1455	G	N9-C4	-5.54	1.33	1.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	C1	346	C	N1-C6	-5.52	1.33	1.37
3	C1	1515	A	C6-N1	-5.50	1.31	1.35
3	C1	2149	A	N9-C4	-5.41	1.34	1.37
1	C2	118	U	C2-N3	-5.34	1.34	1.37
3	C1	803	C	N1-C6	-5.30	1.33	1.37
55	LR	58	HIS	CA-CB	-5.30	1.42	1.53
3	C1	1857	C	N1-C6	-5.21	1.34	1.37
3	C1	1199	C	N3-C4	-5.09	1.30	1.33

All (225) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	C1	1152	G	N1-C6-O6	-15.47	110.62	119.90
1	C2	190	C	N3-C2-O2	-11.62	113.76	121.90
3	C1	1515	A	N1-C6-N6	-10.61	112.24	118.60
3	C1	1501	U	N3-C2-O2	-10.41	114.92	122.20
1	C2	1455	G	N3-C4-N9	-10.35	119.79	126.00
3	C1	1199	C	N3-C4-N4	-9.78	111.16	118.00
1	C2	1455	G	N3-C4-C5	8.90	133.05	128.60
1	C2	190	C	N1-C2-O2	8.89	124.24	118.90
3	C1	1199	C	C5-C4-N4	8.48	126.14	120.20
1	C2	1455	G	C4-N9-C1'	-8.27	115.76	126.50
1	C2	191	C	C6-N1-C1'	8.17	130.60	120.80
1	C2	191	C	C2-N1-C1'	-8.08	109.92	118.80
1	C2	954	G	C5-C6-O6	8.03	133.42	128.60
3	C1	835	G	O4'-C1'-N9	8.01	114.61	108.20
3	C1	1208	U	C2-N1-C1'	8.00	127.30	117.70
3	C1	1279	C	N1-C2-O2	7.98	123.69	118.90
3	C1	1152	G	C5-C6-O6	7.90	133.34	128.60
3	C1	1501	U	C2-N3-C4	-7.87	122.28	127.00
3	C1	2568	C	N3-C2-O2	-7.76	116.47	121.90
1	C2	1455	G	C8-N9-C1'	7.70	137.01	127.00
1	C2	1501	C	N3-C2-O2	-7.70	116.51	121.90
1	C2	1507	G	N3-C4-N9	-7.70	121.38	126.00
1	C2	453	U	C2-N1-C1'	7.65	126.88	117.70
3	C1	1275	C	C5-C6-N1	7.61	124.81	121.00
3	C1	1515	A	C5-C6-N6	7.51	129.71	123.70
3	C1	1496	C	C2-N1-C1'	7.36	126.89	118.80
1	C2	1141	G	N3-C4-N9	-7.31	121.61	126.00
1	C2	874	C	N3-C2-O2	-7.30	116.79	121.90
3	C1	1756	C	N3-C2-O2	-7.30	116.79	121.90
3	C1	175	C	N3-C2-O2	-7.25	116.83	121.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	C1	2537	U	C2-N1-C1'	7.25	126.40	117.70
3	C1	1501	U	N1-C2-N3	7.21	119.23	114.90
1	C2	1440	C	N3-C2-O2	-7.19	116.87	121.90
1	C2	1039	A	O4'-C1'-N9	7.17	113.93	108.20
3	C1	1280	C	N3-C2-O2	-7.13	116.91	121.90
1	C2	190	C	C6-N1-C2	-7.08	117.47	120.30
3	C1	1495	U	C2-N1-C1'	7.05	126.16	117.70
3	C1	525	C	N3-C2-O2	-6.92	117.06	121.90
1	C2	194	U	C2-N1-C1'	6.88	125.96	117.70
3	C1	2239	G	N3-C4-N9	-6.80	121.92	126.00
1	C2	453	U	N1-C2-O2	6.80	127.56	122.80
3	C1	1878	G	C4-N9-C1'	6.80	135.33	126.50
1	C2	1141	G	C5-C6-O6	6.70	132.62	128.60
1	C2	830	U	C2-N1-C1'	6.67	125.71	117.70
1	C2	1572	G	C4-N9-C1'	6.67	135.18	126.50
3	C1	1283	C	N3-C2-O2	-6.67	117.23	121.90
3	C1	3235	C	N3-C2-O2	-6.65	117.25	121.90
3	C1	1208	U	N1-C2-O2	6.64	127.45	122.80
3	C1	1228	C	N3-C2-O2	-6.63	117.26	121.90
3	C1	1283	C	N1-C2-O2	6.62	122.87	118.90
3	C1	2827	U	C2-N1-C1'	6.60	125.62	117.70
1	C2	1454	G	N1-C6-O6	-6.59	115.95	119.90
1	C2	1141	G	N9-C4-C5	6.59	108.03	105.40
3	C1	1238	C	C2-N1-C1'	6.58	126.03	118.80
1	C2	14	C	N3-C2-O2	-6.57	117.30	121.90
1	C2	453	U	N3-C2-O2	-6.55	117.62	122.20
1	C2	1216	C	N3-C2-O2	-6.50	117.35	121.90
3	C1	758	C	N3-C2-O2	-6.49	117.35	121.90
3	C1	2568	C	O4'-C1'-N1	6.47	113.38	108.20
3	C1	548	G	N1-C6-O6	-6.39	116.07	119.90
1	C2	1641	C	C6-N1-C2	-6.38	117.75	120.30
1	C2	1454	G	C5-C6-O6	6.35	132.41	128.60
3	C1	69	C	C6-N1-C1'	6.30	128.36	120.80
3	C1	2283	G	N1-C6-O6	6.29	123.67	119.90
1	C2	1210	C	N3-C2-O2	-6.28	117.50	121.90
3	C1	1275	C	C2-N1-C1'	6.26	125.69	118.80
3	C1	327	A	N1-C6-N6	-6.25	114.85	118.60
3	C1	2237	C	N3-C2-O2	-6.25	117.53	121.90
3	C1	1377	G	C5-C6-O6	6.24	132.34	128.60
3	C1	544	C	C6-N1-C1'	6.23	128.28	120.80
1	C2	1390	U	C2-N1-C1'	6.22	125.17	117.70
1	C2	1507	G	C5-C6-O6	6.21	132.32	128.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	C1	1555	U	C5-C6-N1	6.21	125.80	122.70
1	C2	821	U	O5'-P-OP1	-6.18	100.14	105.70
3	C1	1878	G	C8-N9-C1'	-6.17	118.97	127.00
3	C1	525	C	N1-C2-O2	6.16	122.60	118.90
3	C1	1583	A	O5'-P-OP1	-6.16	100.16	105.70
3	C1	2513	U	P-O3'-C3'	6.16	127.09	119.70
3	C1	544	C	C2-N1-C1'	-6.14	112.04	118.80
1	C2	176	C	C2-N1-C1'	6.14	125.56	118.80
3	C1	69	C	C2-N1-C1'	-6.13	112.06	118.80
3	C1	327	A	C5-C6-N6	6.11	128.59	123.70
3	C1	2209	U	P-O3'-C3'	6.09	127.01	119.70
3	C1	69	C	N3-C2-O2	-6.08	117.65	121.90
1	C2	540	G	N3-C2-N2	-6.07	115.65	119.90
3	C1	244	G	C5-C6-O6	6.07	132.24	128.60
1	C2	474	A	N3-C4-N9	-6.04	122.57	127.40
1	C2	191	C	O4'-C1'-N1	6.03	113.03	108.20
7	SB	54	LEU	CA-CB-CG	6.01	129.13	115.30
1	C2	1439	C	N1-C2-O2	6.00	122.50	118.90
3	C1	804	C	C2-N3-C4	-5.97	116.92	119.90
3	C1	3253	G	N3-C4-N9	-5.97	122.42	126.00
3	C1	1152	G	C5-C6-N1	5.97	114.48	111.50
3	C1	2537	U	N1-C2-O2	5.96	126.97	122.80
1	C2	189	C	N1-C2-O2	5.96	122.47	118.90
1	C2	1455	G	C6-C5-N7	5.94	133.96	130.40
1	C2	1572	G	C8-N9-C1'	-5.89	119.34	127.00
3	C1	1562	C	N1-C2-O2	5.89	122.43	118.90
3	C1	1238	C	C5-C6-N1	5.88	123.94	121.00
1	C2	1448	G	N1-C2-N2	-5.88	110.91	116.20
3	C1	548	G	C5-C6-O6	5.88	132.12	128.60
1	C2	583	C	C2-N1-C1'	5.87	125.26	118.80
1	C2	1507	G	N3-C4-C5	5.87	131.53	128.60
3	C1	1031	C	C5-C6-N1	5.86	123.93	121.00
1	C2	1458	G	C4-N9-C1'	5.85	134.10	126.50
1	C2	118	U	N3-C4-O4	-5.80	115.34	119.40
1	C2	1572	G	N3-C2-N2	5.79	123.95	119.90
3	C1	101	G	C4-N9-C1'	5.79	134.02	126.50
3	C1	1208	U	C6-N1-C1'	-5.79	113.10	121.20
1	C2	1448	G	N3-C2-N2	5.77	123.94	119.90
3	C1	2663	G	C4-N9-C1'	5.77	134.00	126.50
3	C1	543	C	N3-C2-O2	-5.76	117.87	121.90
3	C1	1579	C	N3-C2-O2	-5.75	117.88	121.90
3	C1	243	G	N3-C4-N9	5.71	129.42	126.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	C1	2513	U	OP1-P-O3'	5.68	117.70	105.20
1	C2	1458	G	N3-C4-N9	5.66	129.40	126.00
1	C2	1572	G	N3-C4-N9	5.63	129.38	126.00
3	C1	580	C	N3-C2-O2	-5.63	117.96	121.90
69	Lf	88	ASN	C-N-CA	-5.63	107.63	121.70
3	C1	1280	C	C6-N1-C2	-5.62	118.05	120.30
3	C1	1230	G	N1-C6-O6	-5.61	116.53	119.90
1	C2	698	U	N1-C2-O2	5.61	126.73	122.80
3	C1	101	G	C8-N9-C1'	-5.60	119.72	127.00
1	C2	1572	G	N1-C2-N2	-5.60	111.16	116.20
3	C1	1496	C	C6-N1-C1'	-5.59	114.09	120.80
3	C1	1279	C	N3-C2-O2	-5.59	117.99	121.90
3	C1	69	C	C2-N3-C4	-5.59	117.11	119.90
3	C1	386	A	N1-C6-N6	5.58	121.95	118.60
1	C2	500	C	N3-C4-C5	5.58	124.13	121.90
1	C2	1644	C	C6-N1-C2	-5.57	118.07	120.30
1	C2	1458	G	C8-N9-C1'	-5.57	119.76	127.00
3	C1	1115	G	C4-N9-C1'	5.56	133.73	126.50
3	C1	66	A	N1-C6-N6	-5.55	115.27	118.60
1	C2	954	G	N1-C2-N3	5.54	127.23	123.90
1	C2	1274	C	C2-N1-C1'	5.54	124.90	118.80
1	C2	954	G	N1-C6-O6	-5.53	116.58	119.90
1	C2	1274	C	N1-C2-O2	5.53	122.22	118.90
1	C2	767	U	N3-C2-O2	-5.52	118.33	122.20
1	C2	1455	G	N3-C2-N2	-5.52	116.04	119.90
1	C2	1246	C	N1-C2-O2	5.52	122.21	118.90
3	C1	1279	C	C2-N1-C1'	5.50	124.86	118.80
1	C2	484	C	C2-N1-C1'	5.50	124.85	118.80
1	C2	1537	C	N3-C2-O2	-5.50	118.05	121.90
5	C3	113	U	C2-N1-C1'	5.49	124.29	117.70
1	C2	163	G	N3-C4-N9	-5.48	122.71	126.00
1	C2	698	U	N3-C2-O2	-5.47	118.37	122.20
1	C2	1180	C	N1-C2-O2	5.46	122.18	118.90
3	C1	1230	G	C5-C6-O6	5.46	131.88	128.60
3	C1	2239	G	N9-C4-C5	5.46	107.58	105.40
1	C2	1470	C	N3-C2-O2	-5.46	118.08	121.90
3	C1	1878	G	N3-C4-N9	5.46	129.28	126.00
3	C1	1819	U	N1-C2-O2	5.45	126.61	122.80
1	C2	176	C	N1-C2-O2	5.45	122.17	118.90
1	C2	830	U	C6-N1-C1'	-5.44	113.58	121.20
1	C2	965	U	C2-N1-C1'	5.42	124.20	117.70
1	C2	1210	C	N1-C2-N3	5.38	122.97	119.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	C2	1210	C	C6-N1-C2	-5.38	118.15	120.30
3	C1	101	G	O4'-C1'-N9	5.37	112.50	108.20
3	C1	1716	U	P-O3'-C3'	5.37	126.14	119.70
1	C2	184	C	C2-N1-C1'	5.36	124.69	118.80
1	C2	1141	G	N1-C6-O6	-5.35	116.69	119.90
3	C1	757	C	N1-C2-O2	5.34	122.11	118.90
1	C2	474	A	N9-C4-C5	5.34	107.94	105.80
1	C2	1271	G	C5-C6-O6	5.33	131.80	128.60
1	C2	1507	G	N1-C6-O6	-5.33	116.70	119.90
1	C2	1390	U	N1-C2-O2	5.33	126.53	122.80
1	C2	1303	U	N3-C2-O2	-5.32	118.47	122.20
3	C1	2567	C	N1-C2-O2	5.32	122.09	118.90
3	C1	1495	U	C5-C6-N1	5.32	125.36	122.70
1	C2	349	U	C2-N1-C1'	-5.32	111.32	117.70
1	C2	1125	A	N1-C6-N6	5.31	121.79	118.60
3	C1	1815	U	P-O3'-C3'	5.31	126.07	119.70
1	C2	196	G	N1-C2-N2	-5.30	111.43	116.20
3	C1	1227	C	N1-C2-O2	5.30	122.08	118.90
1	C2	1000	C	C2-N1-C1'	5.29	124.62	118.80
3	C1	864	G	N3-C4-N9	5.28	129.16	126.00
3	C1	774	G	N3-C4-N9	-5.27	122.84	126.00
1	C2	219	A	O4'-C1'-N9	5.26	112.41	108.20
1	C2	1500	C	N1-C2-O2	5.25	122.05	118.90
3	C1	1280	C	N1-C2-N3	5.25	122.87	119.20
1	C2	1322	A	C4-C5-N7	5.24	113.32	110.70
1	C2	319	U	OP1-P-O3'	5.24	116.73	105.20
3	C1	2204	C	N3-C2-O2	-5.24	118.23	121.90
1	C2	1398	U	N1-C2-O2	5.23	126.46	122.80
3	C1	315	C	C2-N1-C1'	5.22	124.54	118.80
3	C1	180	C	C2-N1-C1'	5.21	124.53	118.80
3	C1	1081	U	P-O3'-C3'	5.20	125.94	119.70
3	C1	2537	U	C6-N1-C1'	-5.19	113.93	121.20
1	C2	1398	U	N3-C2-O2	-5.19	118.57	122.20
3	C1	2254	U	N3-C2-O2	-5.19	118.57	122.20
64	La	47	LYS	C-N-CA	5.18	134.65	121.70
3	C1	69	C	N1-C2-N3	5.17	122.82	119.20
1	C2	1170	G	N3-C4-C5	-5.16	126.02	128.60
1	C2	1322	A	N1-C6-N6	5.16	121.69	118.60
3	C1	548	G	N3-C4-N9	-5.15	122.91	126.00
3	C1	2663	G	C8-N9-C1'	-5.15	120.31	127.00
1	C2	1572	G	C6-C5-N7	-5.14	127.31	130.40
3	C1	1228	C	C6-N1-C2	-5.14	118.24	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	C2	1440	C	C6-N1-C2	-5.14	118.24	120.30
3	C1	1275	C	C6-N1-C2	-5.14	118.25	120.30
1	C2	103	A	P-O3'-C3'	5.13	125.86	119.70
1	C2	453	U	C6-N1-C1'	-5.13	114.02	121.20
3	C1	3317	U	P-O3'-C3'	5.13	125.85	119.70
1	C2	1560	U	C2-N1-C1'	5.13	123.85	117.70
1	C2	532	U	N1-C2-N3	5.12	117.97	114.90
3	C1	567	G	N3-C4-N9	5.12	129.07	126.00
1	C2	1500	C	N3-C2-O2	-5.12	118.32	121.90
3	C1	2772	C	P-O3'-C3'	5.11	125.84	119.70
3	C1	2663	G	N3-C4-N9	5.11	129.07	126.00
3	C1	1577	G	N1-C2-N2	-5.10	111.61	116.20
3	C1	915	A	C8-N9-C4	-5.09	103.76	105.80
3	C1	175	C	C6-N1-C1'	5.08	126.90	120.80
1	C2	337	G	O4'-C1'-N9	-5.08	104.14	108.20
1	C2	1180	C	N3-C2-O2	-5.07	118.35	121.90
1	C2	1641	C	C5-C6-N1	5.06	123.53	121.00
1	C2	163	G	N3-C4-C5	5.05	131.12	128.60
3	C1	2961	G	N3-C4-C5	-5.04	126.08	128.60
3	C1	2978	U	C2-N1-C1'	-5.04	111.65	117.70
3	C1	1275	C	N1-C2-O2	5.04	121.93	118.90
1	C2	194	U	N1-C2-O2	5.03	126.32	122.80
3	C1	1155	C	C2-N1-C1'	5.03	124.34	118.80
3	C1	2237	C	N1-C2-O2	5.03	121.92	118.90
3	C1	1496	C	N1-C2-O2	5.02	121.91	118.90
3	C1	2978	U	O4'-C1'-N1	5.01	112.21	108.20
3	C1	327	A	N9-C4-C5	5.01	107.80	105.80

There are no chirality outliers.

All (33) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
39	LA	13	GLY	Peptide
41	LC	338	LYS	Peptide
48	LJ	172	LEU	Peptide
48	LJ	94	ARG	Peptide
49	LL	47	ALA	Peptide
49	LL	61	PRO	Peptide
51	LN	146	ALA	Peptide
63	LZ	100	THR	Peptide
63	LZ	102	GLU	Peptide
64	La	17	ALA	Peptide

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Mol	Chain	Res	Type	Group
64	La	66	ALA	Peptide
65	Lb	20	GLY	Peptide
65	Lb	21	ILE	Peptide
72	Li	64	SER	Peptide
6	SA	184	LEU	Peptide
7	SB	104	ASP	Peptide
7	SB	146	GLN	Peptide
8	SC	106	ASP	Peptide
13	SH	31	SER	Peptide
13	SH	64	VAL	Peptide
18	SM	110	GLY	Peptide
18	SM	128	ALA	Peptide
18	SM	130	THR	Peptide
19	SN	139	TRP	Peptide
22	SQ	113	ASP	Peptide
22	SQ	40	GLU	Peptide
24	SS	101	LEU	Peptide
26	SU	50	LEU	Peptide
30	SY	31	ASN	Peptide
30	SY	51	GLU	Peptide
32	Sa	10	ARG	Peptide
33	Sb	75	GLU	Peptide
36	Se	44	PHE	Peptide

5.2 Too-close contacts (i)

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

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
2	C5	77/91 (85%)	71 (92%)	6 (8%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
6	SA	204/252 (81%)	167 (82%)	35 (17%)	2 (1%)	15 46
7	SB	214/255 (84%)	190 (89%)	23 (11%)	1 (0%)	29 61
8	SC	215/254 (85%)	194 (90%)	21 (10%)	0	100 100
9	SD	221/240 (92%)	188 (85%)	32 (14%)	1 (0%)	29 61
10	SE	258/261 (99%)	216 (84%)	41 (16%)	1 (0%)	34 67
11	SF	204/225 (91%)	173 (85%)	30 (15%)	1 (0%)	29 61
12	SG	216/236 (92%)	194 (90%)	21 (10%)	1 (0%)	29 61
13	SH	183/190 (96%)	154 (84%)	27 (15%)	2 (1%)	14 44
14	SI	184/200 (92%)	170 (92%)	14 (8%)	0	100 100
15	SJ	183/197 (93%)	164 (90%)	18 (10%)	1 (0%)	29 61
16	SK	90/105 (86%)	66 (73%)	23 (26%)	1 (1%)	14 44
17	SL	144/156 (92%)	125 (87%)	19 (13%)	0	100 100
18	SM	122/143 (85%)	82 (67%)	36 (30%)	4 (3%)	4 22
19	SN	148/151 (98%)	130 (88%)	17 (12%)	1 (1%)	22 55
20	SO	126/137 (92%)	107 (85%)	19 (15%)	0	100 100
21	SP	117/142 (82%)	97 (83%)	19 (16%)	1 (1%)	17 49
22	SQ	139/143 (97%)	120 (86%)	18 (13%)	1 (1%)	22 55
23	SR	111/136 (82%)	97 (87%)	14 (13%)	0	100 100
24	SS	143/146 (98%)	125 (87%)	17 (12%)	1 (1%)	22 55
25	ST	141/144 (98%)	125 (89%)	16 (11%)	0	100 100
26	SU	99/121 (82%)	90 (91%)	8 (8%)	1 (1%)	15 46
27	SV	85/87 (98%)	76 (89%)	9 (11%)	0	100 100
28	SW	127/130 (98%)	117 (92%)	10 (8%)	0	100 100
29	SX	142/145 (98%)	121 (85%)	19 (13%)	2 (1%)	11 37
30	SY	132/135 (98%)	113 (86%)	16 (12%)	3 (2%)	6 28
31	SZ	67/108 (62%)	59 (88%)	8 (12%)	0	100 100
32	Sa	95/119 (80%)	77 (81%)	17 (18%)	1 (1%)	14 44
33	Sb	79/82 (96%)	62 (78%)	16 (20%)	1 (1%)	12 39
34	Sc	61/67 (91%)	54 (88%)	7 (12%)	0	100 100
35	Sd	51/56 (91%)	44 (86%)	7 (14%)	0	100 100
36	Se	58/63 (92%)	48 (83%)	10 (17%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
37	Sf	31/152 (20%)	20 (64%)	11 (36%)	0	100	100
38	Sg	311/319 (98%)	269 (86%)	42 (14%)	0	100	100
39	LA	250/254 (98%)	207 (83%)	43 (17%)	0	100	100
40	LB	384/387 (99%)	347 (90%)	37 (10%)	0	100	100
41	LC	359/362 (99%)	303 (84%)	54 (15%)	2 (1%)	25	57
42	LD	292/297 (98%)	271 (93%)	21 (7%)	0	100	100
43	LE	153/176 (87%)	132 (86%)	21 (14%)	0	100	100
44	LF	221/244 (91%)	208 (94%)	12 (5%)	1 (0%)	29	61
45	LG	229/256 (90%)	194 (85%)	35 (15%)	0	100	100
46	LH	188/191 (98%)	172 (92%)	16 (8%)	0	100	100
47	LI	205/221 (93%)	184 (90%)	20 (10%)	1 (0%)	29	61
48	LJ	167/174 (96%)	135 (81%)	30 (18%)	2 (1%)	13	41
49	LL	192/199 (96%)	160 (83%)	24 (12%)	8 (4%)	3	18
50	LM	135/138 (98%)	130 (96%)	5 (4%)	0	100	100
51	LN	201/204 (98%)	180 (90%)	19 (10%)	2 (1%)	15	46
52	LO	195/199 (98%)	180 (92%)	15 (8%)	0	100	100
53	LP	171/184 (93%)	156 (91%)	15 (9%)	0	100	100
54	LQ	183/186 (98%)	167 (91%)	16 (9%)	0	100	100
55	LR	172/189 (91%)	162 (94%)	10 (6%)	0	100	100
56	LS	170/172 (99%)	160 (94%)	10 (6%)	0	100	100
57	LT	157/160 (98%)	146 (93%)	10 (6%)	1 (1%)	25	57
58	LU	96/121 (79%)	92 (96%)	4 (4%)	0	100	100
59	LV	132/137 (96%)	121 (92%)	11 (8%)	0	100	100
60	LW	61/155 (39%)	58 (95%)	3 (5%)	0	100	100
61	LX	118/142 (83%)	104 (88%)	14 (12%)	0	100	100
62	LY	122/127 (96%)	111 (91%)	11 (9%)	0	100	100
63	LZ	133/136 (98%)	118 (89%)	12 (9%)	3 (2%)	6	28
64	La	146/149 (98%)	116 (80%)	27 (18%)	3 (2%)	7	30
65	Lb	56/59 (95%)	46 (82%)	9 (16%)	1 (2%)	8	32
66	Lc	98/105 (93%)	93 (95%)	5 (5%)	0	100	100
67	Ld	107/113 (95%)	94 (88%)	13 (12%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
68	Le	125/130 (96%)	111 (89%)	14 (11%)	0	100	100
69	Lf	104/107 (97%)	96 (92%)	8 (8%)	0	100	100
70	Lg	110/121 (91%)	99 (90%)	11 (10%)	0	100	100
71	Lh	117/120 (98%)	107 (92%)	10 (8%)	0	100	100
72	Li	97/100 (97%)	87 (90%)	10 (10%)	0	100	100
73	Lj	80/88 (91%)	70 (88%)	10 (12%)	0	100	100
74	Lk	75/78 (96%)	68 (91%)	6 (8%)	1 (1%)	12	39
75	Ll	48/51 (94%)	41 (85%)	7 (15%)	0	100	100
76	Lm	50/128 (39%)	47 (94%)	3 (6%)	0	100	100
77	Ln	23/25 (92%)	22 (96%)	1 (4%)	0	100	100
78	Lo	103/106 (97%)	96 (93%)	7 (7%)	0	100	100
79	Lp	89/92 (97%)	79 (89%)	10 (11%)	0	100	100
All	All	10892/11971 (91%)	9575 (88%)	1265 (12%)	52 (0%)	32	61

All (52) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
22	SQ	116	LEU
41	LC	339	LEU
48	LJ	95	ASN
49	LL	48	PRO
49	LL	62	THR
51	LN	147	ARG
64	La	78	LEU
11	SF	101	GLY
13	SH	74	GLN
18	SM	109	GLU
18	SM	131	ASP
24	SS	91	ASP
30	SY	32	ARG
30	SY	52	LYS
49	LL	76	THR
49	LL	77	LEU
63	LZ	102	GLU
64	La	48	TYR
74	Lk	17	ARG
12	SG	68	LEU
18	SM	130	THR

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Mol	Chain	Res	Type
49	LL	61	PRO
49	LL	140	SER
6	SA	185	ARG
16	SK	25	LYS
19	SN	139	TRP
29	SX	89	ASN
30	SY	49	LYS
32	Sa	46	GLU
49	LL	47	ALA
51	LN	146	ALA
63	LZ	101	PHE
7	SB	106	THR
18	SM	119	SER
26	SU	72	ASN
41	LC	301	PRO
48	LJ	115	LYS
65	Lb	20	GLY
47	LI	175	ASN
64	La	18	GLY
10	SE	196	VAL
49	LL	60	ALA
6	SA	31	VAL
33	Sb	76	GLY
44	LF	191	VAL
9	SD	180	GLY
21	SP	68	PRO
57	LT	135	PRO
13	SH	65	PRO
15	SJ	163	PRO
29	SX	88	PRO
63	LZ	103	GLN

5.3.2 Protein sidechains (i)

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

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

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	C5	60/69 (87%)	60 (100%)	0	100	100
6	SA	165/210 (79%)	165 (100%)	0	100	100
7	SB	192/224 (86%)	191 (100%)	1 (0%)	88	94
8	SC	176/205 (86%)	174 (99%)	2 (1%)	73	86
9	SD	182/195 (93%)	179 (98%)	3 (2%)	62	81
10	SE	221/222 (100%)	220 (100%)	1 (0%)	88	94
11	SF	173/191 (91%)	173 (100%)	0	100	100
12	SG	187/201 (93%)	185 (99%)	2 (1%)	73	86
13	SH	165/170 (97%)	164 (99%)	1 (1%)	86	94
14	SI	150/161 (93%)	149 (99%)	1 (1%)	84	92
15	SJ	158/166 (95%)	158 (100%)	0	100	100
16	SK	73/98 (74%)	73 (100%)	0	100	100
17	SL	129/137 (94%)	128 (99%)	1 (1%)	81	91
18	SM	88/119 (74%)	87 (99%)	1 (1%)	73	86
19	SN	127/128 (99%)	127 (100%)	0	100	100
20	SO	97/105 (92%)	96 (99%)	1 (1%)	76	88
21	SP	98/118 (83%)	98 (100%)	0	100	100
22	SQ	117/119 (98%)	115 (98%)	2 (2%)	60	80
23	SR	92/124 (74%)	90 (98%)	2 (2%)	52	75
24	SS	128/129 (99%)	127 (99%)	1 (1%)	81	91
25	ST	115/116 (99%)	115 (100%)	0	100	100
26	SU	94/114 (82%)	94 (100%)	0	100	100
27	SV	74/74 (100%)	74 (100%)	0	100	100
28	SW	110/111 (99%)	110 (100%)	0	100	100
29	SX	119/120 (99%)	118 (99%)	1 (1%)	81	91
30	SY	112/113 (99%)	112 (100%)	0	100	100
31	SZ	61/89 (68%)	61 (100%)	0	100	100
32	Sa	83/100 (83%)	82 (99%)	1 (1%)	71	85
33	Sb	70/71 (99%)	69 (99%)	1 (1%)	67	83
34	Sc	56/60 (93%)	56 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
35	Sd	47/49 (96%)	47 (100%)	0	100	100
36	Se	51/54 (94%)	51 (100%)	0	100	100
37	Sf	27/135 (20%)	27 (100%)	0	100	100
38	Sg	255/262 (97%)	255 (100%)	0	100	100
39	LA	192/196 (98%)	189 (98%)	3 (2%)	62	81
40	LB	318/323 (98%)	315 (99%)	3 (1%)	78	90
41	LC	288/289 (100%)	283 (98%)	5 (2%)	60	80
42	LD	243/245 (99%)	241 (99%)	2 (1%)	81	91
43	LE	135/153 (88%)	135 (100%)	0	100	100
44	LF	187/205 (91%)	186 (100%)	1 (0%)	88	94
45	LG	177/208 (85%)	177 (100%)	0	100	100
46	LH	170/171 (99%)	170 (100%)	0	100	100
47	LI	177/187 (95%)	176 (99%)	1 (1%)	86	94
48	LJ	147/150 (98%)	146 (99%)	1 (1%)	84	92
49	LL	154/159 (97%)	151 (98%)	3 (2%)	57	78
50	LM	108/109 (99%)	107 (99%)	1 (1%)	78	90
51	LN	175/176 (99%)	175 (100%)	0	100	100
52	LO	160/162 (99%)	160 (100%)	0	100	100
53	LP	139/146 (95%)	137 (99%)	2 (1%)	67	83
54	LQ	150/151 (99%)	150 (100%)	0	100	100
55	LR	133/154 (86%)	128 (96%)	5 (4%)	33	61
56	LS	156/156 (100%)	155 (99%)	1 (1%)	86	94
57	LT	136/137 (99%)	136 (100%)	0	100	100
58	LU	85/107 (79%)	85 (100%)	0	100	100
59	LV	103/105 (98%)	102 (99%)	1 (1%)	76	88
60	LW	55/129 (43%)	55 (100%)	0	100	100
61	LX	104/118 (88%)	104 (100%)	0	100	100
62	LY	107/110 (97%)	107 (100%)	0	100	100
63	LZ	115/116 (99%)	114 (99%)	1 (1%)	78	90
64	La	118/119 (99%)	118 (100%)	0	100	100
65	Lb	46/47 (98%)	45 (98%)	1 (2%)	52	75

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
66	Lc	84/88 (96%)	84 (100%)	0	100	100
67	Ld	94/97 (97%)	94 (100%)	0	100	100
68	Le	109/111 (98%)	108 (99%)	1 (1%)	78	90
69	Lf	90/91 (99%)	90 (100%)	0	100	100
70	Lg	95/103 (92%)	95 (100%)	0	100	100
71	Lh	103/105 (98%)	102 (99%)	1 (1%)	76	88
72	Li	80/82 (98%)	79 (99%)	1 (1%)	69	84
73	Lj	67/71 (94%)	67 (100%)	0	100	100
74	Lk	67/69 (97%)	67 (100%)	0	100	100
75	Ll	45/46 (98%)	45 (100%)	0	100	100
76	Lm	47/116 (40%)	46 (98%)	1 (2%)	53	76
77	Ln	23/23 (100%)	23 (100%)	0	100	100
78	Lo	90/91 (99%)	89 (99%)	1 (1%)	73	86
79	Lp	71/72 (99%)	70 (99%)	1 (1%)	67	83
All	All	9195/10052 (92%)	9136 (99%)	59 (1%)	86	94

All (59) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
7	SB	133	TYR
8	SC	106	ASP
8	SC	222	TYR
9	SD	93	ASP
9	SD	94	ARG
9	SD	156	PHE
10	SE	146	THR
12	SG	68	LEU
12	SG	177	ARG
13	SH	7	LYS
14	SI	18	ARG
17	SL	67	ARG
18	SM	50	LYS
20	SO	136	ARG
22	SQ	102	LYS
22	SQ	127	LYS
23	SR	71	PHE
23	SR	106	THR

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Mol	Chain	Res	Type
24	SS	117	LYS
29	SX	144	ARG
32	Sa	67	THR
33	Sb	59	CYS
39	LA	23	ARG
39	LA	193	ARG
39	LA	247	ARG
40	LB	229	VAL
40	LB	306	THR
40	LB	332	ARG
41	LC	194	TYR
41	LC	197	ARG
41	LC	203	ARG
41	LC	217	LYS
41	LC	255	PHE
42	LD	23	ARG
42	LD	185	PHE
44	LF	229	PHE
47	LI	121	LYS
48	LJ	152	HIS
49	LL	21	ARG
49	LL	58	VAL
49	LL	86	THR
50	LM	66	THR
53	LP	9	THR
53	LP	94	LEU
55	LR	151	ARG
55	LR	152	GLU
55	LR	153	LYS
55	LR	155	LEU
55	LR	156	ASN
56	LS	172	TYR
59	LV	25	CYS
63	LZ	80	LEU
65	Lb	14	ARG
68	Le	87	MET
71	Lh	119	LYS
72	Li	36	ARG
76	Lm	106	ARG
78	Lo	45	ARG
79	Lp	17	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (150)

such sidechains are listed below:

Mol	Chain	Res	Type
2	C5	27	GLN
6	SA	33	GLN
6	SA	140	ASN
6	SA	168	HIS
7	SB	95	ASN
7	SB	160	HIS
7	SB	194	ASN
8	SC	108	ASN
8	SC	110	HIS
9	SD	62	ASN
9	SD	74	GLN
9	SD	111	ASN
10	SE	36	HIS
10	SE	57	ASN
10	SE	209	HIS
11	SF	104	ASN
11	SF	200	ASN
12	SG	80	ASN
12	SG	119	GLN
12	SG	185	GLN
12	SG	201	GLN
13	SH	122	HIS
13	SH	170	GLN
14	SI	32	GLN
14	SI	116	HIS
15	SJ	48	GLN
15	SJ	74	ASN
15	SJ	133	HIS
15	SJ	142	ASN
15	SJ	155	HIS
16	SK	39	ASN
19	SN	123	HIS
23	SR	56	HIS
23	SR	83	GLN
23	SR	104	ASN
24	SS	44	ASN
24	SS	137	HIS
25	ST	12	GLN
25	ST	23	GLN
25	ST	77	ASN
26	SU	98	GLN
27	SV	81	ASN

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Mol	Chain	Res	Type
28	SW	70	ASN
28	SW	92	ASN
29	SX	79	ASN
29	SX	89	ASN
29	SX	99	ASN
30	SY	15	ASN
30	SY	22	GLN
30	SY	63	GLN
31	SZ	95	HIS
31	SZ	98	GLN
32	Sa	17	HIS
32	Sa	94	ASN
33	Sb	19	HIS
33	Sb	26	GLN
33	Sb	42	ASN
35	Sd	53	ASN
36	Se	5	HIS
36	Se	17	GLN
37	Sf	145	HIS
38	Sg	66	HIS
38	Sg	101	GLN
38	Sg	182	ASN
38	Sg	196	ASN
38	Sg	200	ASN
38	Sg	288	HIS
39	LA	38	HIS
39	LA	47	GLN
39	LA	211	HIS
39	LA	218	HIS
40	LB	165	GLN
40	LB	212	ASN
41	LC	9	HIS
41	LC	48	GLN
41	LC	58	HIS
41	LC	59	GLN
41	LC	160	GLN
41	LC	279	HIS
41	LC	291	ASN
41	LC	296	GLN
42	LD	40	HIS
42	LD	175	HIS
43	LE	138	GLN

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Mol	Chain	Res	Type
44	LF	25	GLN
44	LF	159	GLN
45	LG	24	ASN
45	LG	33	ASN
45	LG	38	GLN
45	LG	41	GLN
45	LG	221	ASN
46	LH	50	ASN
46	LH	59	ASN
46	LH	157	ASN
47	LI	51	HIS
47	LI	59	GLN
47	LI	86	HIS
47	LI	123	HIS
48	LJ	20	ASN
48	LJ	62	ASN
49	LL	19	GLN
49	LL	102	GLN
49	LL	149	GLN
50	LM	41	GLN
50	LM	105	GLN
51	LN	11	GLN
51	LN	175	ASN
52	LO	31	GLN
52	LO	50	ASN
52	LO	55	HIS
53	LP	10	ASN
53	LP	28	ASN
53	LP	55	GLN
54	LQ	58	ASN
55	LR	34	GLN
55	LR	144	GLN
55	LR	156	ASN
56	LS	49	HIS
56	LS	65	ASN
56	LS	88	HIS
56	LS	142	GLN
57	LT	54	HIS
57	LT	98	HIS
57	LT	131	GLN
58	LU	40	HIS
61	LX	65	GLN

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Mol	Chain	Res	Type
61	LX	94	GLN
61	LX	111	ASN
62	LY	91	ASN
62	LY	120	GLN
63	LZ	40	HIS
63	LZ	57	HIS
63	LZ	127	ASN
65	Lb	7	HIS
65	Lb	43	HIS
66	Lc	7	GLN
66	Lc	12	GLN
66	Lc	75	ASN
67	Ld	43	HIS
68	Le	31	ASN
70	Lg	33	GLN
70	Lg	34	HIS
71	Lh	34	GLN
72	Li	91	ASN
73	Lj	12	HIS
73	Lj	28	HIS
74	Lk	57	ASN
75	Ll	20	ASN
78	Lo	82	GLN
78	Lo	105	GLN

5.3.3 RNA

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	C2	1695/1800 (94%)	427 (25%)	34 (2%)
3	C1	3120/3396 (91%)	646 (20%)	44 (1%)
4	C4	120/121 (99%)	17 (14%)	0
5	C3	156/158 (98%)	34 (21%)	1 (0%)
All	All	5091/5475 (92%)	1124 (22%)	79 (1%)

All (1124) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	C2	2	A
1	C2	4	C
1	C2	17	C
1	C2	25	C

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Mol	Chain	Res	Type
1	C2	26	A
1	C2	27	U
1	C2	34	G
1	C2	43	A
1	C2	45	U
1	C2	47	A
1	C2	57	G
1	C2	60	U
1	C2	63	G
1	C2	67	A
1	C2	68	A
1	C2	72	A
1	C2	77	U
1	C2	78	A
1	C2	104	A
1	C2	114	C
1	C2	115	G
1	C2	116	U
1	C2	126	A
1	C2	127	G
1	C2	130	C
1	C2	132	U
1	C2	137	U
1	C2	140	A
1	C2	141	U
1	C2	146	U
1	C2	153	G
1	C2	158	U
1	C2	166	C
1	C2	178	U
1	C2	179	A
1	C2	180	A
1	C2	185	U
1	C2	188	A
1	C2	190	C
1	C2	191	C
1	C2	192	U
1	C2	193	U
1	C2	194	U
1	C2	195	G
1	C2	196	G
1	C2	197	A

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Mol	Chain	Res	Type
1	C2	198	A
1	C2	200	A
1	C2	207	U
1	C2	216	U
1	C2	220	A
1	C2	224	C
1	C2	226	A
1	C2	228	G
1	C2	230	C
1	C2	233	C
1	C2	235	G
1	C2	238	U
1	C2	239	C
1	C2	240	U
1	C2	241	U
1	C2	250	C
1	C2	261	U
1	C2	265	A
1	C2	270	C
1	C2	271	A
1	C2	272	U
1	C2	273	G
1	C2	277	U
1	C2	278	U
1	C2	280	U
1	C2	299	A
1	C2	302	U
1	C2	313	U
1	C2	316	A
1	C2	320	U
1	C2	321	C
1	C2	322	G
1	C2	333	A
1	C2	337	G
1	C2	338	C
1	C2	350	U
1	C2	351	C
1	C2	352	A
1	C2	359	A
1	C2	360	A
1	C2	361	C
1	C2	369	A

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Mol	Chain	Res	Type
1	C2	381	C
1	C2	387	A
1	C2	400	A
1	C2	401	A
1	C2	402	C
1	C2	403	G
1	C2	404	G
1	C2	411	C
1	C2	416	A
1	C2	417	A
1	C2	418	G
1	C2	419	G
1	C2	423	G
1	C2	424	C
1	C2	425	A
1	C2	426	G
1	C2	427	C
1	C2	434	G
1	C2	435	C
1	C2	439	U
1	C2	444	C
1	C2	448	C
1	C2	454	U
1	C2	459	G
1	C2	475	A
1	C2	477	A
1	C2	486	G
1	C2	488	G
1	C2	501	U
1	C2	506	A
1	C2	507	U
1	C2	508	U
1	C2	510	G
1	C2	511	A
1	C2	512	A
1	C2	513	U
1	C2	514	G
1	C2	515	A
1	C2	519	C
1	C2	520	A
1	C2	527	A
1	C2	530	C

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Mol	Chain	Res	Type
1	C2	533	U
1	C2	534	A
1	C2	536	C
1	C2	538	A
1	C2	539	G
1	C2	540	G
1	C2	541	A
1	C2	542	A
1	C2	543	C
1	C2	546	U
1	C2	548	G
1	C2	555	A
1	C2	556	A
1	C2	557	G
1	C2	558	U
1	C2	559	C
1	C2	561	G
1	C2	565	C
1	C2	568	G
1	C2	574	G
1	C2	578	U
1	C2	579	A
1	C2	580	A
1	C2	594	A
1	C2	595	G
1	C2	606	A
1	C2	611	U
1	C2	619	A
1	C2	620	A
1	C2	623	A
1	C2	624	G
1	C2	630	A
1	C2	635	A
1	C2	639	U
1	C2	640	U
1	C2	648	G
1	C2	685	A
1	C2	690	G
1	C2	691	C
1	C2	696	C
1	C2	697	C
1	C2	698	U

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Mol	Chain	Res	Type
1	C2	702	G
1	C2	703	G
1	C2	739	G
1	C2	740	A
1	C2	742	U
1	C2	743	U
1	C2	744	U
1	C2	754	A
1	C2	755	A
1	C2	756	A
1	C2	764	U
1	C2	765	G
1	C2	766	U
1	C2	771	A
1	C2	774	A
1	C2	775	G
1	C2	780	A
1	C2	781	U
1	C2	782	U
1	C2	783	G
1	C2	787	G
1	C2	793	A
1	C2	794	U
1	C2	811	A
1	C2	812	A
1	C2	813	U
1	C2	814	A
1	C2	815	G
1	C2	816	G
1	C2	820	U
1	C2	821	U
1	C2	826	U
1	C2	829	A
1	C2	830	U
1	C2	831	U
1	C2	833	U
1	C2	835	U
1	C2	850	A
1	C2	851	U
1	C2	855	A
1	C2	856	A
1	C2	863	A

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Mol	Chain	Res	Type
1	C2	886	U
1	C2	892	A
1	C2	912	U
1	C2	913	G
1	C2	914	G
1	C2	928	U
1	C2	931	C
1	C2	932	U
1	C2	933	A
1	C2	934	C
1	C2	935	U
1	C2	942	G
1	C2	959	U
1	C2	960	U
1	C2	966	A
1	C2	969	C
1	C2	970	A
1	C2	971	A
1	C2	992	A
1	C2	1004	U
1	C2	1005	A
1	C2	1014	G
1	C2	1025	A
1	C2	1026	A
1	C2	1028	C
1	C2	1030	A
1	C2	1032	G
1	C2	1039	A
1	C2	1040	G
1	C2	1052	U
1	C2	1053	G
1	C2	1057	U
1	C2	1058	U
1	C2	1059	U
1	C2	1060	U
1	C2	1061	A
1	C2	1062	A
1	C2	1063	U
1	C2	1074	G
1	C2	1082	C
1	C2	1090	C
1	C2	1092	A

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Mol	Chain	Res	Type
1	C2	1093	A
1	C2	1096	C
1	C2	1097	U
1	C2	1098	U
1	C2	1099	U
1	C2	1100	G
1	C2	1138	A
1	C2	1147	A
1	C2	1150	G
1	C2	1155	G
1	C2	1158	C
1	C2	1159	C
1	C2	1160	A
1	C2	1167	G
1	C2	1185	U
1	C2	1188	G
1	C2	1193	A
1	C2	1194	A
1	C2	1196	A
1	C2	1197	C
1	C2	1199	G
1	C2	1200	G
1	C2	1202	A
1	C2	1212	G
1	C2	1216	C
1	C2	1217	A
1	C2	1218	G
1	C2	1220	C
1	C2	1225	U
1	C2	1226	A
1	C2	1227	A
1	C2	1228	G
1	C2	1229	G
1	C2	1230	A
1	C2	1231	U
1	C2	1239	U
1	C2	1240	U
1	C2	1243	G
1	C2	1244	A
1	C2	1245	G
1	C2	1246	C
1	C2	1252	C

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Mol	Chain	Res	Type
1	C2	1253	U
1	C2	1255	G
1	C2	1256	A
1	C2	1257	U
1	C2	1258	U
1	C2	1274	C
1	C2	1276	U
1	C2	1284	C
1	C2	1286	U
1	C2	1287	A
1	C2	1291	G
1	C2	1300	A
1	C2	1314	U
1	C2	1315	U
1	C2	1316	G
1	C2	1321	A
1	C2	1325	A
1	C2	1338	C
1	C2	1341	A
1	C2	1344	A
1	C2	1345	A
1	C2	1355	C
1	C2	1360	A
1	C2	1361	U
1	C2	1362	U
1	C2	1363	U
1	C2	1364	G
1	C2	1367	G
1	C2	1370	U
1	C2	1371	A
1	C2	1382	A
1	C2	1388	A
1	C2	1390	U
1	C2	1396	U
1	C2	1398	U
1	C2	1399	C
1	C2	1402	G
1	C2	1406	A
1	C2	1413	U
1	C2	1414	U
1	C2	1415	U
1	C2	1421	A

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Mol	Chain	Res	Type
1	C2	1425	A
1	C2	1426	C
1	C2	1427	A
1	C2	1428	G
1	C2	1433	G
1	C2	1435	G
1	C2	1436	A
1	C2	1444	A
1	C2	1445	G
1	C2	1446	A
1	C2	1448	G
1	C2	1457	C
1	C2	1458	G
1	C2	1459	C
1	C2	1460	A
1	C2	1461	C
1	C2	1462	G
1	C2	1469	A
1	C2	1471	A
1	C2	1474	G
1	C2	1481	C
1	C2	1482	C
1	C2	1486	G
1	C2	1487	A
1	C2	1489	U
1	C2	1490	C
1	C2	1491	U
1	C2	1492	A
1	C2	1493	A
1	C2	1496	U
1	C2	1510	U
1	C2	1516	A
1	C2	1518	C
1	C2	1521	G
1	C2	1523	G
1	C2	1524	A
1	C2	1526	A
1	C2	1531	G
1	C2	1534	G
1	C2	1535	U
1	C2	1536	G
1	C2	1537	C

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Mol	Chain	Res	Type
1	C2	1540	G
1	C2	1542	G
1	C2	1548	G
1	C2	1553	G
1	C2	1557	U
1	C2	1558	U
1	C2	1559	A
1	C2	1565	C
1	C2	1569	A
1	C2	1573	A
1	C2	1574	G
1	C2	1583	A
1	C2	1584	G
1	C2	1590	G
1	C2	1600	A
1	C2	1601	G
1	C2	1607	G
1	C2	1616	G
1	C2	1619	C
1	C2	1621	U
1	C2	1634	C
1	C2	1635	A
1	C2	1658	G
1	C2	1663	G
1	C2	1680	G
1	C2	1686	C
1	C2	1716	C
1	C2	1717	G
1	C2	1718	G
1	C2	1750	A
1	C2	1755	A
1	C2	1757	G
1	C2	1760	G
1	C2	1766	A
1	C2	1767	G
1	C2	1769	U
1	C2	1780	G
1	C2	1782	A
1	C2	1783	C
1	C2	1792	G
1	C2	1793	G
1	C2	1794	A

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Mol	Chain	Res	Type
1	C2	1796	C
1	C2	1799	U
1	C2	1800	A
3	C1	6	A
3	C1	22	G
3	C1	26	A
3	C1	40	A
3	C1	43	A
3	C1	44	U
3	C1	49	A
3	C1	59	G
3	C1	60	A
3	C1	65	A
3	C1	66	A
3	C1	67	A
3	C1	92	G
3	C1	96	G
3	C1	99	A
3	C1	110	G
3	C1	111	C
3	C1	116	A
3	C1	117	U
3	C1	122	A
3	C1	124	U
3	C1	133	U
3	C1	134	U
3	C1	135	C
3	C1	136	G
3	C1	140	C
3	C1	143	G
3	C1	148	G
3	C1	151	A
3	C1	152	U
3	C1	156	G
3	C1	157	A
3	C1	165	A
3	C1	171	G
3	C1	180	C
3	C1	182	U
3	C1	187	A
3	C1	190	U
3	C1	191	U

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Mol	Chain	Res	Type
3	C1	200	C
3	C1	210	U
3	C1	211	A
3	C1	213	A
3	C1	218	G
3	C1	219	A
3	C1	222	A
3	C1	239	G
3	C1	240	U
3	C1	241	G
3	C1	246	U
3	C1	248	U
3	C1	251	G
3	C1	252	U
3	C1	253	A
3	C1	254	A
3	C1	263	C
3	C1	269	G
3	C1	283	G
3	C1	284	A
3	C1	286	U
3	C1	295	A
3	C1	305	U
3	C1	315	C
3	C1	323	A
3	C1	329	U
3	C1	339	C
3	C1	350	C
3	C1	351	A
3	C1	352	A
3	C1	359	U
3	C1	368	G
3	C1	375	A
3	C1	376	G
3	C1	395	A
3	C1	396	A
3	C1	398	A
3	C1	399	A
3	C1	401	U
3	C1	402	A
3	C1	403	C
3	C1	404	G

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Mol	Chain	Res	Type
3	C1	421	G
3	C1	422	A
3	C1	440	A
3	C1	495	G
3	C1	505	G
3	C1	510	G
3	C1	521	A
3	C1	523	A
3	C1	532	A
3	C1	535	G
3	C1	536	U
3	C1	541	U
3	C1	544	C
3	C1	545	U
3	C1	546	C
3	C1	548	G
3	C1	550	A
3	C1	555	U
3	C1	556	U
3	C1	557	A
3	C1	558	U
3	C1	559	A
3	C1	569	A
3	C1	578	A
3	C1	579	G
3	C1	581	U
3	C1	585	A
3	C1	590	G
3	C1	597	G
3	C1	603	A
3	C1	604	G
3	C1	607	A
3	C1	609	G
3	C1	611	A
3	C1	620	U
3	C1	621	A
3	C1	622	A
3	C1	625	G
3	C1	636	C
3	C1	649	A
3	C1	677	A
3	C1	681	U

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Mol	Chain	Res	Type
3	C1	690	A
3	C1	691	A
3	C1	705	A
3	C1	712	G
3	C1	715	A
3	C1	716	A
3	C1	717	C
3	C1	735	A
3	C1	736	A
3	C1	737	G
3	C1	750	G
3	C1	766	U
3	C1	767	U
3	C1	776	U
3	C1	777	U
3	C1	779	G
3	C1	780	A
3	C1	781	G
3	C1	785	G
3	C1	786	A
3	C1	799	G
3	C1	801	A
3	C1	806	A
3	C1	816	A
3	C1	817	A
3	C1	830	A
3	C1	837	A
3	C1	861	C
3	C1	874	U
3	C1	879	U
3	C1	880	G
3	C1	890	C
3	C1	895	A
3	C1	896	A
3	C1	897	U
3	C1	907	G
3	C1	908	G
3	C1	914	A
3	C1	915	A
3	C1	916	G
3	C1	917	A
3	C1	921	A

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Mol	Chain	Res	Type
3	C1	923	C
3	C1	932	U
3	C1	933	A
3	C1	936	A
3	C1	937	G
3	C1	944	C
3	C1	953	G
3	C1	959	C
3	C1	960	U
3	C1	961	C
3	C1	967	A
3	C1	970	A
3	C1	971	G
3	C1	979	U
3	C1	984	G
3	C1	1002	A
3	C1	1010	G
3	C1	1015	U
3	C1	1016	C
3	C1	1017	C
3	C1	1019	G
3	C1	1021	G
3	C1	1024	G
3	C1	1025	A
3	C1	1026	A
3	C1	1028	U
3	C1	1029	G
3	C1	1032	C
3	C1	1035	G
3	C1	1045	C
3	C1	1047	A
3	C1	1049	C
3	C1	1062	A
3	C1	1063	G
3	C1	1064	A
3	C1	1065	A
3	C1	1066	G
3	C1	1070	U
3	C1	1072	G
3	C1	1081	U
3	C1	1082	U
3	C1	1094	U

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Mol	Chain	Res	Type
3	C1	1097	G
3	C1	1098	A
3	C1	1103	A
3	C1	1104	G
3	C1	1117	G
3	C1	1131	G
3	C1	1135	A
3	C1	1143	A
3	C1	1144	U
3	C1	1151	U
3	C1	1159	A
3	C1	1179	A
3	C1	1180	A
3	C1	1181	U
3	C1	1196	C
3	C1	1201	C
3	C1	1206	G
3	C1	1208	U
3	C1	1209	G
3	C1	1222	G
3	C1	1224	C
3	C1	1235	U
3	C1	1236	G
3	C1	1239	C
3	C1	1241	U
3	C1	1242	G
3	C1	1244	A
3	C1	1245	A
3	C1	1246	G
3	C1	1247	U
3	C1	1255	C
3	C1	1262	G
3	C1	1263	A
3	C1	1264	G
3	C1	1265	U
3	C1	1266	G
3	C1	1270	A
3	C1	1271	A
3	C1	1285	G
3	C1	1286	A
3	C1	1287	A
3	C1	1301	A

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Mol	Chain	Res	Type
3	C1	1307	G
3	C1	1308	A
3	C1	1309	U
3	C1	1313	G
3	C1	1330	A
3	C1	1345	G
3	C1	1348	U
3	C1	1354	G
3	C1	1357	G
3	C1	1380	G
3	C1	1386	A
3	C1	1390	A
3	C1	1399	A
3	C1	1400	G
3	C1	1408	G
3	C1	1419	A
3	C1	1421	G
3	C1	1430	U
3	C1	1433	A
3	C1	1434	G
3	C1	1437	C
3	C1	1446	A
3	C1	1450	G
3	C1	1475	A
3	C1	1481	A
3	C1	1482	A
3	C1	1483	G
3	C1	1488	G
3	C1	1494	U
3	C1	1503	A
3	C1	1508	C
3	C1	1523	U
3	C1	1525	G
3	C1	1527	C
3	C1	1533	U
3	C1	1536	G
3	C1	1539	A
3	C1	1546	A
3	C1	1554	U
3	C1	1555	U
3	C1	1559	A
3	C1	1560	G

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Mol	Chain	Res	Type
3	C1	1561	G
3	C1	1562	C
3	C1	1574	C
3	C1	1575	A
3	C1	1576	G
3	C1	1577	G
3	C1	1578	C
3	C1	1581	C
3	C1	1582	C
3	C1	1583	A
3	C1	1587	A
3	C1	1589	A
3	C1	1593	A
3	C1	1596	C
3	C1	1619	A
3	C1	1620	U
3	C1	1629	U
3	C1	1630	U
3	C1	1631	C
3	C1	1639	C
3	C1	1643	A
3	C1	1644	C
3	C1	1645	U
3	C1	1646	G
3	C1	1657	C
3	C1	1658	G
3	C1	1677	G
3	C1	1683	A
3	C1	1694	U
3	C1	1696	A
3	C1	1703	U
3	C1	1705	U
3	C1	1713	G
3	C1	1716	U
3	C1	1717	U
3	C1	1724	U
3	C1	1728	G
3	C1	1736	G
3	C1	1741	A
3	C1	1749	A
3	C1	1750	A
3	C1	1751	G

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Mol	Chain	Res	Type
3	C1	1752	A
3	C1	1756	C
3	C1	1760	A
3	C1	1762	C
3	C1	1763	U
3	C1	1765	U
3	C1	1766	G
3	C1	1770	G
3	C1	1775	G
3	C1	1780	G
3	C1	1797	A
3	C1	1812	G
3	C1	1814	A
3	C1	1816	A
3	C1	1817	G
3	C1	1818	U
3	C1	1821	U
3	C1	1839	A
3	C1	1842	A
3	C1	1846	C
3	C1	1849	C
3	C1	1850	A
3	C1	1858	A
3	C1	1866	C
3	C1	1878	G
3	C1	1879	A
3	C1	1880	U
3	C1	1886	A
3	C1	1893	A
3	C1	1904	C
3	C1	1906	G
3	C1	1907	C
3	C1	1930	A
3	C1	2096	A
3	C1	2101	C
3	C1	2102	U
3	C1	2110	G
3	C1	2111	G
3	C1	2112	U
3	C1	2113	A
3	C1	2114	C
3	C1	2121	G

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Mol	Chain	Res	Type
3	C1	2122	G
3	C1	2126	A
3	C1	2131	A
3	C1	2144	A
3	C1	2145	A
3	C1	2158	A
3	C1	2169	G
3	C1	2170	U
3	C1	2171	G
3	C1	2176	U
3	C1	2192	C
3	C1	2194	G
3	C1	2198	A
3	C1	2205	U
3	C1	2206	G
3	C1	2207	A
3	C1	2208	A
3	C1	2209	U
3	C1	2210	G
3	C1	2223	A
3	C1	2225	U
3	C1	2229	A
3	C1	2244	A
3	C1	2248	C
3	C1	2249	G
3	C1	2252	A
3	C1	2255	A
3	C1	2256	A
3	C1	2257	C
3	C1	2272	G
3	C1	2273	G
3	C1	2276	G
3	C1	2279	A
3	C1	2281	A
3	C1	2285	C
3	C1	2286	U
3	C1	2288	G
3	C1	2307	G
3	C1	2308	C
3	C1	2310	U
3	C1	2313	A
3	C1	2315	G

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Mol	Chain	Res	Type
3	C1	2334	U
3	C1	2372	A
3	C1	2373	A
3	C1	2374	C
3	C1	2375	G
3	C1	2385	G
3	C1	2388	U
3	C1	2395	G
3	C1	2397	A
3	C1	2401	A
3	C1	2402	A
3	C1	2403	G
3	C1	2404	A
3	C1	2405	C
3	C1	2411	U
3	C1	2412	G
3	C1	2418	G
3	C1	2419	A
3	C1	2437	G
3	C1	2440	G
3	C1	2507	C
3	C1	2510	U
3	C1	2511	A
3	C1	2514	U
3	C1	2515	A
3	C1	2522	G
3	C1	2523	A
3	C1	2524	A
3	C1	2526	C
3	C1	2530	G
3	C1	2534	G
3	C1	2535	A
3	C1	2537	U
3	C1	2538	U
3	C1	2539	C
3	C1	2540	A
3	C1	2541	U
3	C1	2542	U
3	C1	2543	U
3	C1	2544	U
3	C1	2547	A
3	C1	2549	G

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Mol	Chain	Res	Type
3	C1	2551	U
3	C1	2552	C
3	C1	2554	A
3	C1	2557	A
3	C1	2562	A
3	C1	2568	C
3	C1	2569	A
3	C1	2570	U
3	C1	2571	U
3	C1	2572	C
3	C1	2573	G
3	C1	2578	U
3	C1	2585	G
3	C1	2589	G
3	C1	2593	A
3	C1	2606	G
3	C1	2607	G
3	C1	2610	G
3	C1	2614	G
3	C1	2626	A
3	C1	2629	U
3	C1	2635	A
3	C1	2648	G
3	C1	2652	U
3	C1	2656	A
3	C1	2663	G
3	C1	2672	G
3	C1	2674	A
3	C1	2677	G
3	C1	2688	U
3	C1	2689	A
3	C1	2691	A
3	C1	2694	A
3	C1	2696	A
3	C1	2704	A
3	C1	2714	G
3	C1	2719	U
3	C1	2726	C
3	C1	2727	A
3	C1	2728	G
3	C1	2729	U
3	C1	2752	U

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Mol	Chain	Res	Type
3	C1	2753	G
3	C1	2755	C
3	C1	2772	C
3	C1	2773	C
3	C1	2777	G
3	C1	2778	G
3	C1	2779	A
3	C1	2782	U
3	C1	2796	G
3	C1	2797	C
3	C1	2798	C
3	C1	2799	A
3	C1	2800	G
3	C1	2801	A
3	C1	2803	A
3	C1	2810	C
3	C1	2816	G
3	C1	2817	A
3	C1	2818	U
3	C1	2839	G
3	C1	2844	C
3	C1	2845	A
3	C1	2849	C
3	C1	2853	A
3	C1	2856	G
3	C1	2861	U
3	C1	2871	G
3	C1	2872	A
3	C1	2875	U
3	C1	2876	C
3	C1	2887	A
3	C1	2889	C
3	C1	2899	C
3	C1	2900	A
3	C1	2911	A
3	C1	2912	G
3	C1	2922	G
3	C1	2923	U
3	C1	2925	C
3	C1	2935	U
3	C1	2936	A
3	C1	2938	G

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Mol	Chain	Res	Type
3	C1	2941	A
3	C1	2945	G
3	C1	2947	G
3	C1	2971	A
3	C1	2983	C
3	C1	2996	U
3	C1	2997	G
3	C1	3012	A
3	C1	3021	A
3	C1	3022	G
3	C1	3028	G
3	C1	3059	G
3	C1	3069	G
3	C1	3078	U
3	C1	3079	U
3	C1	3080	G
3	C1	3086	A
3	C1	3092	C
3	C1	3104	U
3	C1	3116	G
3	C1	3117	C
3	C1	3129	A
3	C1	3130	A
3	C1	3131	U
3	C1	3142	A
3	C1	3143	C
3	C1	3153	U
3	C1	3158	G
3	C1	3159	C
3	C1	3165	A
3	C1	3172	A
3	C1	3173	G
3	C1	3174	A
3	C1	3175	U
3	C1	3176	G
3	C1	3179	U
3	C1	3181	C
3	C1	3185	U
3	C1	3187	A
3	C1	3196	U
3	C1	3206	C
3	C1	3207	U

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Mol	Chain	Res	Type
3	C1	3208	G
3	C1	3210	A
3	C1	3217	C
3	C1	3218	A
3	C1	3219	G
3	C1	3224	G
3	C1	3227	A
3	C1	3228	C
3	C1	3229	G
3	C1	3234	A
3	C1	3235	C
3	C1	3238	G
3	C1	3239	G
3	C1	3242	G
3	C1	3243	A
3	C1	3245	A
3	C1	3247	G
3	C1	3259	U
3	C1	3260	G
3	C1	3263	G
3	C1	3268	A
3	C1	3269	U
3	C1	3270	U
3	C1	3273	A
3	C1	3276	G
3	C1	3279	A
3	C1	3280	U
3	C1	3281	U
3	C1	3283	U
3	C1	3287	U
3	C1	3288	G
3	C1	3289	G
3	C1	3290	G
3	C1	3294	A
3	C1	3304	U
3	C1	3313	U
3	C1	3316	A
3	C1	3317	U
3	C1	3318	G
3	C1	3319	U
3	C1	3331	U
3	C1	3334	U

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Mol	Chain	Res	Type
3	C1	3341	U
3	C1	3342	A
3	C1	3345	G
3	C1	3348	G
3	C1	3351	U
3	C1	3352	U
3	C1	3355	U
3	C1	3356	G
3	C1	3357	U
3	C1	3358	U
3	C1	3363	U
3	C1	3368	U
3	C1	3369	G
3	C1	3375	A
3	C1	3378	C
3	C1	3382	U
3	C1	3389	U
3	C1	3390	G
3	C1	3396	U
4	C4	7	G
4	C4	10	C
4	C4	11	A
4	C4	19	C
4	C4	22	A
4	C4	52	G
4	C4	54	U
4	C4	55	A
4	C4	65	G
4	C4	73	C
4	C4	74	C
4	C4	76	A
4	C4	91	G
4	C4	93	C
4	C4	102	A
4	C4	112	G
4	C4	121	U
5	C3	23	U
5	C3	25	G
5	C3	34	U
5	C3	35	C
5	C3	49	G
5	C3	52	A

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Mol	Chain	Res	Type
5	C3	59	A
5	C3	62	C
5	C3	63	G
5	C3	75	G
5	C3	80	A
5	C3	81	U
5	C3	82	U
5	C3	83	C
5	C3	84	C
5	C3	85	G
5	C3	86	U
5	C3	87	G
5	C3	95	G
5	C3	97	A
5	C3	100	U
5	C3	104	A
5	C3	106	C
5	C3	111	A
5	C3	113	U
5	C3	116	G
5	C3	125	U
5	C3	126	A
5	C3	127	U
5	C3	128	U
5	C3	129	C
5	C3	138	A
5	C3	155	A
5	C3	156	U

All (79) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	C2	25	C
1	C2	76	A
1	C2	103	A
1	C2	114	C
1	C2	136	C
1	C2	139	C
1	C2	187	G
1	C2	272	U
1	C2	277	U
1	C2	319	U

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Mol	Chain	Res	Type
1	C2	321	C
1	C2	417	A
1	C2	422	G
1	C2	424	C
1	C2	512	A
1	C2	542	A
1	C2	555	A
1	C2	558	U
1	C2	755	A
1	C2	820	U
1	C2	855	A
1	C2	1051	G
1	C2	1058	U
1	C2	1097	U
1	C2	1196	A
1	C2	1227	A
1	C2	1244	A
1	C2	1255	G
1	C2	1344	A
1	C2	1481	C
1	C2	1535	U
1	C2	1568	C
1	C2	1573	A
1	C2	1620	C
3	C1	65	A
3	C1	151	A
3	C1	170	G
3	C1	210	U
3	C1	282	G
3	C1	715	A
3	C1	735	A
3	C1	916	G
3	C1	1015	U
3	C1	1016	C
3	C1	1027	A
3	C1	1062	A
3	C1	1064	A
3	C1	1081	U
3	C1	1241	U
3	C1	1284	C
3	C1	1307	G
3	C1	1560	G

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Mol	Chain	Res	Type
3	C1	1581	C
3	C1	1582	C
3	C1	1716	U
3	C1	1815	U
3	C1	1816	A
3	C1	1878	G
3	C1	2101	C
3	C1	2112	U
3	C1	2204	C
3	C1	2209	U
3	C1	2418	G
3	C1	2513	U
3	C1	2537	U
3	C1	2662	G
3	C1	2772	C
3	C1	2818	U
3	C1	3078	U
3	C1	3158	G
3	C1	3218	A
3	C1	3228	C
3	C1	3269	U
3	C1	3289	G
3	C1	3317	U
3	C1	3341	U
3	C1	3356	G
3	C1	3357	U
5	C3	80	A

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 9 ligands modelled in this entry, 9 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

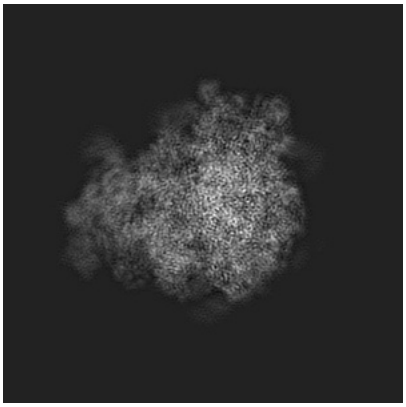
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-11097. These allow visual inspection of the internal detail of the map and identification of artifacts.

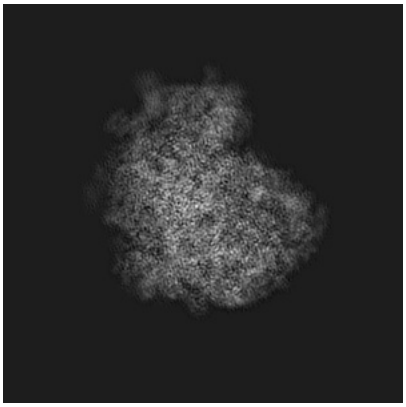
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

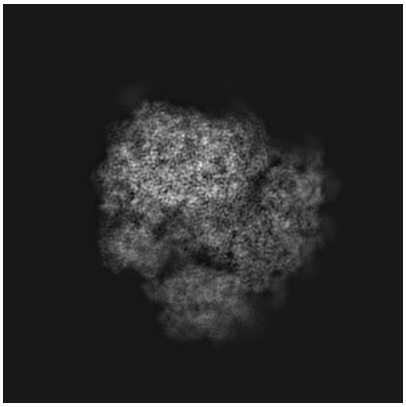
6.1.1 Primary map



X



Y

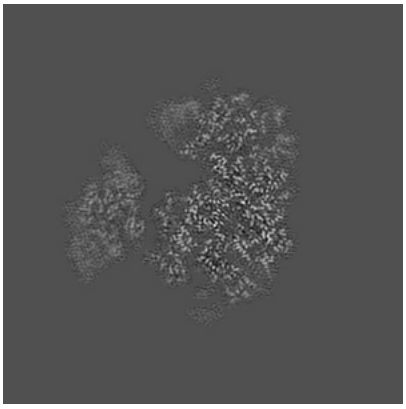


Z

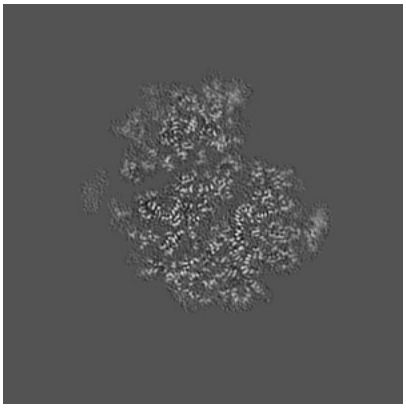
The images above show the map projected in three orthogonal directions.

6.2 Central slices

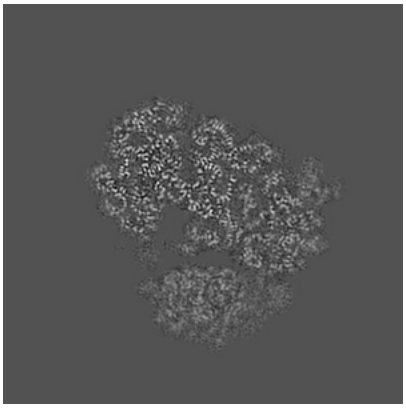
6.2.1 Primary map



X Index: 200



Y Index: 200

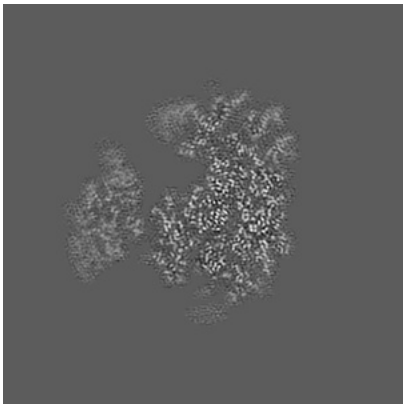


Z Index: 200

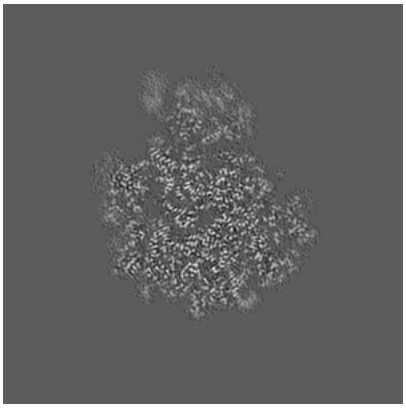
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

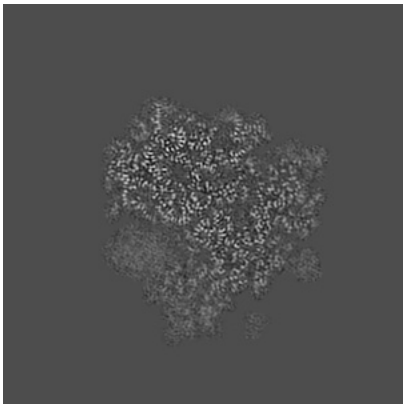
6.3.1 Primary map



X Index: 202



Y Index: 227

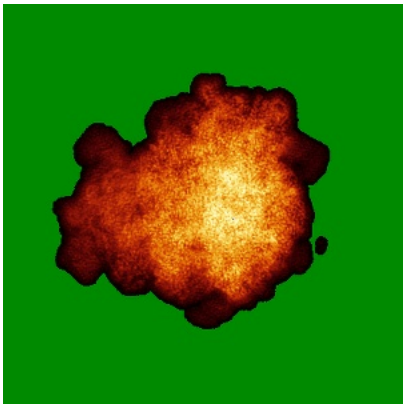


Z Index: 172

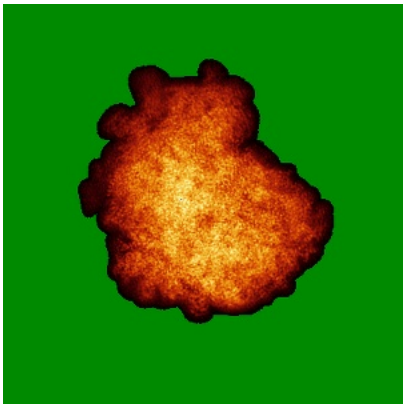
The images above show the largest variance slices of the map in three orthogonal directions.

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

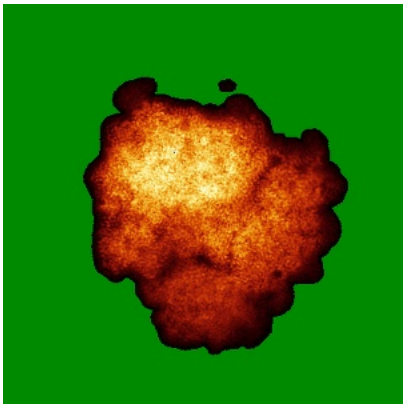
6.4.1 Primary map



X



Y

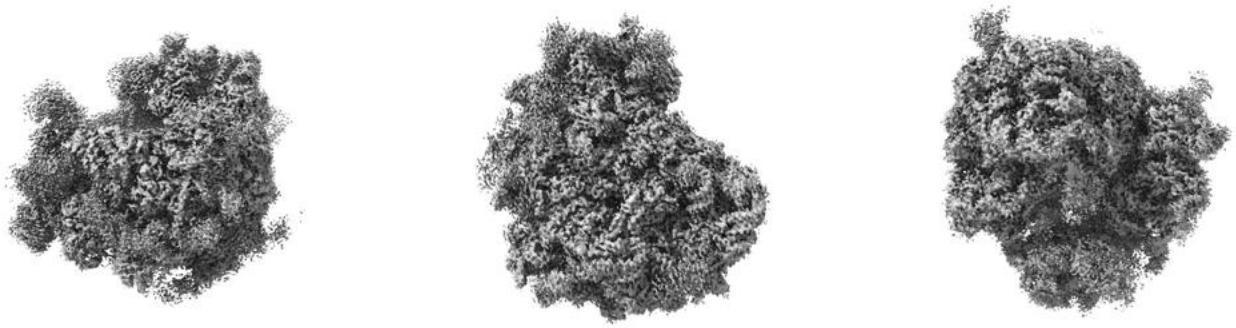


Z

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

6.5 Orthogonal surface views (i)

6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.03. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

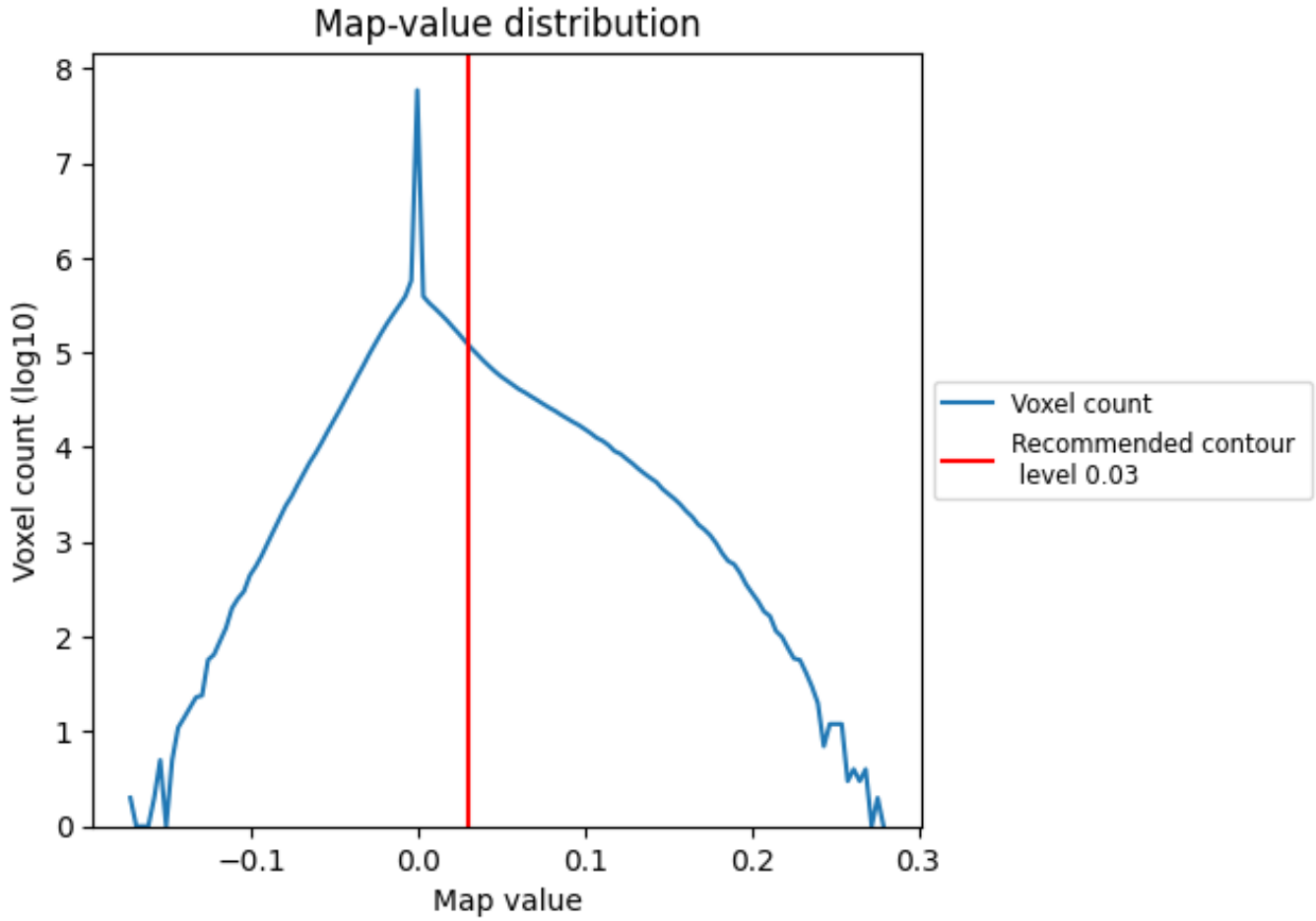
6.6 Mask visualisation (i)

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

7 Map analysis

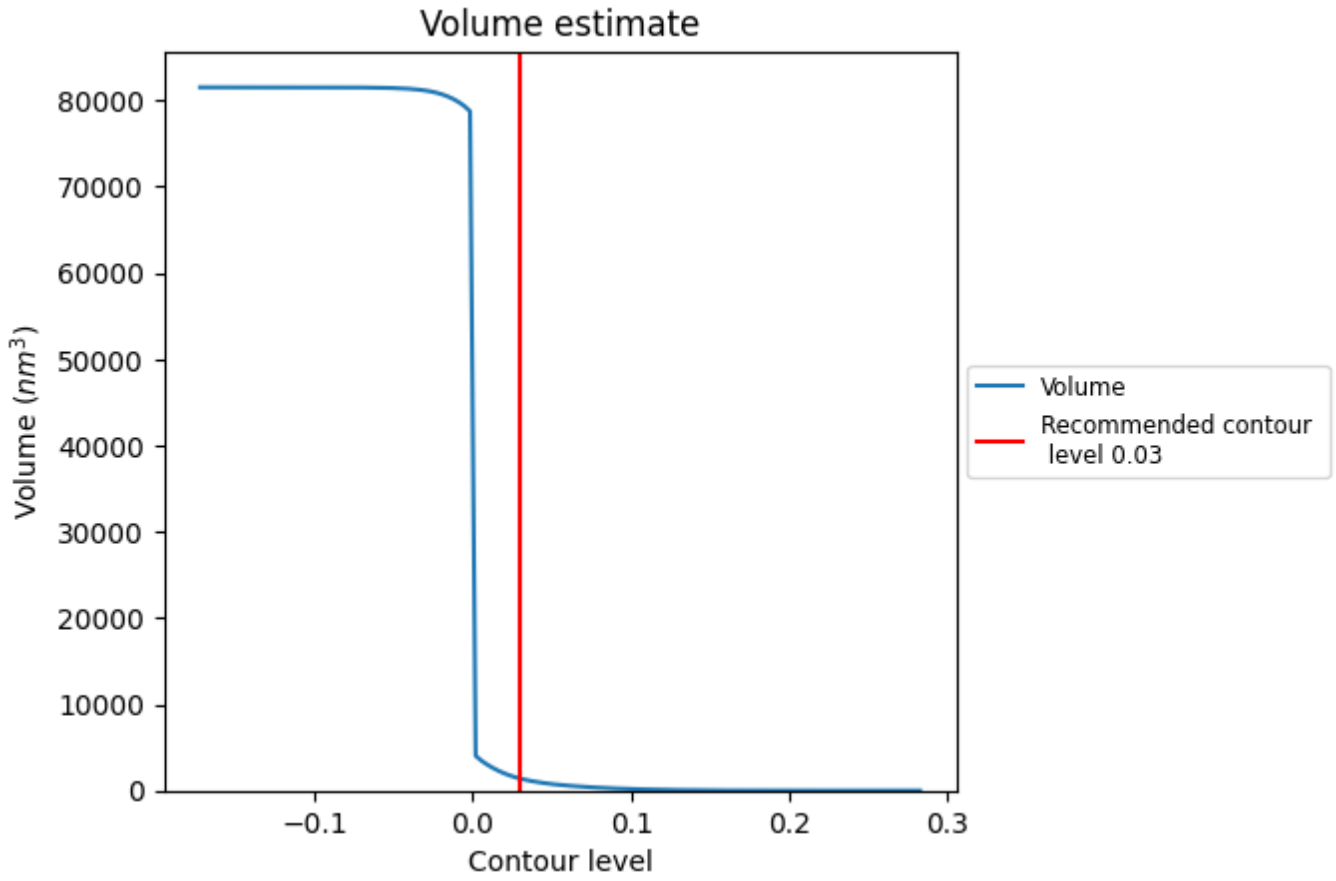
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

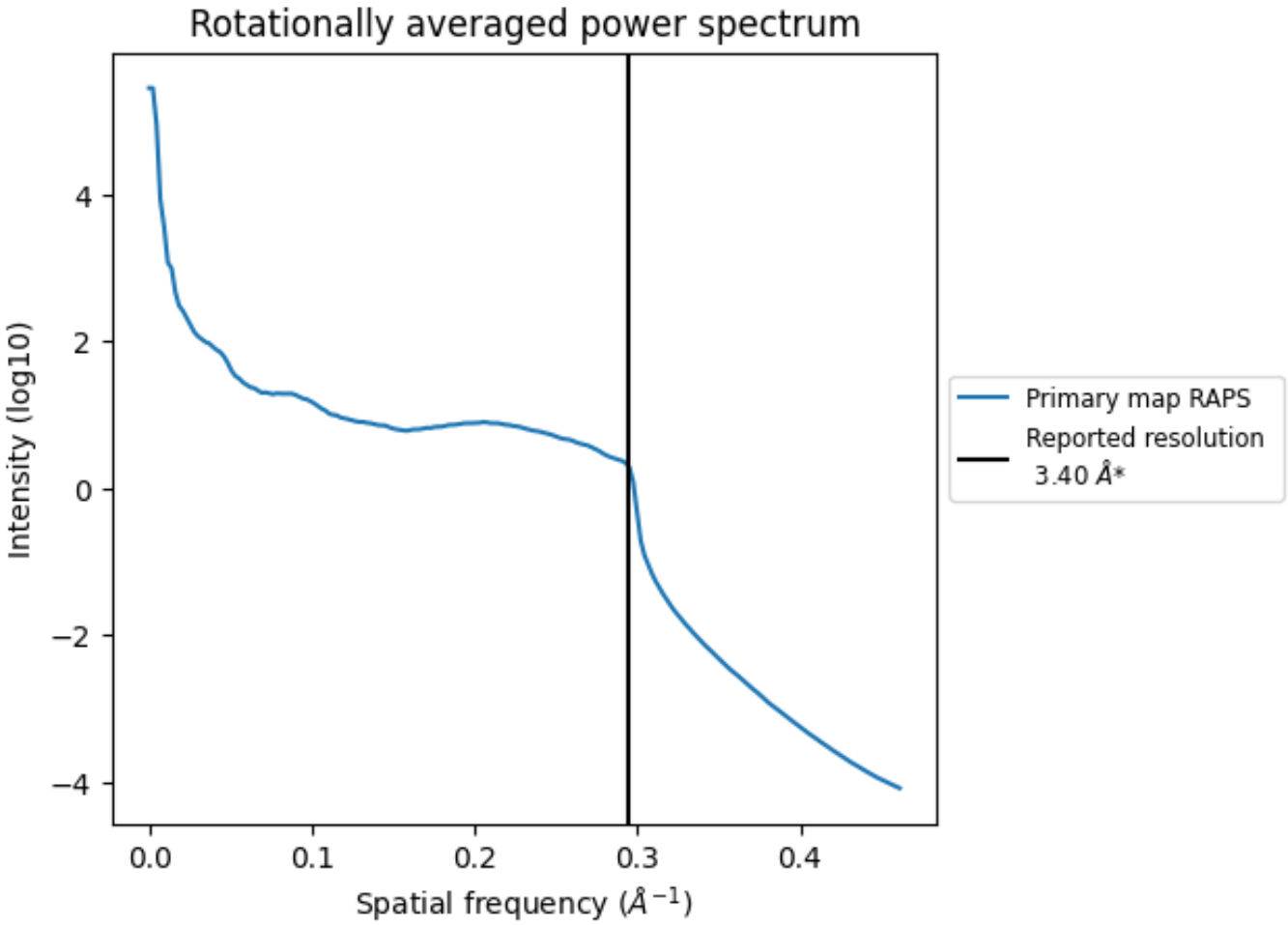
7.2 Volume estimate



The volume at the recommended contour level is 1384 nm^3; this corresponds to an approximate mass of 1250 kDa.

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

7.3 Rotationally averaged power spectrum (i)

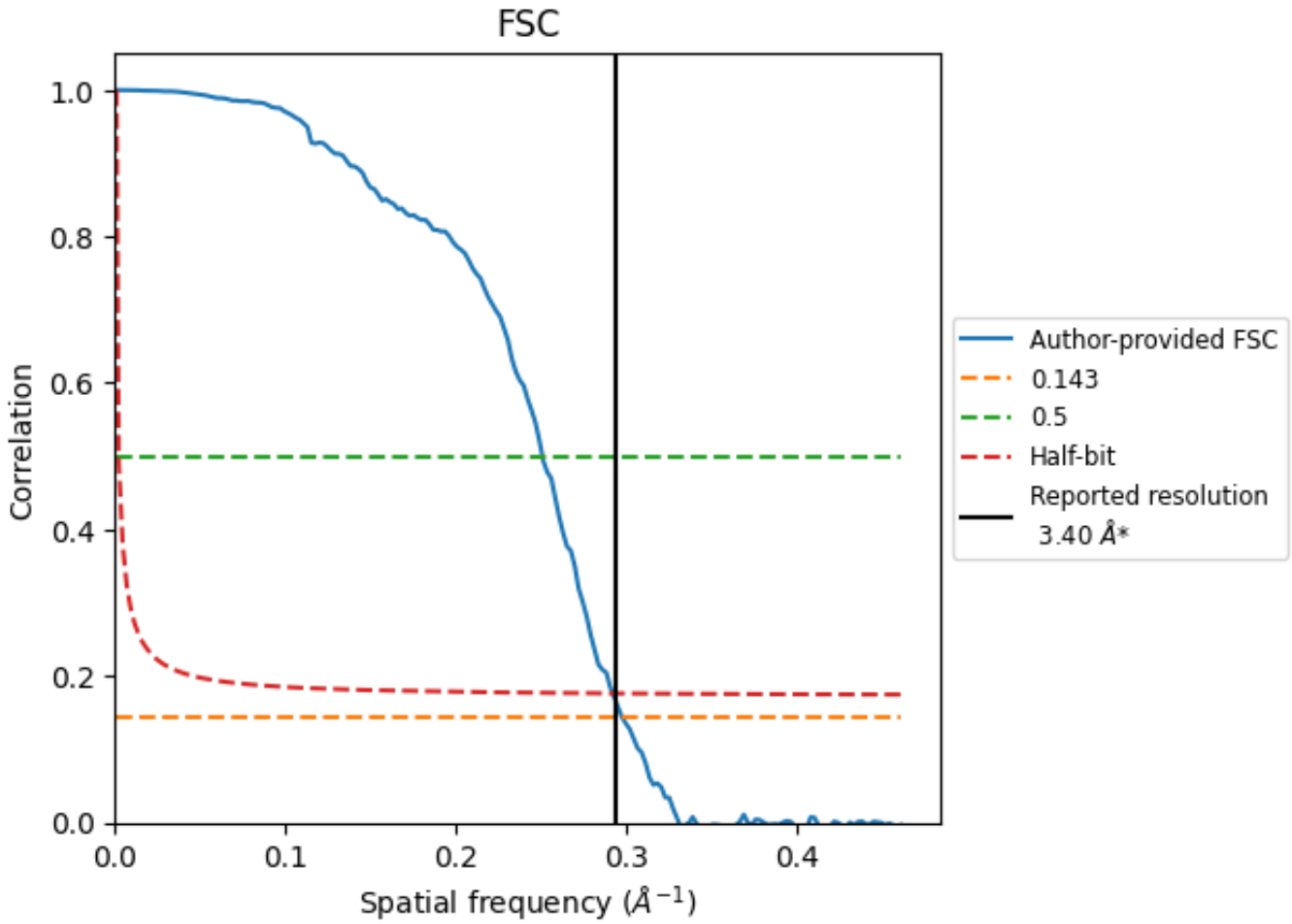


*Reported resolution corresponds to spatial frequency of 0.294 Å^{-1}

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 0.294 Å^{-1}

8.2 Resolution estimates (i)

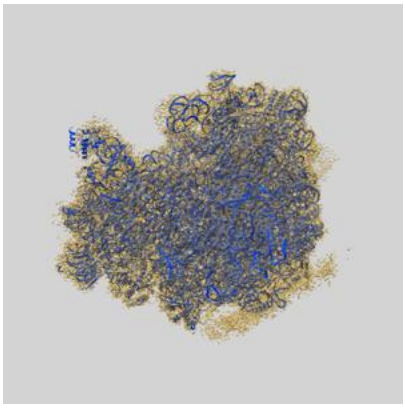
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.40	-	-
Author-provided FSC curve	3.36	3.99	3.42
Unmasked-calculated*	-	-	-

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

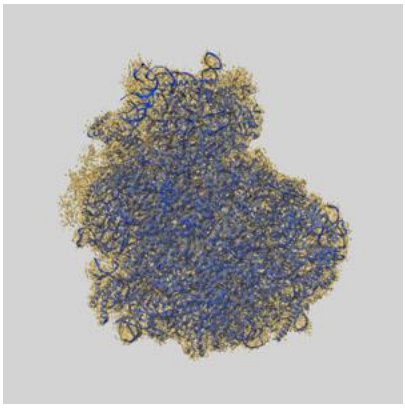
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-11097 and PDB model 6Z6K. Per-residue inclusion information can be found in section 3 on page 18.

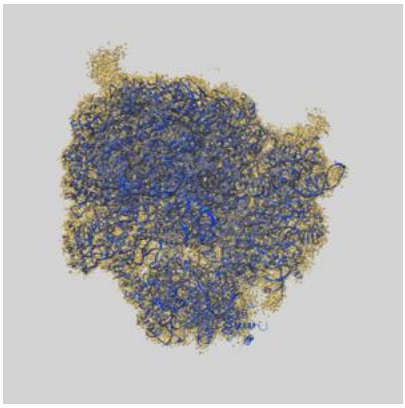
9.1 Map-model overlay



X



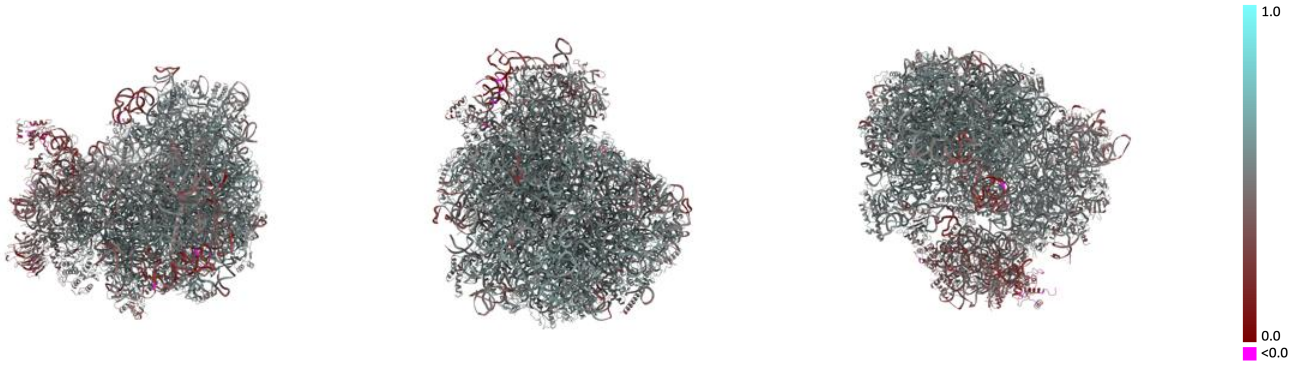
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.03 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

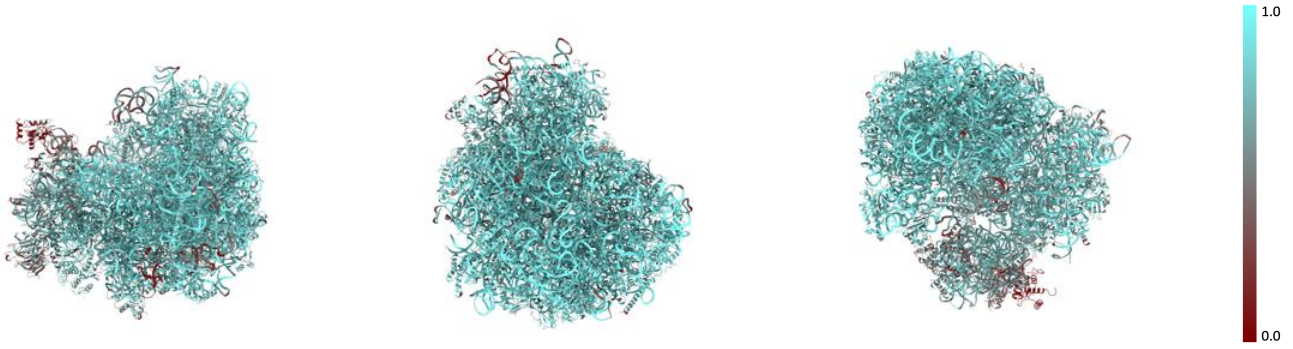
9.2 Q-score mapped to coordinate model (i)



X Y Z

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

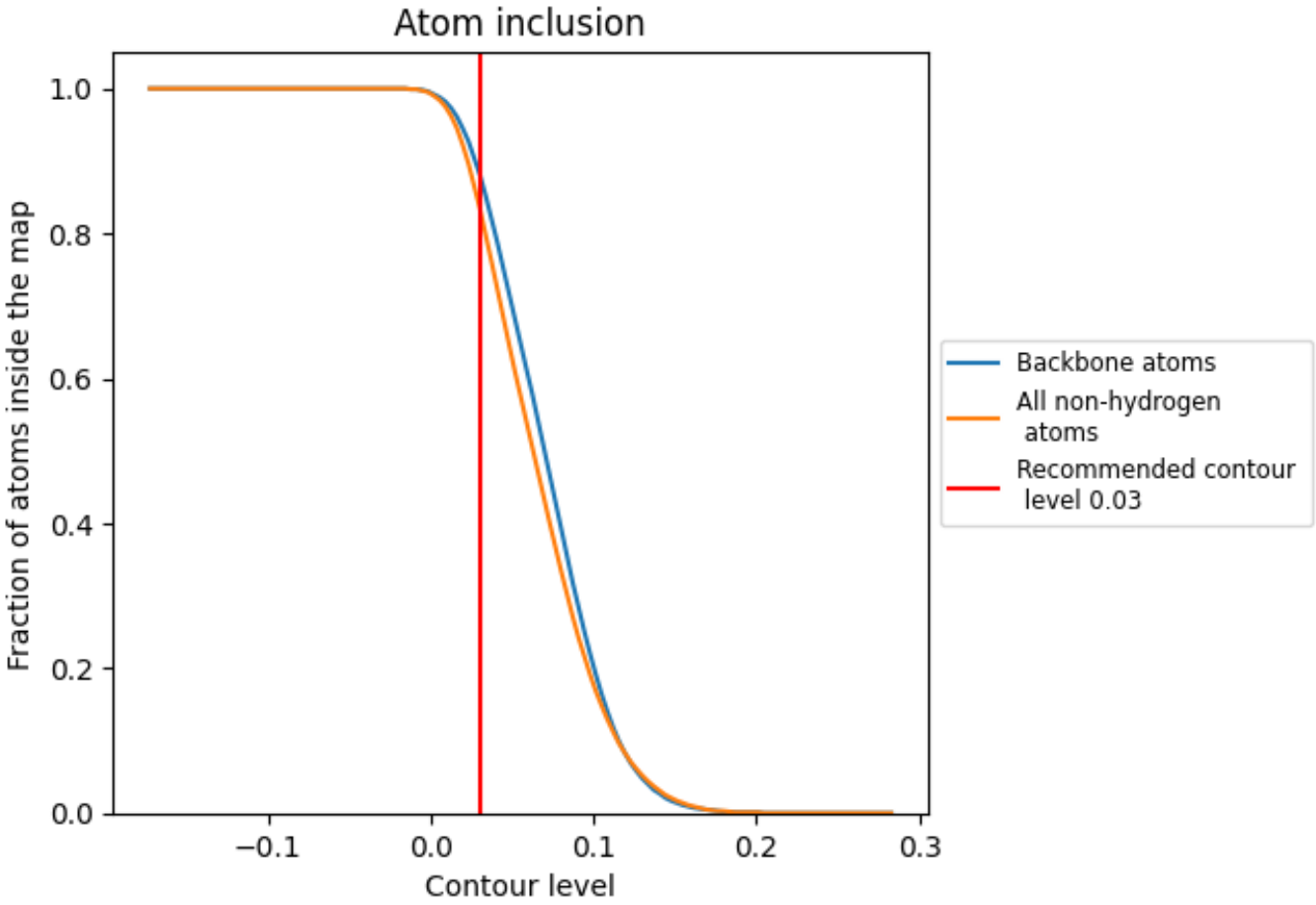
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.03).

9.4 Atom inclusion (i)



At the recommended contour level, 88% of all backbone atoms, 83% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.03) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8340	0.4940
C1	0.9130	0.5130
C2	0.8380	0.4520
C3	0.9430	0.5300
C4	0.9480	0.5190
C5	0.6510	0.4580
LA	0.8620	0.5580
LB	0.8710	0.5440
LC	0.8570	0.5390
LD	0.7960	0.5000
LE	0.7980	0.5050
LF	0.8330	0.5270
LG	0.8330	0.5150
LH	0.8210	0.5140
LI	0.8090	0.5200
LJ	0.7740	0.4810
LL	0.8350	0.5210
LM	0.8270	0.5130
LN	0.8810	0.5650
LO	0.8390	0.5360
LP	0.8550	0.5440
LQ	0.8610	0.5450
LR	0.8250	0.5160
LS	0.8260	0.5330
LT	0.8300	0.5380
LU	0.7760	0.4860
LV	0.8120	0.5370
LW	0.8320	0.5390
LX	0.8610	0.5370
LY	0.8400	0.5370
LZ	0.8530	0.5290
La	0.8760	0.5500
Lb	0.8160	0.5140
Lc	0.7720	0.5280
Ld	0.8000	0.5220

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Chain	Atom inclusion	Q-score
Le	0.8580	0.5460
Lf	0.8670	0.5540
Lg	0.8090	0.5330
Lh	0.8480	0.5280
Li	0.8130	0.5070
Lj	0.9100	0.5770
Lk	0.7230	0.4960
Ll	0.8410	0.5470
Lm	0.8170	0.5400
Ln	0.6560	0.5320
Lo	0.8410	0.5480
Lp	0.8040	0.5410
SA	0.7570	0.4770
SB	0.7620	0.4980
SC	0.7880	0.5120
SD	0.5790	0.4140
SE	0.7820	0.5070
SF	0.5870	0.4150
SG	0.7290	0.4500
SH	0.6930	0.4540
SI	0.7900	0.5160
SJ	0.7690	0.4920
SK	0.5560	0.3740
SL	0.8040	0.5310
SM	0.1300	0.2320
SN	0.7870	0.5070
SO	0.7830	0.5130
SP	0.4490	0.3420
SQ	0.6220	0.4250
SR	0.6250	0.4180
SS	0.5510	0.3580
ST	0.6200	0.3920
SU	0.5800	0.3770
SV	0.7600	0.5000
SW	0.8280	0.5320
SX	0.7930	0.5240
SY	0.7490	0.4630
SZ	0.5000	0.3660
Sa	0.8270	0.5280
Sb	0.7820	0.5020
Sc	0.5910	0.4420
Sd	0.7380	0.4650

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Chain	Atom inclusion	Q-score
Se	0.6970	0.4500
Sf	0.2370	0.2560
Sg	0.4840	0.3540