Full wwPDB EM Validation Report

Nov 9, 2024 – 12:05 pm GMT

PDB ID	:	9G8M
EMDB ID	:	EMD-51132
Title	:	human 80S ribosome bound by a SKI2-exosome complex
Authors	:	Koegel, A.; Keidel, A.; Loukeri, M.J.; Kuhn, C.C.; Langer, L.M.; Schaefer, I.B.; Conti, E.
Deposited on	:	2024-07-23
Resolution	:	3.30 Å(reported)

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

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

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

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

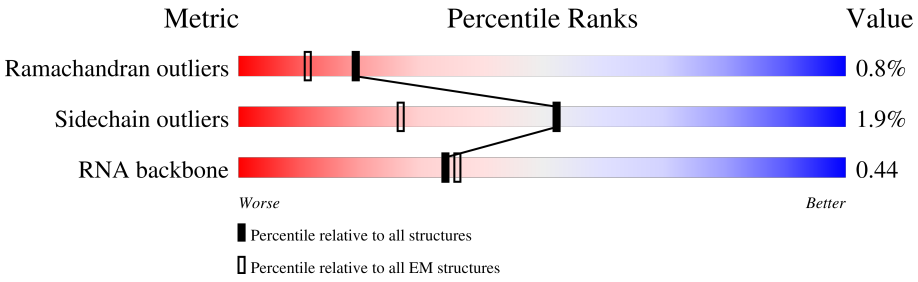
EMDB validation analysis	:	0.0.1.dev113
MolProbity	:	4.02b-467
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

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 3.30 Å.

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



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

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

Mol	Chain	Length	Quality of chain
1	A	1246	72% 75% · 24%
2	L	245	98% 98% ··
3	N	280	95% 92% · 5%
4	O	239	87% 87% 13%
5	F	295	97% 95% ··
6	G	272	92% 90% · 8%
7	H	371	64% 64% 36%
8	I	297	97% 96% ··

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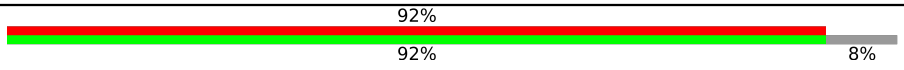
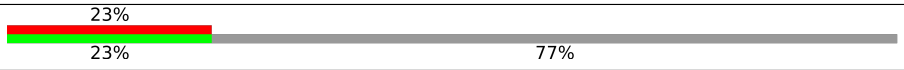
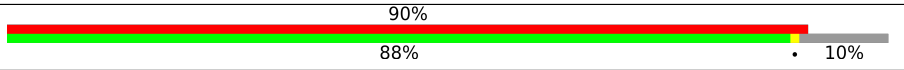
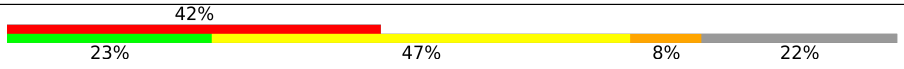
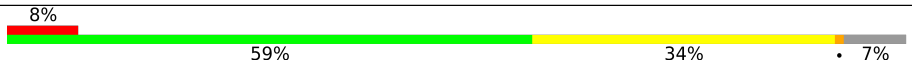
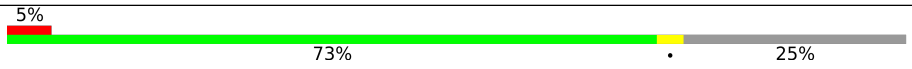
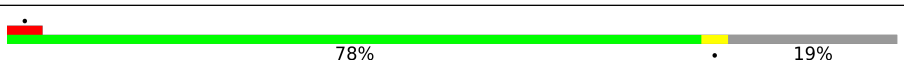
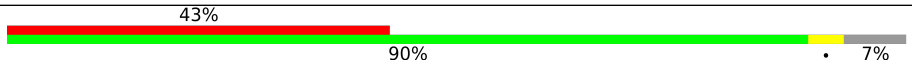
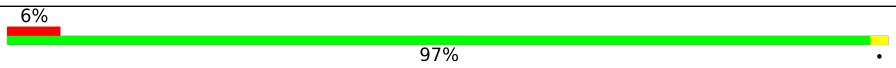
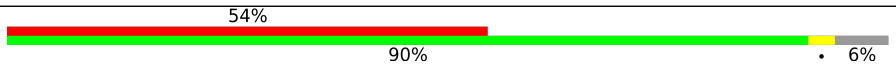
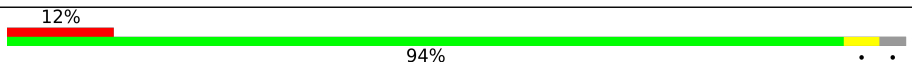
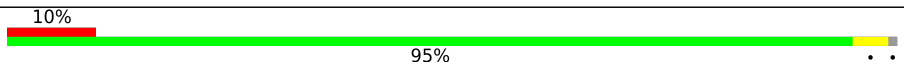
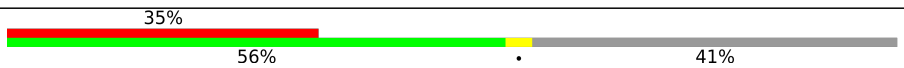
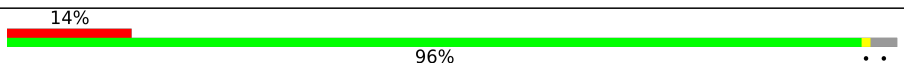
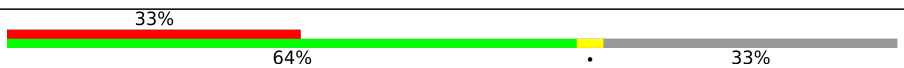
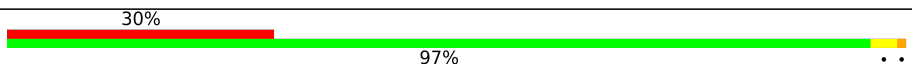
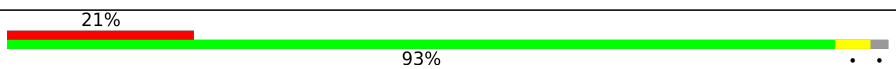
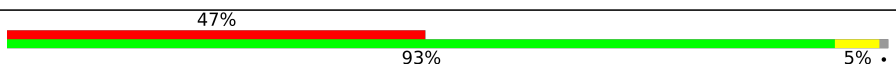
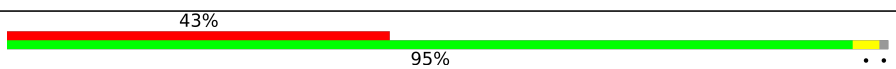
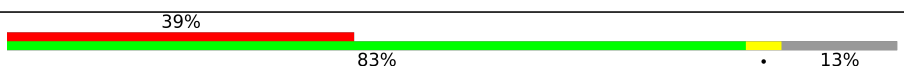
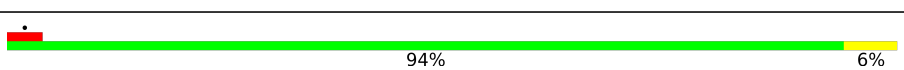
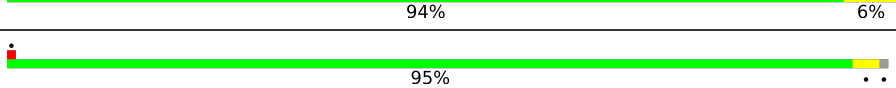
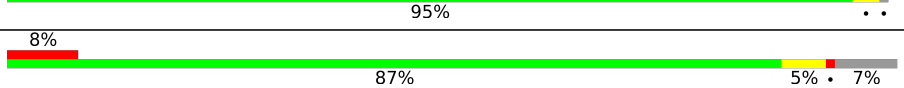
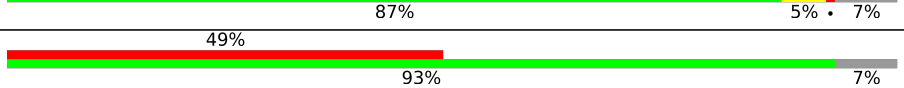
Mol	Chain	Length	Quality of chain
9	J	199	
10	K	443	
11	E	274	
12	M	1096	
13	X	249	
14	S2	1869	
15	SA	295	
16	SB	264	
17	SD	243	
18	SE	263	
19	SF	204	
20	SH	194	
21	SI	208	
22	SK	165	
23	SL	158	
24	SP	145	
25	SQ	146	
26	SR	135	
27	SS	152	
28	ST	145	
29	SU	119	
30	SV	83	
31	SX	143	
32	Sa	115	
33	Sc	69	

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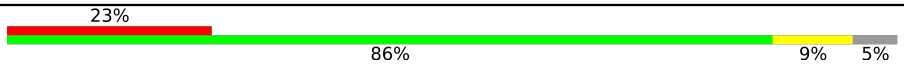
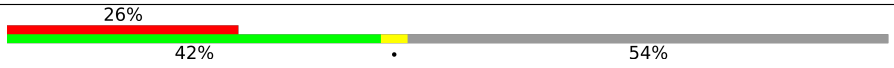
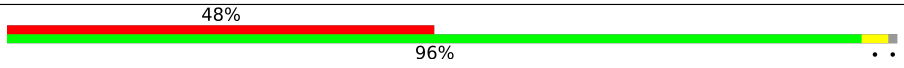
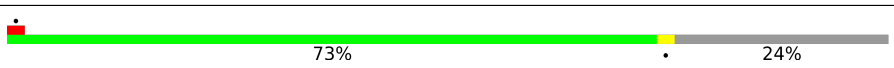
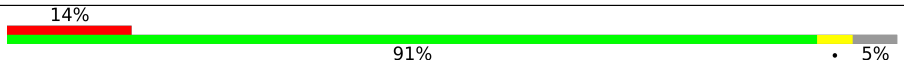
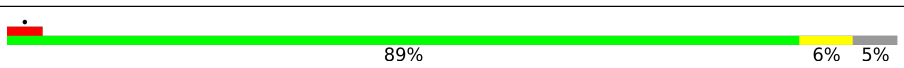
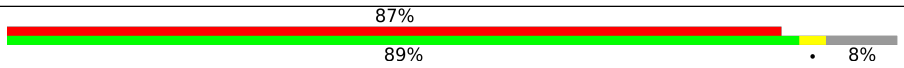
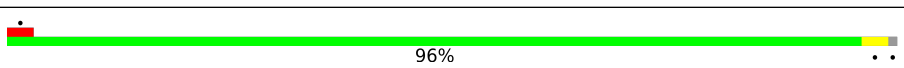
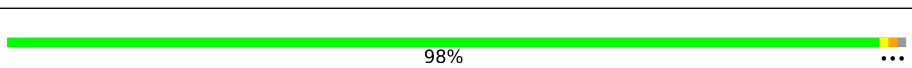
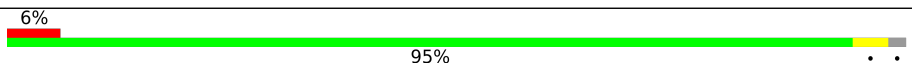
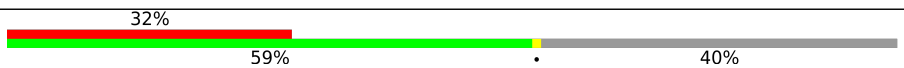
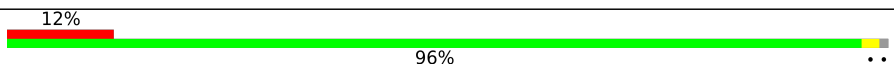
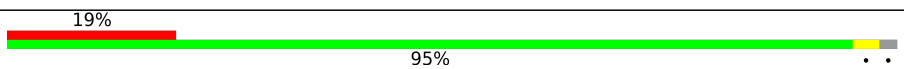
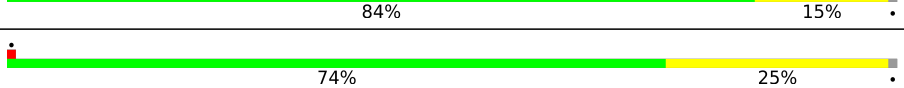
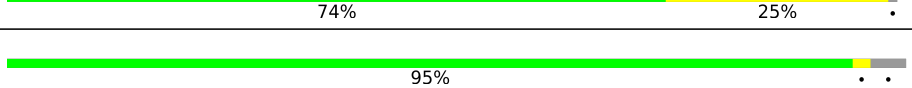
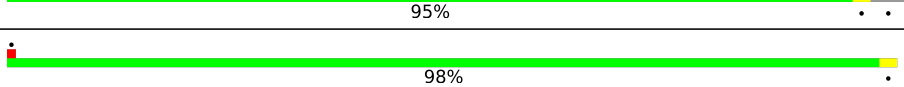
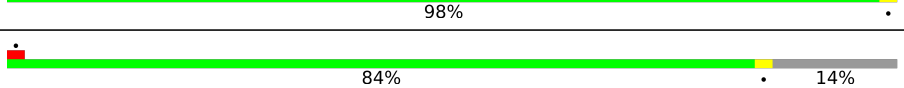
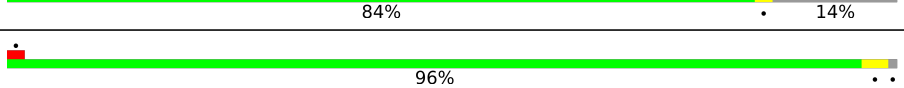
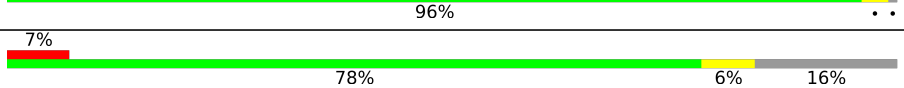
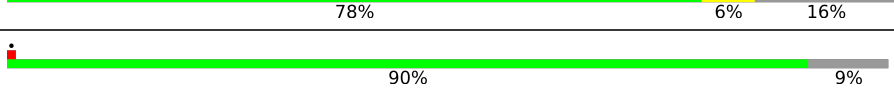
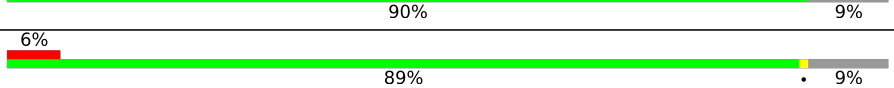
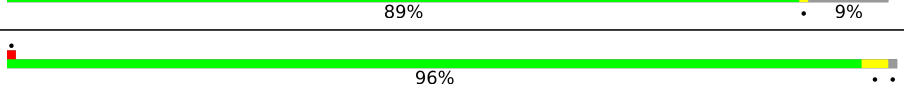
Mol	Chain	Length	Quality of chain
34	Sd	56	
35	Sf	156	
36	Sg	317	
37	SC	293	
38	SG	249	
39	SJ	194	
40	SM	132	
41	SN	151	
42	SO	151	
43	SW	130	
44	SY	133	
45	SZ	125	
46	Sb	84	
47	Se	59	
48	L5	5066	
49	L7	121	
50	L8	157	
51	LA	257	
52	LB	403	
53	LC	427	
54	LD	297	
55	LE	288	
56	LF	248	
57	LG	266	
58	LH	192	

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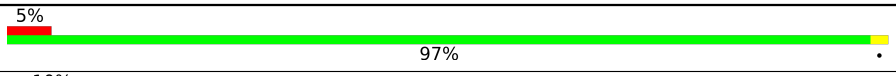
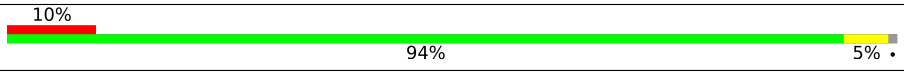
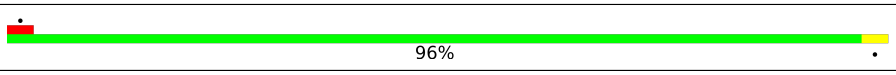
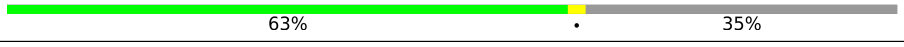
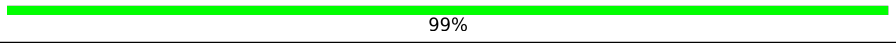
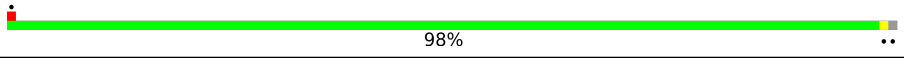
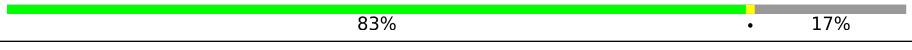
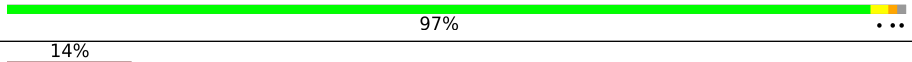
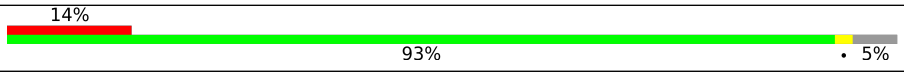
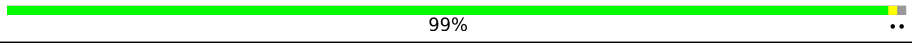
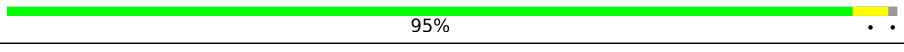
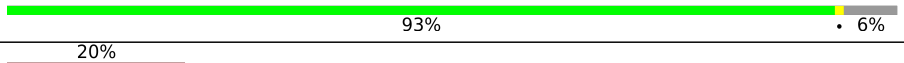
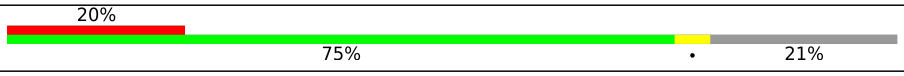
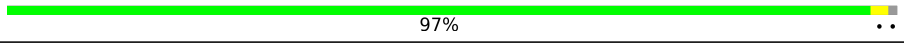
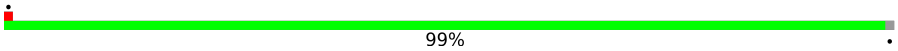
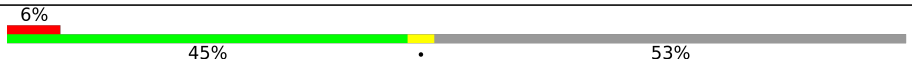
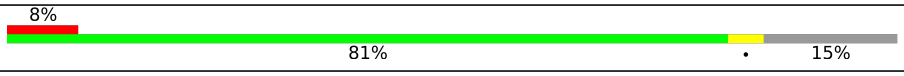
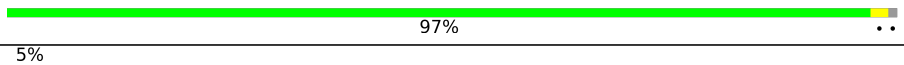
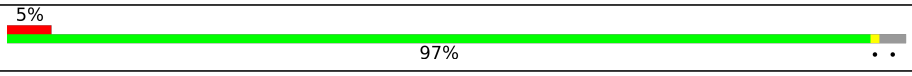
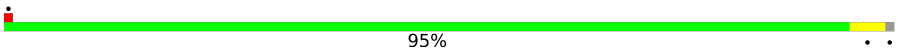
Mol	Chain	Length	Quality of chain
59	LI	214	
60	LJ	178	
61	LL	211	
62	LM	215	
63	LN	204	
64	LO	203	
65	LP	184	
66	LQ	188	
67	LR	196	
68	LS	176	
69	LT	160	
70	LU	128	
71	LV	140	
72	LW	157	
73	LX	156	
74	LY	145	
75	LZ	136	
76	La	148	
77	Lb	159	
78	Lc	115	
79	Ld	125	
80	Le	135	
81	Lf	110	
82	Lg	117	
83	Lh	123	

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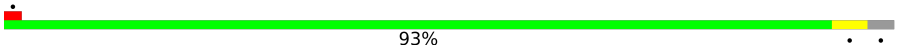
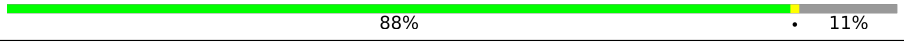
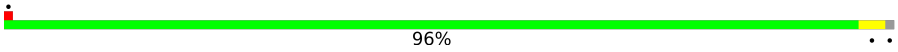
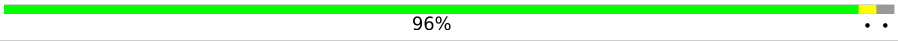
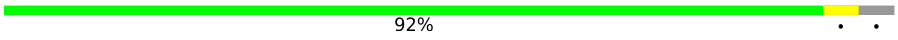
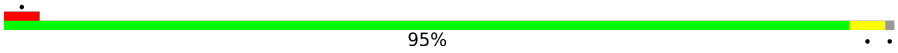
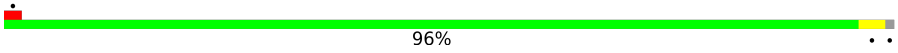
Mol	Chain	Length	Quality of chain
84	Li	105	
85	Lj	97	
86	Lk	70	
87	Ll	51	
88	Lm	128	
89	Ln	25	
90	Lo	106	
91	Lp	92	
92	Lr	137	

2 Entry composition

There are 94 unique types of molecules in this entry. The entry contains 251092 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called Helicase SKI2W.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	949	Total	C	N	O	S	0	0
			7438	4710	1316	1370	42		

- Molecule 2 is a protein called Exosome complex component RRP41.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	L	241	Total	C	N	O	S	0	0
			1819	1123	343	344	9		

- Molecule 3 is a protein called Exosome complex component RRP43.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	N	265	Total	C	N	O	S	0	0
			2020	1272	337	397	14		

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
N	-3	GLY	-	expression tag	UNP Q96B26
N	-2	PRO	-	expression tag	UNP Q96B26
N	-1	ASP	-	expression tag	UNP Q96B26
N	0	SER	-	expression tag	UNP Q96B26

- Molecule 4 is a protein called Exosome complex component RRP46.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	O	208	Total	C	N	O	S	0	0
			1566	979	278	297	12		

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
O	-3	GLY	-	expression tag	UNP Q9NQT4

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Chain	Residue	Modelled	Actual	Comment	Reference
O	-2	PRO	-	expression tag	UNP Q9NQT4
O	-1	ASP	-	expression tag	UNP Q9NQT4
O	0	SER	-	expression tag	UNP Q9NQT4

- Molecule 5 is a protein called Exosome complex component RRP42.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	F	286	Total	C	N	O	S	0	0
			2194	1373	374	432	15		

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F	-3	GLY	-	expression tag	UNP Q15024
F	-2	PRO	-	expression tag	UNP Q15024
F	-1	ASP	-	expression tag	UNP Q15024
F	0	SER	-	expression tag	UNP Q15024

- Molecule 6 is a protein called Exosome complex component MTR3.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	G	251	Total	C	N	O	S	0	0
			1852	1149	352	344	7		

- Molecule 7 is a protein called Exosome complex component RRP40,Exosome complex component MTR3.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	H	237	Total	C	N	O	S	0	0
			1810	1139	331	328	12		

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
H	-3	GLY	-	expression tag	UNP Q9NQT5
H	-2	PRO	-	expression tag	UNP Q9NQT5
H	-1	ASP	-	expression tag	UNP Q9NQT5
H	0	SER	-	expression tag	UNP Q9NQT5
H	61	HIS	SER	conflict	UNP Q9NQT5
H	225	HIS	TYR	variant	UNP Q9NQT5

- Molecule 8 is a protein called Exosome complex component RRP4.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	I	289	Total	C	N	O	S	0	0
			2263	1424	405	419	15		

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
I	-3	GLY	-	expression tag	UNP Q13868
I	-2	PRO	-	expression tag	UNP Q13868
I	-1	ASP	-	expression tag	UNP Q13868
I	0	SER	-	expression tag	UNP Q13868

- Molecule 9 is a protein called Exosome complex component CSL4.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	J	184	Total	C	N	O	S	0	0
			1414	889	248	267	10		

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
J	-3	GLY	-	expression tag	UNP Q9Y3B2
J	-2	PRO	-	expression tag	UNP Q9Y3B2
J	-1	ASP	-	expression tag	UNP Q9Y3B2
J	0	SER	-	expression tag	UNP Q9Y3B2

- Molecule 10 is a protein called Exosome complex component RRP45.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	K	341	Total	C	N	O	S	0	0
			2673	1680	468	506	19		

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
K	-3	GLY	-	expression tag	UNP Q06265
K	-2	PRO	-	expression tag	UNP Q06265
K	-1	ASP	-	expression tag	UNP Q06265
K	0	SER	-	expression tag	UNP Q06265

- Molecule 11 is a protein called Isoform 2 of HBS1-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	E	63	Total	C	N	O	S	0	0
			499	324	83	91	1		

There are 10 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
E	365	GLY	-	expression tag	UNP Q9Y450
E	366	PRO	-	expression tag	UNP Q9Y450
E	367	ASP	-	expression tag	UNP Q9Y450
E	368	SER	-	expression tag	UNP Q9Y450
E	633	LEU	-	expression tag	UNP Q9Y450
E	634	GLU	-	expression tag	UNP Q9Y450
E	635	VAL	-	expression tag	UNP Q9Y450
E	636	LEU	-	expression tag	UNP Q9Y450
E	637	PHE	-	expression tag	UNP Q9Y450
E	638	GLN	-	expression tag	UNP Q9Y450

- Molecule 12 is a protein called DIS3-like exonuclease 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	M	983	Total	C	N	O	S	0	0
			7967	5028	1412	1486	41		

There are 43 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
M	-41	MET	-	initiating methionine	UNP Q8TF46
M	-40	SER	-	expression tag	UNP Q8TF46
M	-39	ALA	-	expression tag	UNP Q8TF46
M	-38	TRP	-	expression tag	UNP Q8TF46
M	-37	SER	-	expression tag	UNP Q8TF46
M	-36	HIS	-	expression tag	UNP Q8TF46
M	-35	PRO	-	expression tag	UNP Q8TF46
M	-34	GLN	-	expression tag	UNP Q8TF46
M	-33	PHE	-	expression tag	UNP Q8TF46
M	-32	GLU	-	expression tag	UNP Q8TF46
M	-31	LYS	-	expression tag	UNP Q8TF46
M	-30	GLY	-	expression tag	UNP Q8TF46
M	-29	GLY	-	expression tag	UNP Q8TF46
M	-28	GLY	-	expression tag	UNP Q8TF46
M	-27	SER	-	expression tag	UNP Q8TF46
M	-26	GLY	-	expression tag	UNP Q8TF46
M	-25	GLY	-	expression tag	UNP Q8TF46

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Chain	Residue	Modelled	Actual	Comment	Reference
M	-24	GLY	-	expression tag	UNP Q8TF46
M	-23	SER	-	expression tag	UNP Q8TF46
M	-22	GLY	-	expression tag	UNP Q8TF46
M	-21	GLY	-	expression tag	UNP Q8TF46
M	-20	SER	-	expression tag	UNP Q8TF46
M	-19	ALA	-	expression tag	UNP Q8TF46
M	-18	TRP	-	expression tag	UNP Q8TF46
M	-17	SER	-	expression tag	UNP Q8TF46
M	-16	HIS	-	expression tag	UNP Q8TF46
M	-15	PRO	-	expression tag	UNP Q8TF46
M	-14	GLN	-	expression tag	UNP Q8TF46
M	-13	PHE	-	expression tag	UNP Q8TF46
M	-12	GLU	-	expression tag	UNP Q8TF46
M	-11	LYS	-	expression tag	UNP Q8TF46
M	-10	THR	-	expression tag	UNP Q8TF46
M	-9	ALA	-	expression tag	UNP Q8TF46
M	-8	GLY	-	expression tag	UNP Q8TF46
M	-7	LEU	-	expression tag	UNP Q8TF46
M	-6	GLU	-	expression tag	UNP Q8TF46
M	-5	VAL	-	expression tag	UNP Q8TF46
M	-4	LEU	-	expression tag	UNP Q8TF46
M	-3	PHE	-	expression tag	UNP Q8TF46
M	-2	GLN	-	expression tag	UNP Q8TF46
M	-1	GLY	-	expression tag	UNP Q8TF46
M	0	PRO	-	expression tag	UNP Q8TF46
M	486	ASN	ASP	conflict	UNP Q8TF46

- Molecule 13 is a RNA chain called CrPV-IRES RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	X	194	Total	C	N	O	P	0	0
			4020	1802	633	1391	194		

- Molecule 14 is a RNA chain called 18S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	S2	1742	Total	C	N	O	P	0	0
			36900	16458	6595	12106	1741		

- Molecule 15 is a protein called 40S ribosomal protein SA.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	SA	222	Total	C	N	O	S	0	0
			1747	1109	306	324	8		

- Molecule 16 is a protein called 40S ribosomal protein S3a.

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

- Molecule 17 is a protein called 40S ribosomal protein S3.

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

- Molecule 18 is a protein called 40S ribosomal protein S4, X isoform.

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

- Molecule 19 is a protein called 40S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	SF	191	Total	C	N	O	S	0	0
			1509	943	286	273	7		

- Molecule 20 is a protein called 40S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	SH	189	Total	C	N	O	S	0	0
			1521	969	280	271	1		

- Molecule 21 is a protein called 40S ribosomal protein S8.

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

- Molecule 22 is a protein called 40S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	SK	98	Total	C	N	O	S	0	0
			827	539	148	134	6		

- Molecule 23 is a protein called 40S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	SL	153	Total	C	N	O	S	0	0
			1247	793	234	214	6		

- Molecule 24 is a protein called 40S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	SP	97	Total	C	N	O	S	0	0
			804	505	155	138	6		

- Molecule 25 is a protein called 40S ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	SQ	146	Total	C	N	O	S	0	0
			1158	736	218	200	4		

- Molecule 26 is a protein called 40S ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	SR	132	Total	C	N	O	S	0	0
			1072	673	199	195	5		

- Molecule 27 is a protein called 40S ribosomal protein S18.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	SS	150	Total	C	N	O	S	0	0
			1235	776	250	208	1		

- Molecule 28 is a protein called 40S ribosomal protein S19.

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

- Molecule 29 is a protein called 40S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	SU	104	Total	C	N	O	S	0	0
			822	514	156	148	4		

- Molecule 30 is a protein called 40S ribosomal protein S21.

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

- Molecule 31 is a protein called 40S ribosomal protein S23.

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
32	Sa	107	Total	C	N	O	S	0	0
			847	528	176	138	5		

- Molecule 33 is a protein called 40S ribosomal protein S28.

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

- Molecule 34 is a protein called 40S ribosomal protein S29.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	Sd	53	Total	C	N	O	S	0	0
			445	278	90	72	5		

- Molecule 35 is a protein called Ubiquitin.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	Sf	71	Total	C	N	O	S	0	0
			581	367	109	98	7		

- Molecule 36 is a protein called Receptor of activated protein C kinase 1.

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

- Molecule 37 is a protein called 40S ribosomal protein S2.

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

- Molecule 38 is a protein called 40S ribosomal protein S6.

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

- Molecule 39 is a protein called 40S ribosomal protein S9.

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
40	SM	122	Total	C	N	O	S	0	0
			952	596	169	179	8		

There are 3 discrepancies between the modelled and reference sequences:

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

- Molecule 41 is a protein called 40S ribosomal protein S13.

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

- Molecule 42 is a protein called 40S ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	SO	140	Total	C	N	O	S	0	0
			1049	642	204	197	6		

- Molecule 43 is a protein called 40S ribosomal protein S15a.

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

- Molecule 44 is a protein called 40S ribosomal protein S24.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	SY	131	Total	C	N	O	S	0	0
			1065	673	209	178	5		

- Molecule 45 is a protein called 40S ribosomal protein S25.

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

- Molecule 46 is a protein called 40S ribosomal protein S27.

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

- Molecule 47 is a protein called 40S ribosomal protein S30.

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

- Molecule 48 is a RNA chain called 28S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	L5	3654	Total	C	N	O	P	0	0
			78316	34871	14334	25458	3653		

- Molecule 49 is a RNA chain called 5S ribosomal RNA.

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

- Molecule 50 is a RNA chain called 5.8S ribosomal RNA.

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

- Molecule 51 is a protein called 60S ribosomal protein L8.

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

- Molecule 52 is a protein called 60S ribosomal protein L3.

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

- Molecule 53 is a protein called 60S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	LC	367	Total	C	N	O	S	0	0
			2919	1835	582	488	14		

- Molecule 54 is a protein called 60S ribosomal protein L5.

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

- Molecule 55 is a protein called Large ribosomal subunit protein eL6.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	LE	242	Total	C	N	O	S	0	0
			1958	1257	372	325	4		

- Molecule 56 is a protein called Large ribosomal subunit protein uL30.

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

- Molecule 57 is a protein called 60S ribosomal protein L7a.

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

- Molecule 58 is a protein called 60S ribosomal protein L9.

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

- Molecule 59 is a protein called Ribosomal protein uL16-like.

Mol	Chain	Residues	Atoms					AltConf	Trace
59	LI	213	Total	C	N	O	S	0	0
			1711	1082	329	285	15		

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

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

- Molecule 61 is a protein called 60S ribosomal protein L13.

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

- Molecule 62 is a protein called 60S ribosomal protein L14.

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

- Molecule 63 is a protein called 60S ribosomal protein L15.

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

- Molecule 64 is a protein called 60S ribosomal protein L13a.

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

- Molecule 65 is a protein called 60S ribosomal protein L17.

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

- Molecule 66 is a protein called 60S ribosomal protein L18.

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

- Molecule 67 is a protein called 60S ribosomal protein L19.

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

- Molecule 68 is a protein called 60S ribosomal protein L18a.

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

- Molecule 69 is a protein called 60S ribosomal protein L21.

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

- Molecule 70 is a protein called 60S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
70	LU	101	Total	C	N	O	S	0	0
			825	529	144	150	2		

- Molecule 71 is a protein called 60S ribosomal protein L23.

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

- Molecule 72 is a protein called 60S ribosomal protein L24.

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

- Molecule 73 is a protein called 60S ribosomal protein L23a.

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

- Molecule 74 is a protein called 60S ribosomal protein L26.

Mol	Chain	Residues	Atoms					AltConf	Trace
74	LY	134	Total	C	N	O	S	0	0
			1115	700	226	186	3		

- Molecule 75 is a protein called 60S ribosomal protein L27.

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

- Molecule 76 is a protein called 60S ribosomal protein L27a.

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

- Molecule 77 is a protein called 60S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
77	Lb	75	Total	C	N	O	S	0	0
			610	378	130	99	3		

- Molecule 78 is a protein called 60S ribosomal protein L30.

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

- Molecule 79 is a protein called 60S ribosomal protein L31.

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

- Molecule 80 is a protein called 60S ribosomal protein L32.

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

- Molecule 81 is a protein called 60S ribosomal protein L35a.

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

- Molecule 82 is a protein called 60S ribosomal protein L34.

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

- Molecule 83 is a protein called 60S ribosomal protein L35.

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

- Molecule 84 is a protein called 60S ribosomal protein L36.

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

- Molecule 85 is a protein called 60S ribosomal protein L37.

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

- Molecule 86 is a protein called 60S ribosomal protein L38.

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

- Molecule 87 is a protein called 60S ribosomal protein L39.

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

- Molecule 88 is a protein called Ubiquitin-60S ribosomal protein L40.

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

- Molecule 89 is a protein called 60S ribosomal protein L41.

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

- Molecule 90 is a protein called 60S ribosomal protein L36a.

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

- Molecule 91 is a protein called 60S ribosomal protein L37a.

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

- Molecule 92 is a protein called 60S ribosomal protein L28.

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

- Molecule 93 is MAGNESIUM ION (three-letter code: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
93	S2	65	Total 65	Mg 65	0
93	Sc	1	Total 1	Mg 1	0
93	L5	145	Total 145	Mg 145	0
93	L7	7	Total 7	Mg 7	0
93	L8	5	Total 5	Mg 5	0
93	LA	1	Total 1	Mg 1	0
93	LH	1	Total 1	Mg 1	0
93	LN	1	Total 1	Mg 1	0
93	LP	1	Total 1	Mg 1	0
93	LQ	1	Total 1	Mg 1	0
93	LV	2	Total 2	Mg 2	0
93	Ll	1	Total 1	Mg 1	0
93	Lr	1	Total 1	Mg 1	0

- Molecule 94 is ZINC ION (three-letter code: ZN) (formula: Zn).

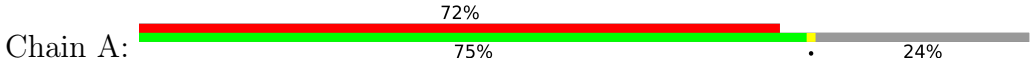
Mol	Chain	Residues	Atoms	AltConf
94	Sa	1	Total Zn 1 1	0
94	Lg	1	Total Zn 1 1	0
94	Lj	1	Total Zn 1 1	0
94	Lm	1	Total Zn 1 1	0
94	Lo	1	Total Zn 1 1	0
94	Lp	1	Total Zn 1 1	0

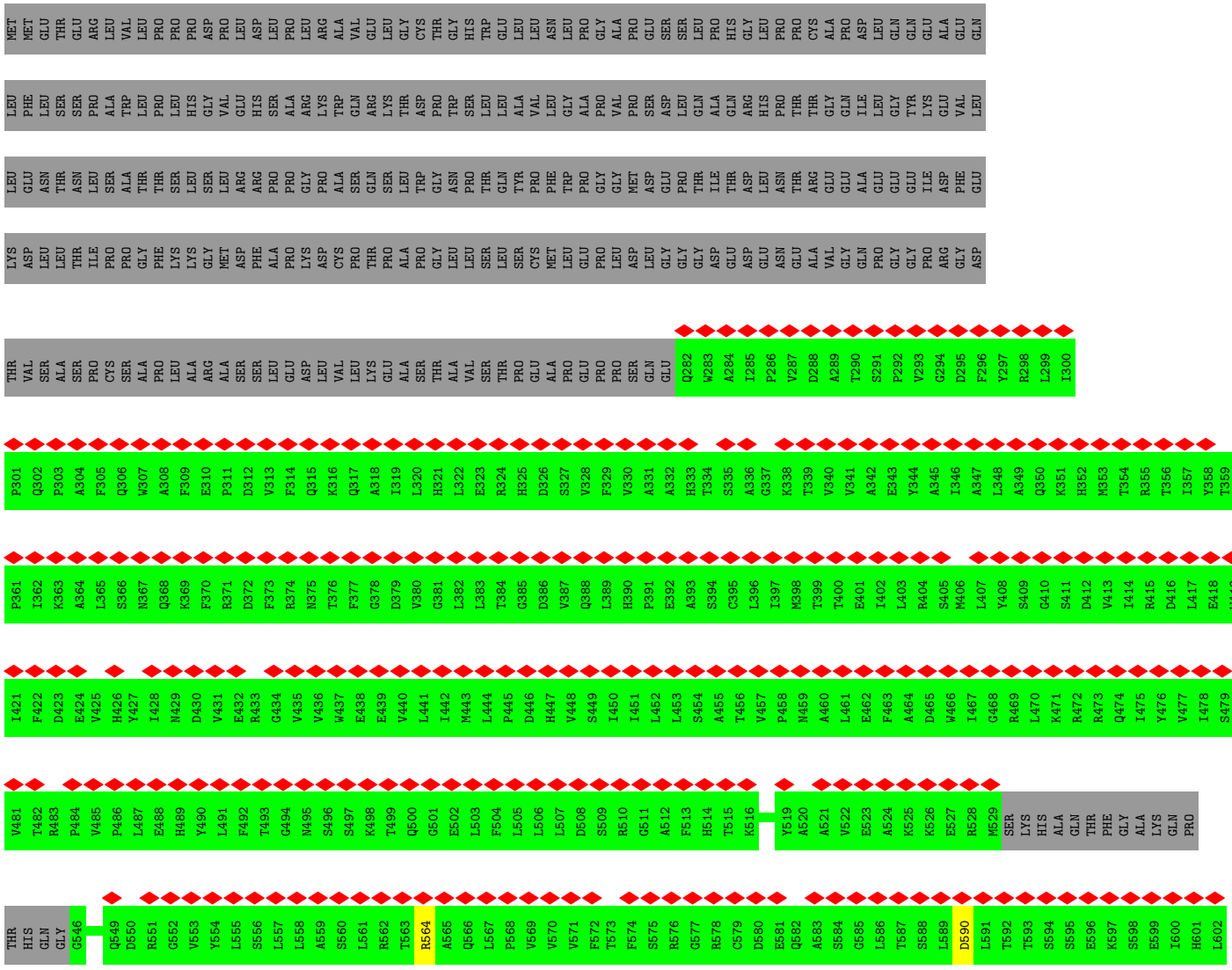
3 Residue-property plots (i)

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

- Molecule 1: Helicase SKI2W

Chain A:





F603 L604 Q605 R606 C607 L608 A609 R610 L611 R612 G613 S614 D615 R616 Q617 L618 P619 Q620 V621 L622 H623 M624 S625 E626 L627 L628 N629 R630 G631 L632 G633 V634 H635 H636 S637 G638 I639 L640 P641 I642 L643 K644 E645 I646 V647 E648 M649 L650 F651 S652 R653 G654 L655 V656 K657 V658 L659 F660 A661 T662

E663 T664 F665 A666 M667 G668 V669 N670 M671 P672 A673 R674 T675 V676 V677 F678 D679 S680 M681 R682 K683 H684 D685 G686 S687 T688 F689 R690 D691 L692 L693 P694 G695 E696 Y697 V698 Q699 M700 A701 G702 R703 R706 R707 G708 L709 D710 P711 T712 G713 T714 V715 I716 L717 L718 C719 K720 G721 R722 V723

P724 E725 M726 A727 R731 M732 M733 M734 G735 K736 P737 S738 Q739 L740 Q741 S742 Q743 F744 R745 L746 T747 Y748 T749 M750 I751 L752 N753 L754 L755 R756 V757 D758 A759 L760 R761 V762 E763 D764 M765 M766 K767 R768 S769 F770 S771 E772 F773 P774 S775 R776 K777 D778 S779 K780 A781 H782 E783 Q784 A785

L786 A787 E788 L789 T790 K791 R792 L793 G794 A795 L796 E797 E798 P799 D800 M801 T802 G803 Q804 L805 V806 D807 L808 P809 E810 Y811 Y812 S813 W814 G815 E816 E817 L818 T819 E820 T821 Q822 H823 M824 I825 Q826 R827 R828 I829 M830 E831 S832 V833 N834 G835 L836 K837 S838 L839 S840 A841 G842 R843 V844 V845

V846 V847 K848 N849 Q850 E851 H852 H853 N854 A855 L856 G857 V858 I859 L860 Q861 V862 S863 S864 N865 S866 T867 S868 R869 V870 F871 T872 T873 L874 V875 L876 C877 D878 K879 P880 L881 S882 Q883 D884 P885 Q886 D887 R888 G889 P890 A891 T892 A893 E894 V895 P896 Y897 P898 D899 D900 L901 V902 G903 F904 K905

L906 F907 L908 P909 E910 G911 P912 C913 D914 H915 T916 V917 V918 K919 L920 Q921 P922 G923 D924 M925 A926 A927 I928 T929 T930 K931 V932 L933 R934 V935 N936 G937 E938 K939 I940 L941 E942 D943 F944 S945 K946 R947 Q948 Q949 P950 K951 F952 K953 K954 D955 P956 P957 L958 A959 A960 V961 T962 T963 A964 V965

Q966 E967 L968 L969 R970 L971 A972 Q973 A974 H975 P976 A977 G978 P979 P980 T981 L982 D983 P984 V985 N986 D987 L988 Q989 L990 K991 D992 M993 S994 V995 V996 E997 G998 G999 L1000 R1001 A1002 R1003 K1004 L1005 E1006 E1007 L1008 I1009 Q1010 G1011 A1012 Q1013 C1014 V1015 H1016 S1017 P1018 R1019 F1020 P1021 A1022 Q1023 Y1024 L1025

K1026 L1027 R1028 E1029 R1030 M1031 Q1032 I1033 Q1034 K1035 E1036 M1037 E1038 R1039 L1040 R1041 F1042 L1043 L1044 S1045 D1046 Q1047 S1048 L1049 L1050 L1051 L1052 P1053 E1054 Y1055 H1056 Q1057 R1058 V1059 E1060 V1061 L1062 R1063 T1064 L1065 G1066 Y1067 V1068 D1069 E1070 A1071 G1072 T1073 V1074 K1075 L1076 A1077 G1078 R1079 V1080 A1081 C1082 A1083 M1084 S1085

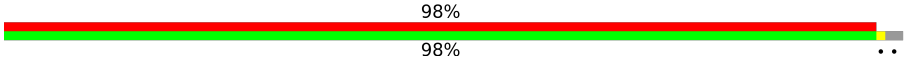
S1086 H1087 E1088 L1089 L1090 L1091 T1092 E1093 L1094 M1095 F1096 D1097 N1098 A1099 L1100 S1101 T1102 L1103 R1104 P1105 E1106 E1107 I1108 A1109 A1110 L1111 L1112 S1113 G1114 L1115 V1116 C1117 Q1118 S1119 P1120 G1121 D1122 A1123 G1124 D1125 Q1126 L1127 P1128 N1129 T1130 L1131 K1132 Q1133 G1134 I1135 E1136 R1137 V1138 R1139 A1140 V1141 A1142 K1143 R1144 I1145

G1146 E1147 V1148 Q1149 V1150 A1151 C1152 G1153 L1154 N1155 Q1156 T1157 V1158 E1159 E1160 F1161 V1162 G1163 E1164 L1165 N1166 F1167 G1168 L1169 V1170 E1171 V1172 V1173 Y1174 E1175 W1176 A1177 R1178 G1179 M1180 P1181 F1182 S1183 E1184 L1185 A1186 G1187 L1188 S1189 G1190 T1191 P1192 E1193 G1194 L1195 V1196 V1197 R1198 C1199 I1200 Q1201 R1202 L1203 A1204 E1205

M1206 C1207 R1208 S1209 L1210 R1211 G1212 A1213 A1214 R1215 Q1216 V1217 G1218 E1219 P1220 V1221 L1222 G1223 A1224 K1225 M1226 E1227 T1228 A1229 A1230 T1231 L1232 L1233 R1234 R1235 D1236 I1237 V1238 F1239 A1240 A1241 S1242 L1243 Y1244 T1245 Q1246

- Molecule 2: Exosome complex component RRP41

Chain L:



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S60 R61 A62 R63 A64 L65 P66 D67 R68 A69 L70 V71 N72 C73 Q74 Y75 S76 S77 A78 T79 F80 S81 T82 G83 E84 R85 K86 R87 R88 P89 H90 G91 D92 R93 K94 S95 C96 E97 M98 G99 L100 Q101 L102 R103 Q104 T105 F106 E107 A108 A109 I110 L111 T112 Q113 L114 H115 P116 R117 S118 Q119

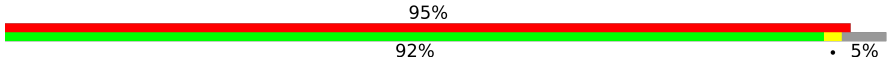
I120 D121 I122 Y123 V124 Q125 V126 L127 Q128 A129 D130 G131 G132 T133 Y134 A135 A136 C137 V138 N139 A140 A141 T142 L143 A144 V145 L146 D147 A148 G149 I150 P151 M152 R153 D154 F155 V156 C157 A158 C159 S160 A161 G162 F163 V164 D165 G166 T167 A168 L169 A170 D171 L172 S173 H174 V175 E176 E177 A178 A179

G180 G181 P182 Q183 L184 A185 L186 A187 L188 L189 P190 A191 S192 G193 Q194 I195 A196 L197 L198 E199 M200 D201 A202 R203 L204 H205 E206 D207 H208 L209 E210 R211 V212 L213 E214 A215 A216 A217 Q218 A219 A220 R221 D222 V223 H224 T225 L226 L227 D228 R229 V230 V231 R232 Q233 H234 V235 R236 E237 A238 S239

I240 L241 L242 G243 ASP

- Molecule 3: Exosome complex component RRP43

Chain N:



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T57 V58 I59 C60 G61 V62 K63 A64 E65 F66 A67 A68 P69 S70 T71 D72 A73 P74 D75 K76 G77 Y78 V79 V80 P81 N82 V83 D84 L85 P86 P87 L88 C89 S90 S91 R92 F93 R94 S95 G96 P97 P98 G99 E100 E101 A102 Q103 V104 A105 S106 Q107 F108 I109 A110 D111 V112 I113 E114 N115 S116

Q117 I118 I119 Q120 K121 E122 D123 L124 C125 I126 S127 P128 G129 K130 L131 V132 W133 V134 L135 Y136 C137 D138 L139 I140 C141 L142 D143 Y144 D145 G146 N147 I148 L149 D150 A151 C152 T153 F154 A155 L156 L157 A158 A159 L160 K161 N162 V163 Q164 L165 P166 E167 V168 T169 I170 N171 E172 E173 T174 A175 L176

A177 E178 V179 N180 L181 K182 K183 K184 S185 Y186 L187 N188 I189 R190 T191 H192 P193 V194 A195 T196 S197 F198 A199 V200 F201 D202 D203 T204 L205 L206 I207 V208 D209 P210 T211 G212 E213 E214 E215 H216 L217 A218 T219 G220 T221 L222 T223 I224 V225 M226 D227 E228 E229 G230 K231 L232 C233 C234 L235 H236

K237 P238 G239 G240 S241 G242 L243 T244 G245 A246 K247 L248 Q249 D250 C251 M252 S253 R254 A255 V256 T257 R258 H259 K260 E261 V262 K263 K264 L265 M266 D267 E268 V269 I270 K271 S272 M273 LYS PRO LYS

- Molecule 4: Exosome complex component RRP46

Chain O:

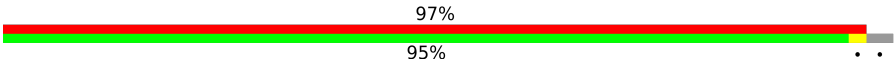
GLY PRO ASP SER MET GLU GLU GLU THR HIS THR ASP ALA LYS ILE ARG ALA GLU ASN GLY THR GLY SER SER PRO ARG GLY PRO GLY C26 S27 L28 R29 H30 F31 A32 C33 E34 Q35 N36 L37 L38 S39 R40 P41 D42 G43 S44 A45 S46 F47 L48 Q49 G50 D51 T52 S53 V54 L55 A56

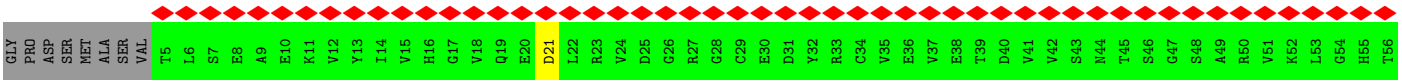
G57 V58 Y59 G60 P61 A62 E63 V64 K65 V66 S67 K68 E69 I70 F71 N72 K73 A74 T75 L76 E77 V78 I79 L80 R81 P82 K83 I84 G85 L86 P87 G88 V89 A90 E91 K92 S93 R94 E95 R96 L97 I98 R99 N100 T101 C102 E103 A104 V105 V106 L107 G108 T109 L110 H111 P112 R113 T114 S115 I116

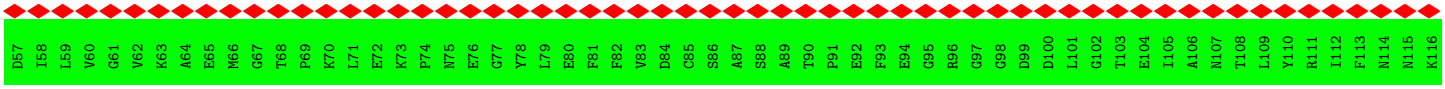
T117 V118 V119 L120 Q121 V122 V123 S124 D125 A126 G127 S128 L129 L130 A131 C132 C133 L134 N135 A136 A137 C138 M139 A140 L141 V142 D143 A144 G145 V146 P147 M148 R149 A150 L151 F152 C153 G154 V155 A156 C157 A158 L159 D160 S161 D162 G163 T164 L165 V166 L167 D168 P169 T170 S171 K172 Q173 E174 K175 E176

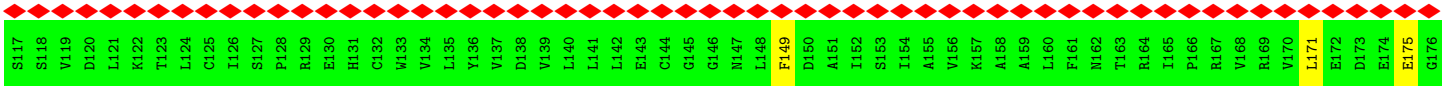
• Molecule 5: Exosome complex component RRP42

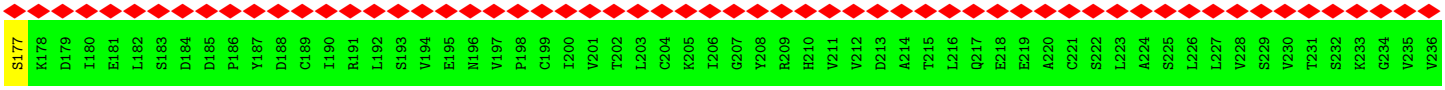
Chain F:

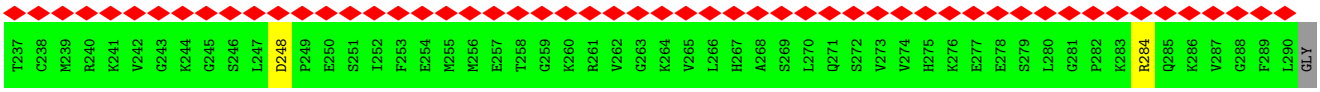






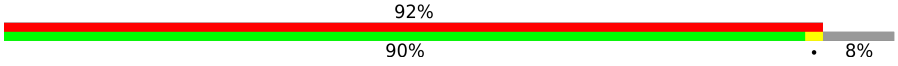


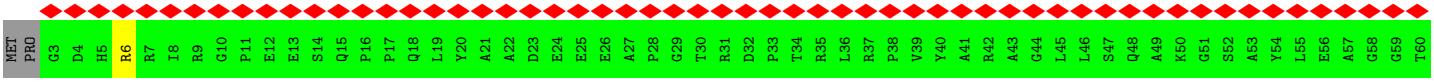


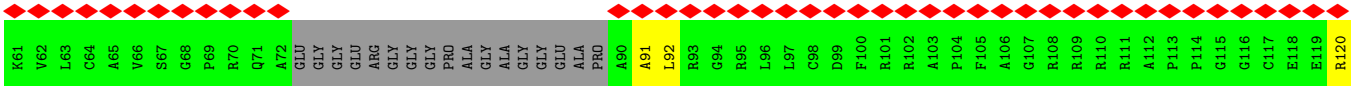


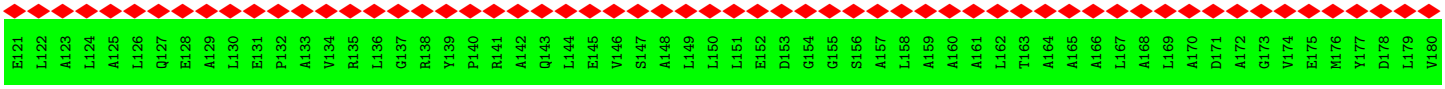
• Molecule 6: Exosome complex component MTR3

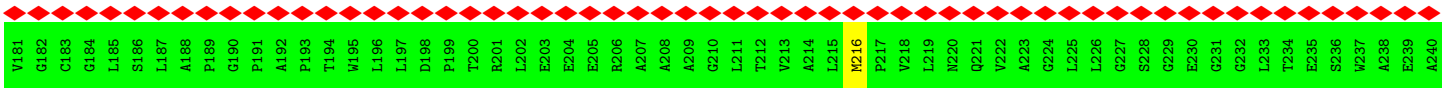
Chain G:

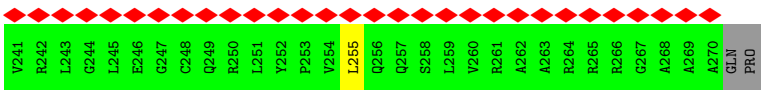






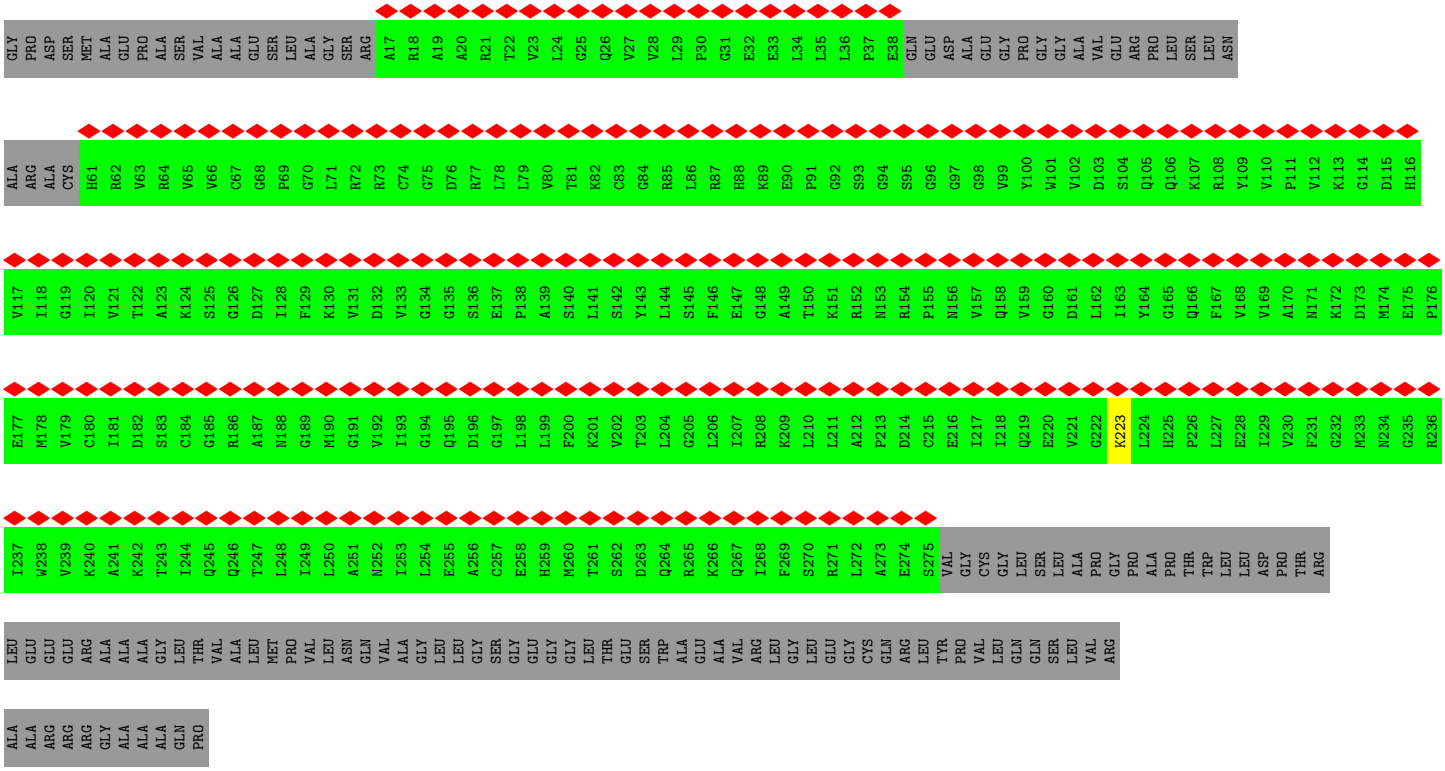






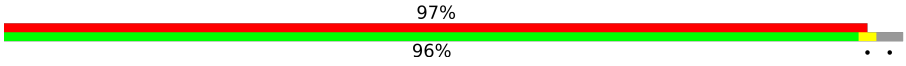
• Molecule 7: Exosome complex component RRP40,Exosome complex component MTR3

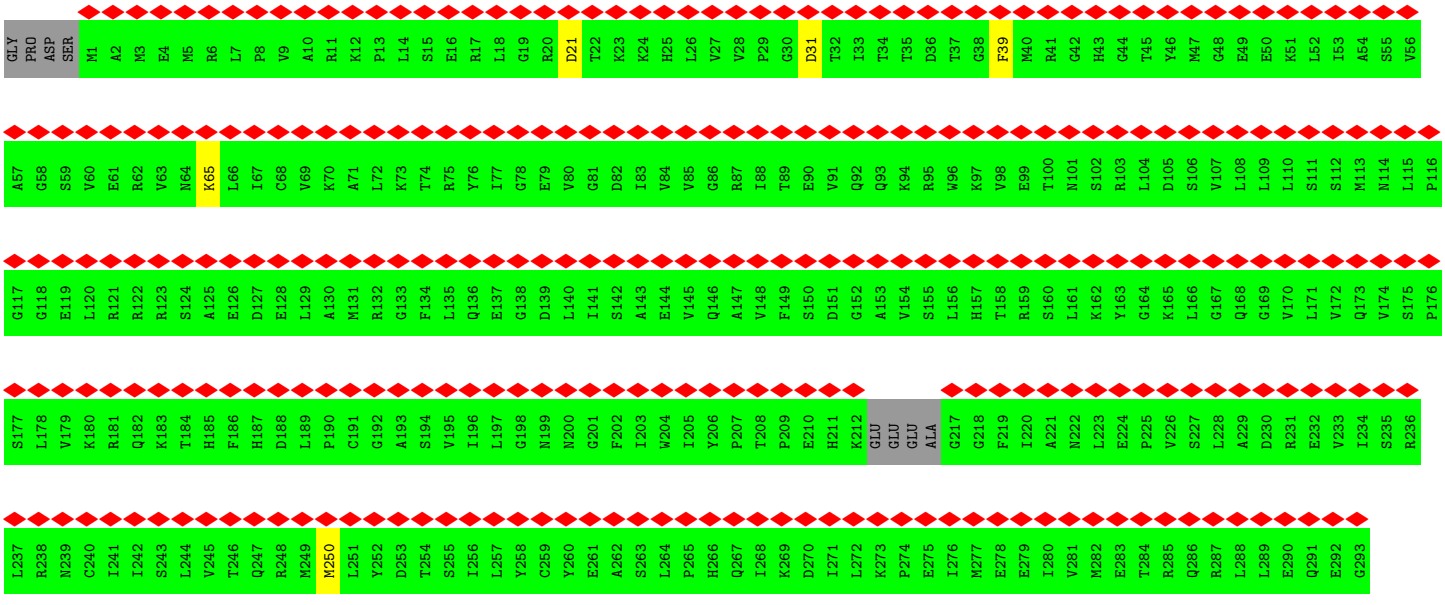
Chain H:



• Molecule 8: Exosome complex component RRP4

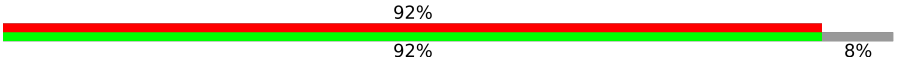
Chain I:

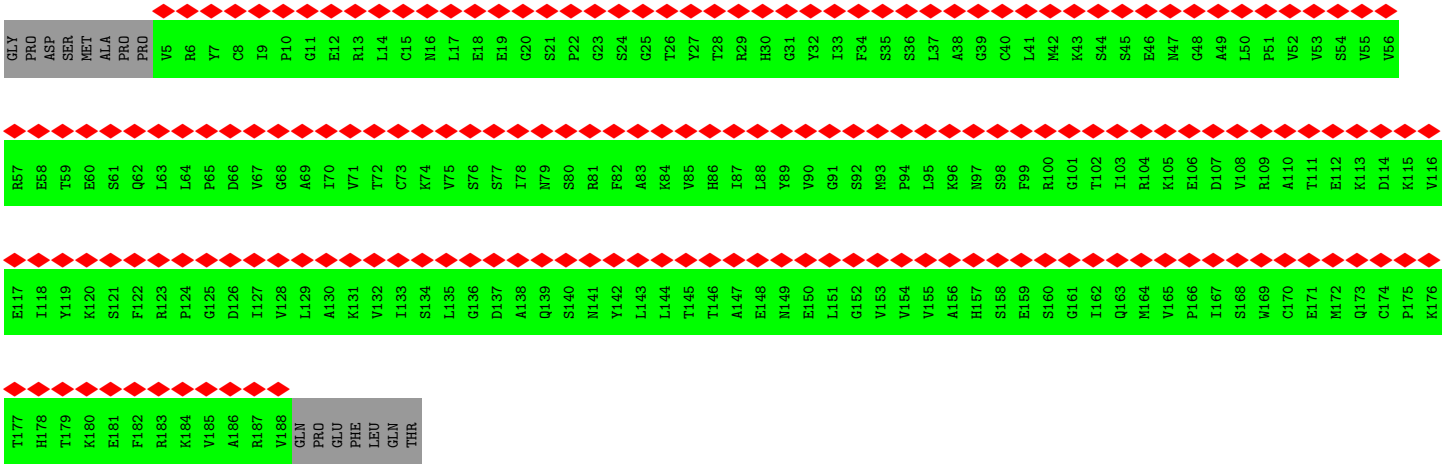




• Molecule 9: Exosome complex component CSL4

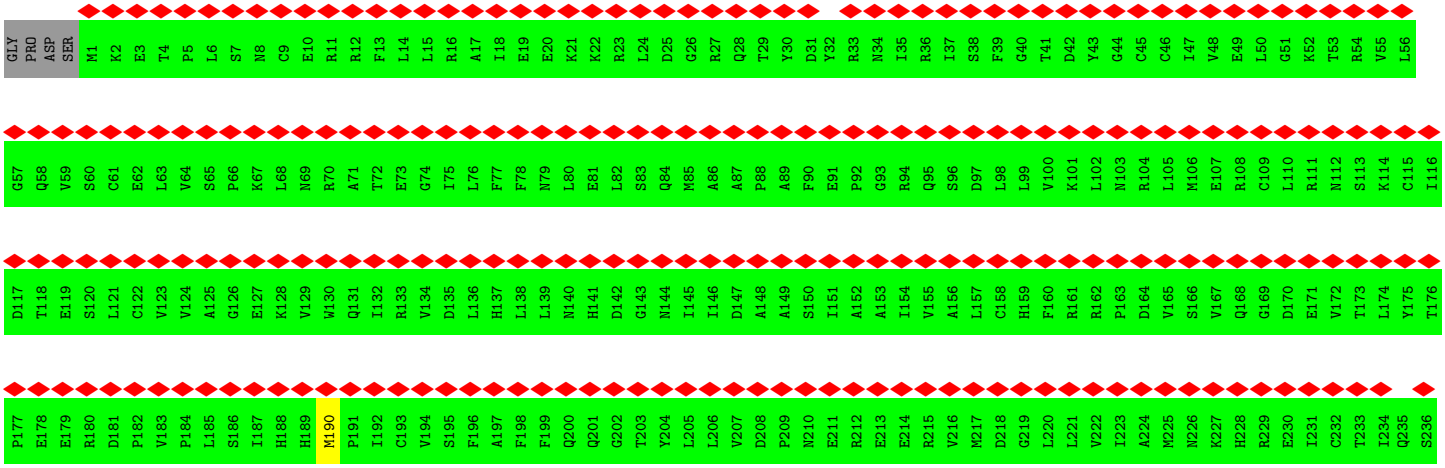
Chain J:





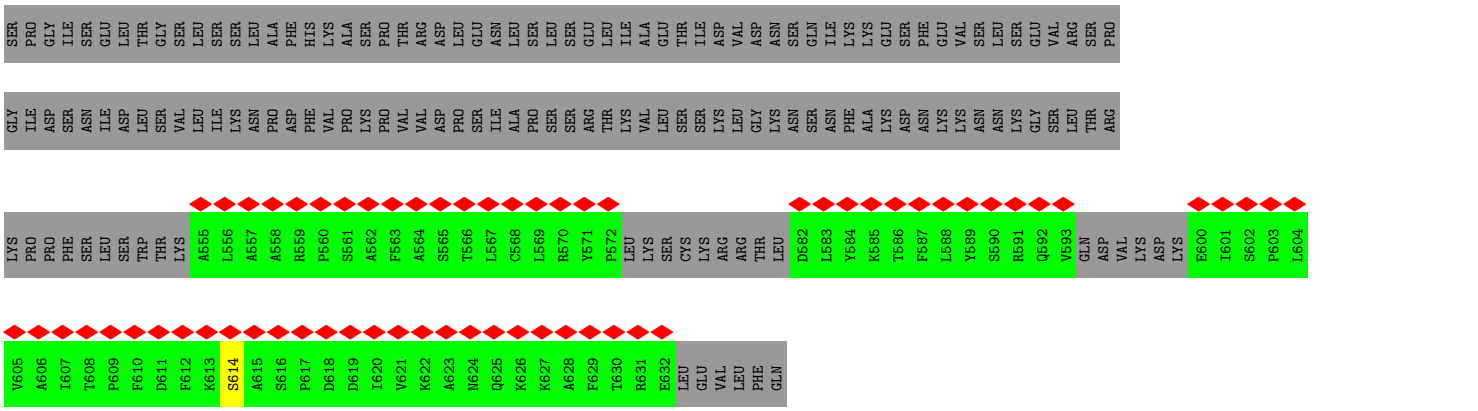
• Molecule 10: Exosome complex component RRP45

Chain K:

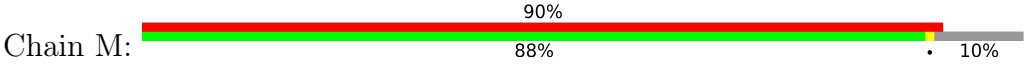


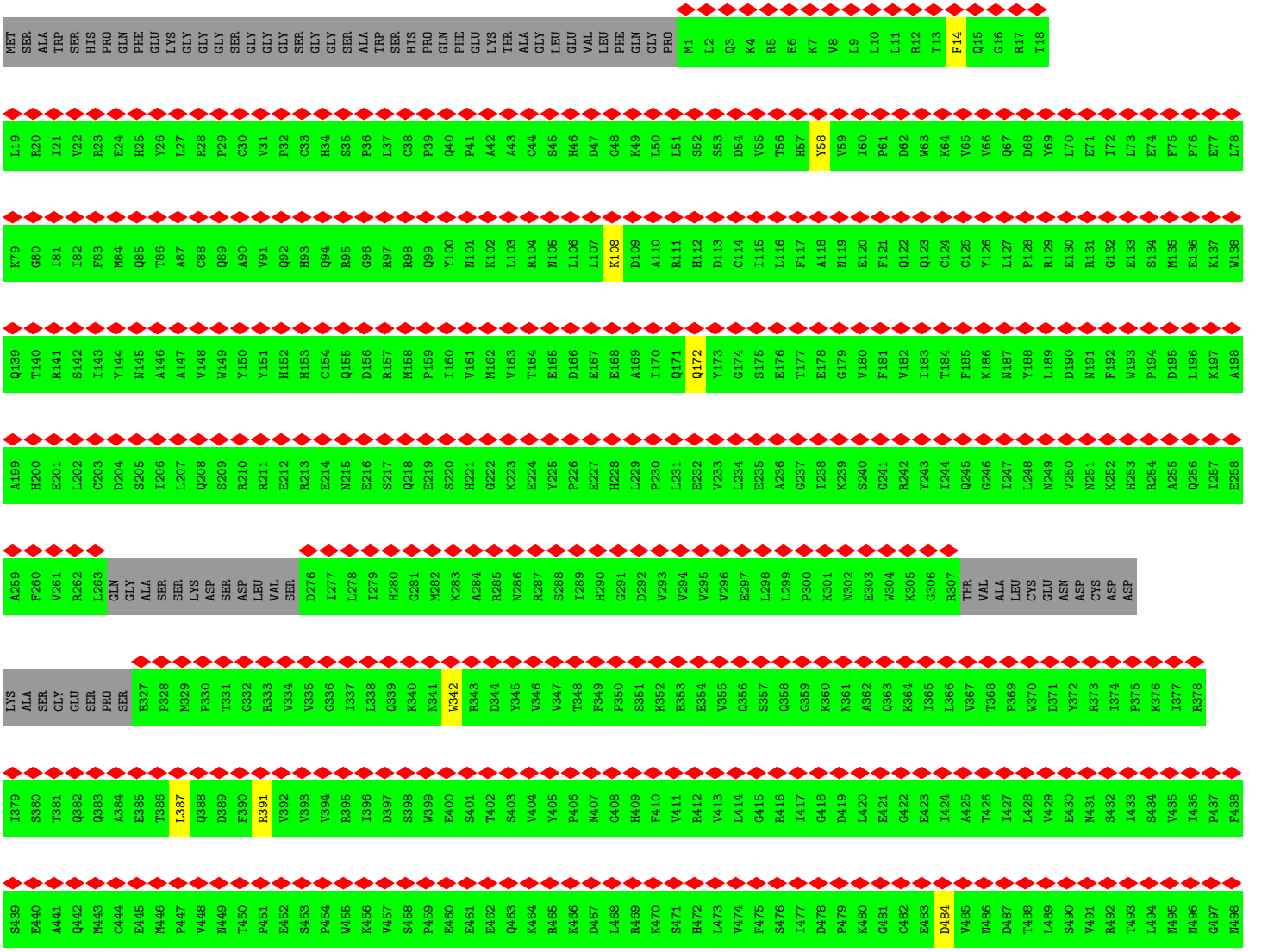
• Molecule 11: Isoform 2 of HBS1-like protein

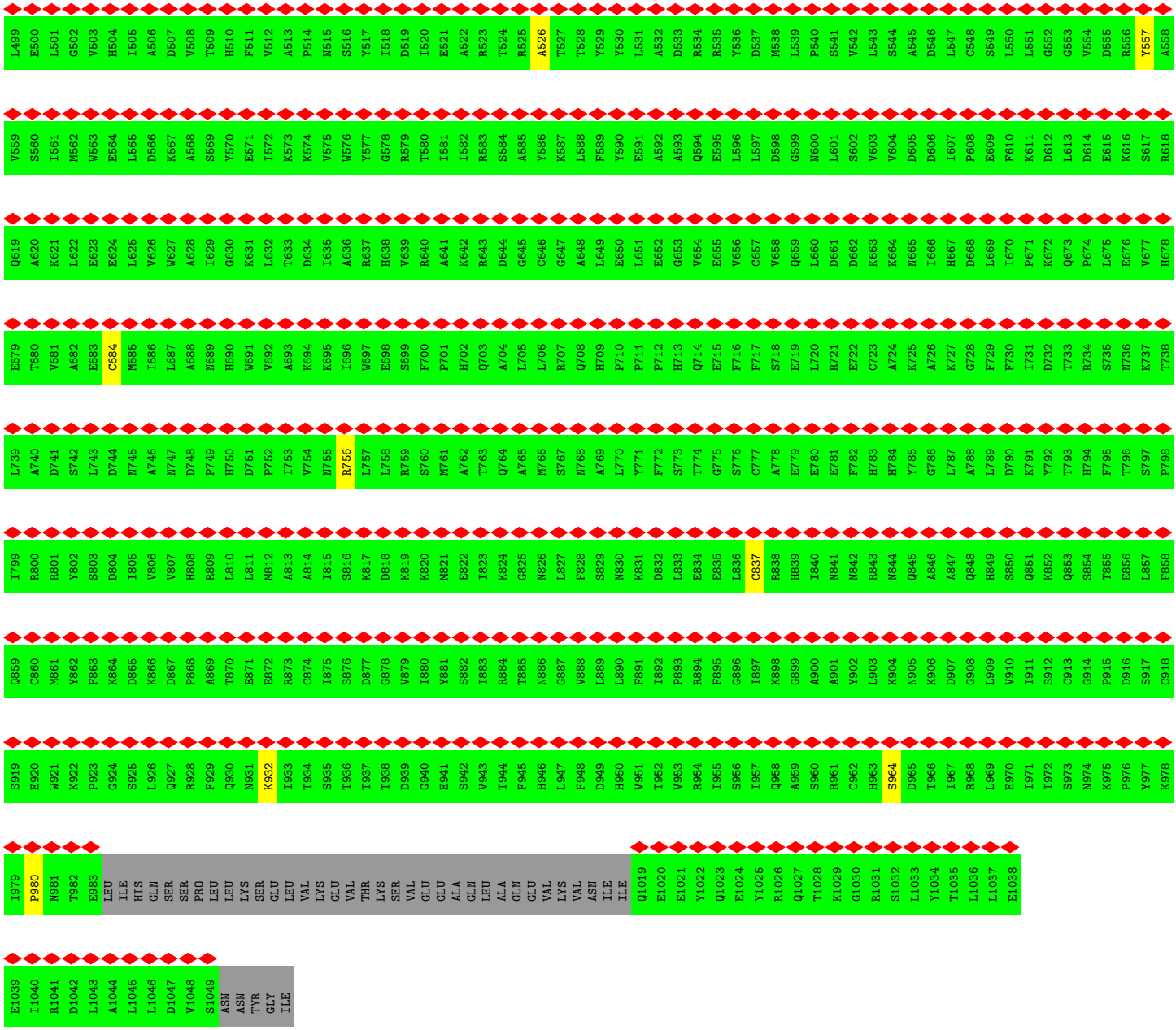
Chain E:



• Molecule 12: DIS3-like exonuclease 1

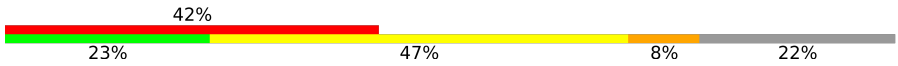


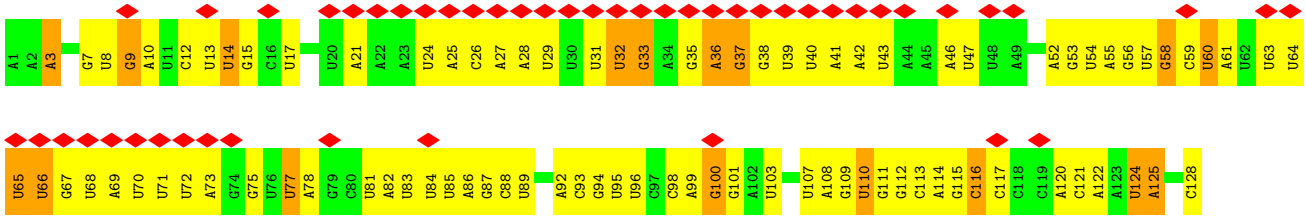


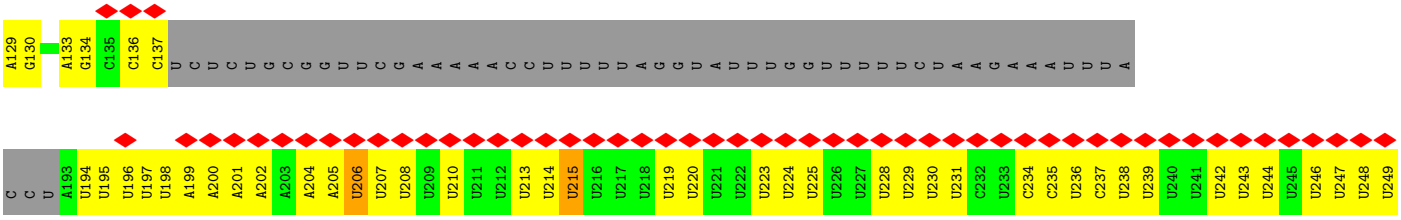


• Molecule 13: CrPV-IRES RNA

Chain X:

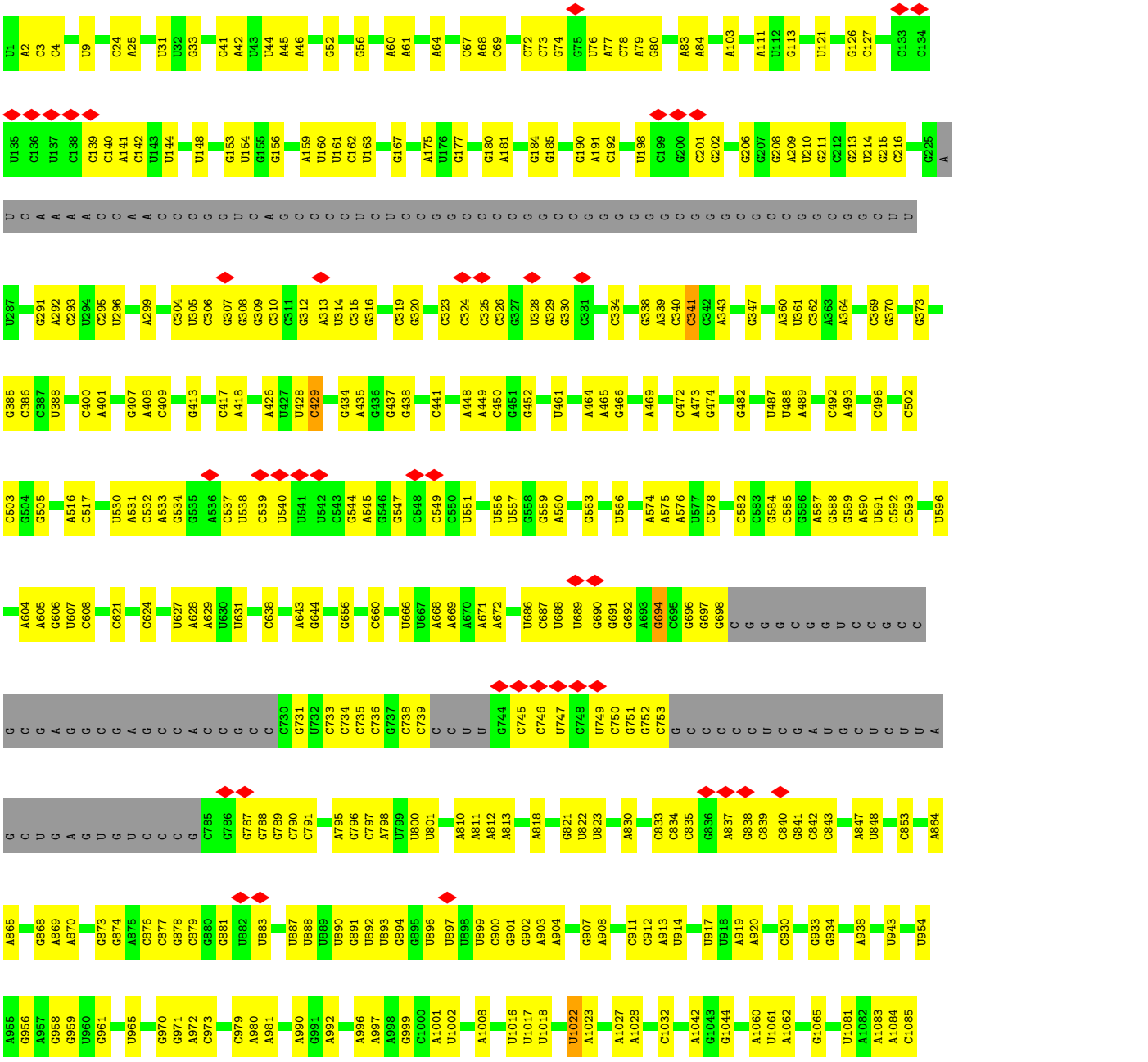


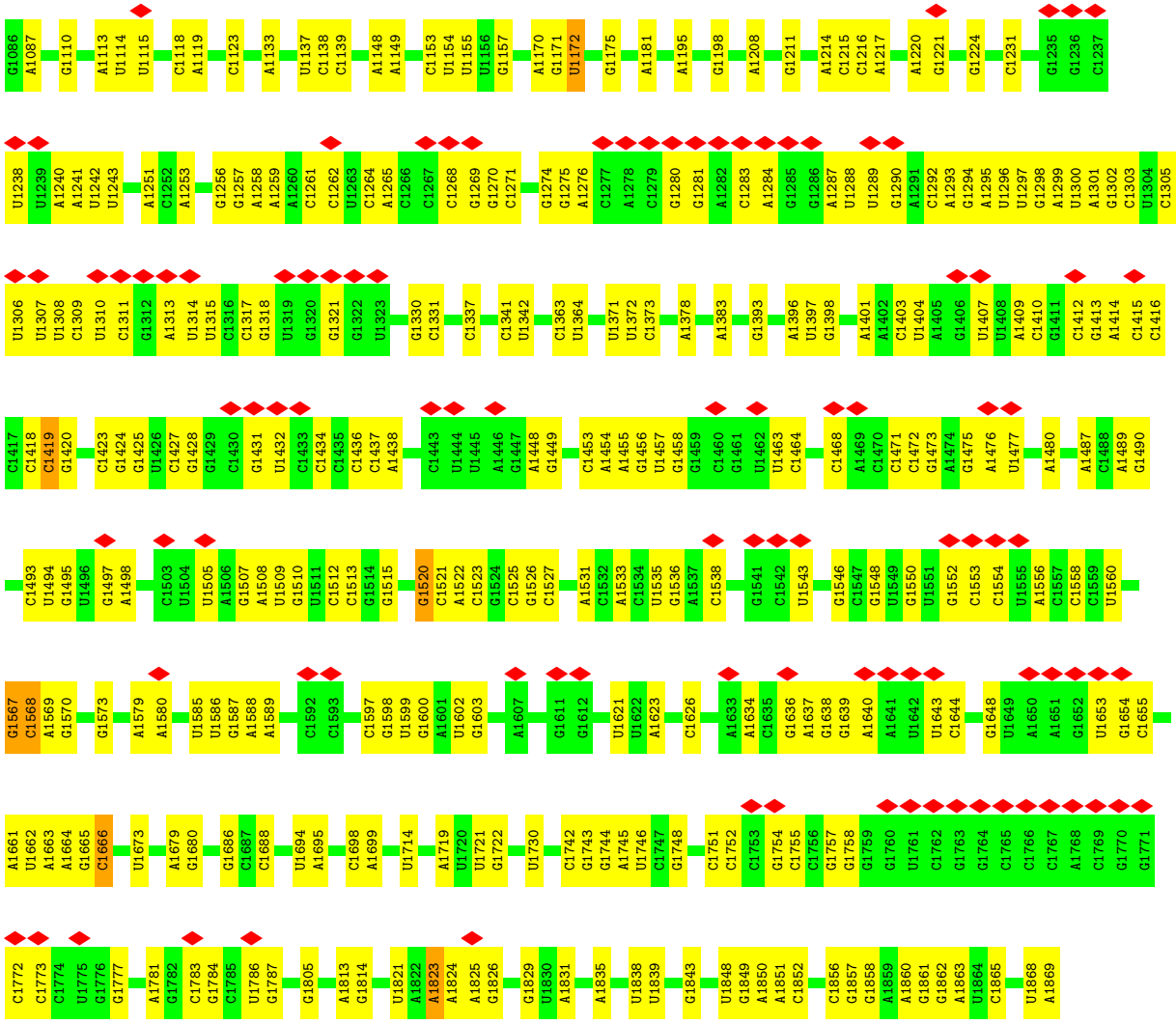




• Molecule 14: 18S ribosomal RNA

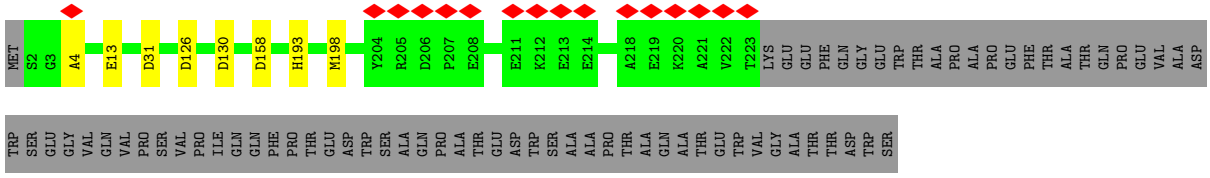
Chain S2:





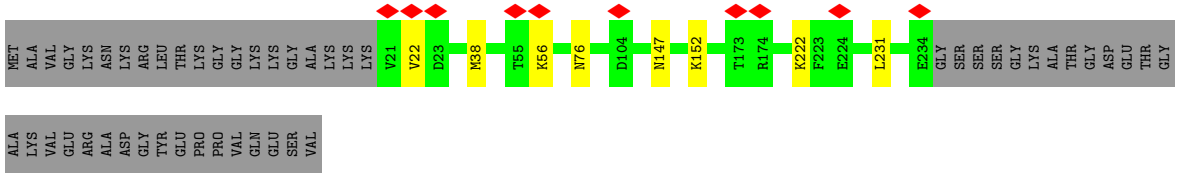
• Molecule 15: 40S ribosomal protein SA

Chain SA:



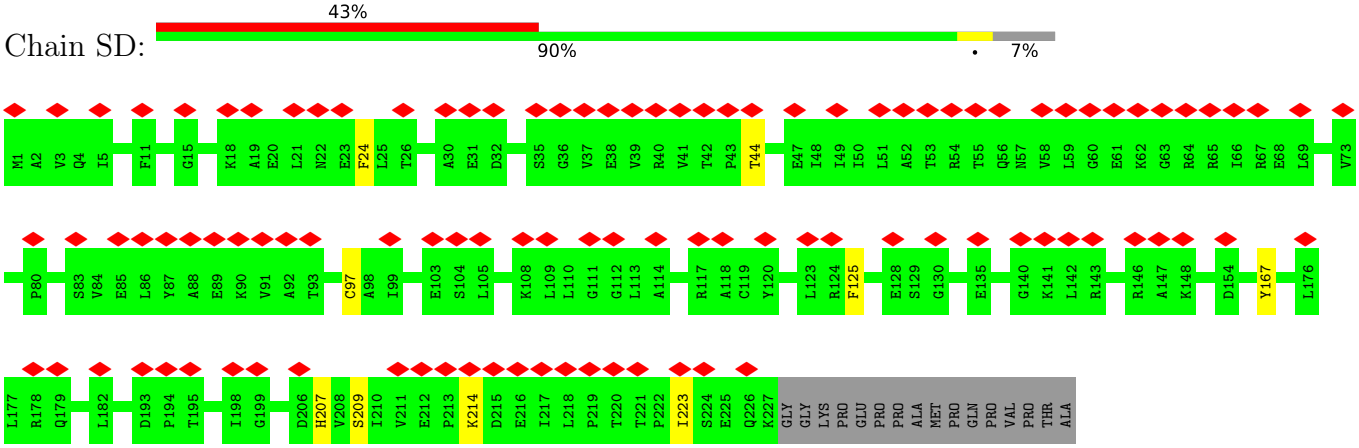
• Molecule 16: 40S ribosomal protein S3a

Chain SB:



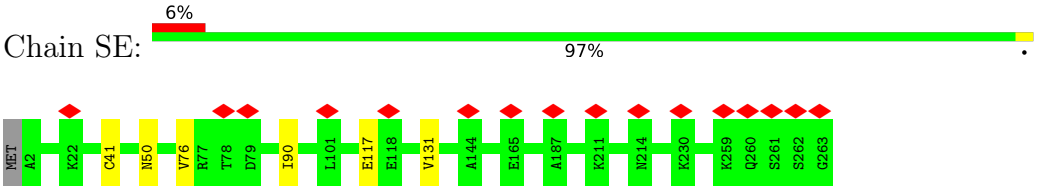
• Molecule 17: 40S ribosomal protein S3

Chain SD:



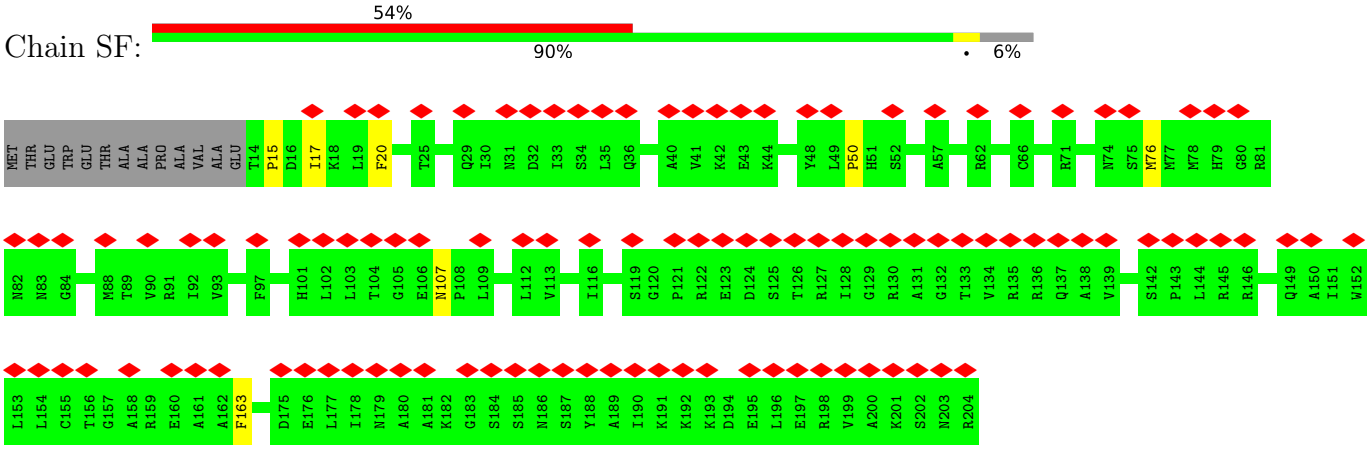
• Molecule 18: 40S ribosomal protein S4, X isoform

Chain SE:



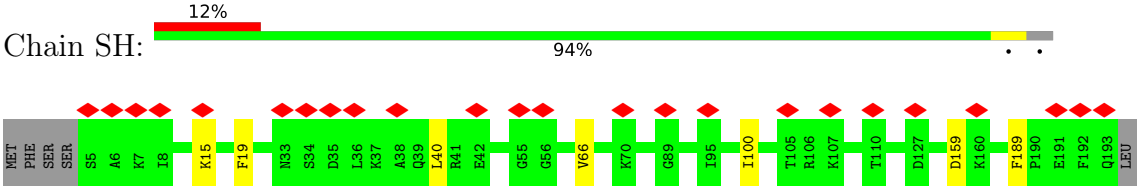
• Molecule 19: 40S ribosomal protein S5

Chain SF:



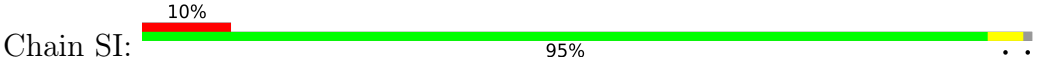
• Molecule 20: 40S ribosomal protein S7

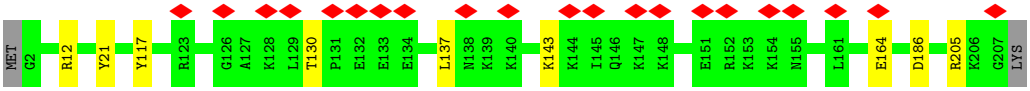
Chain SH:



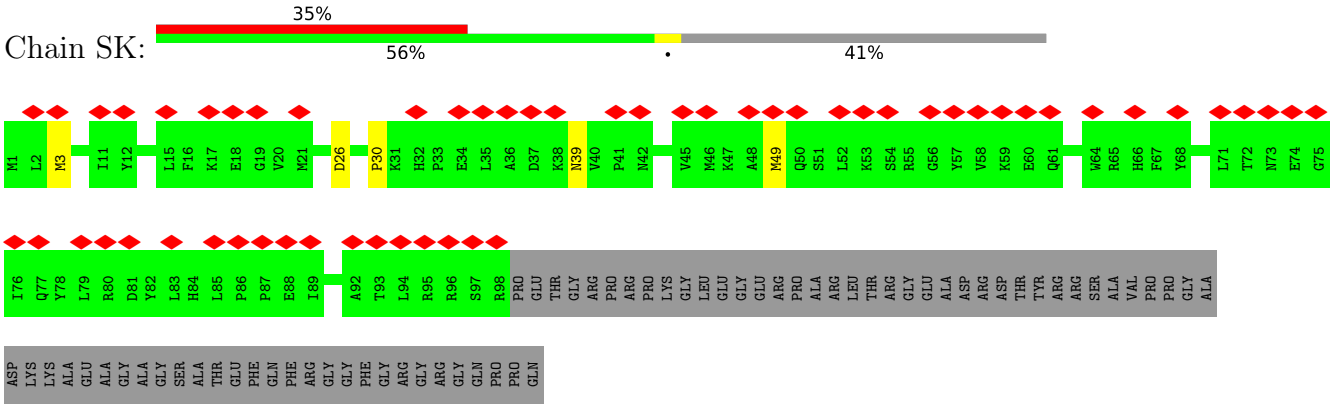
• Molecule 21: 40S ribosomal protein S8

Chain SI:

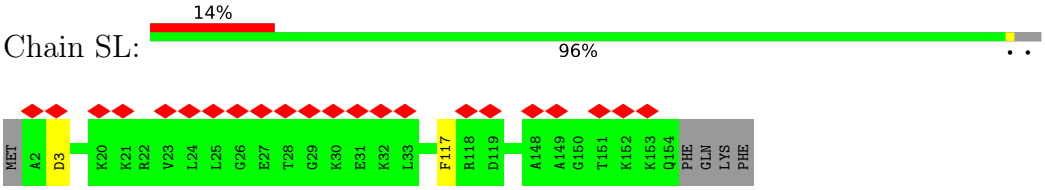




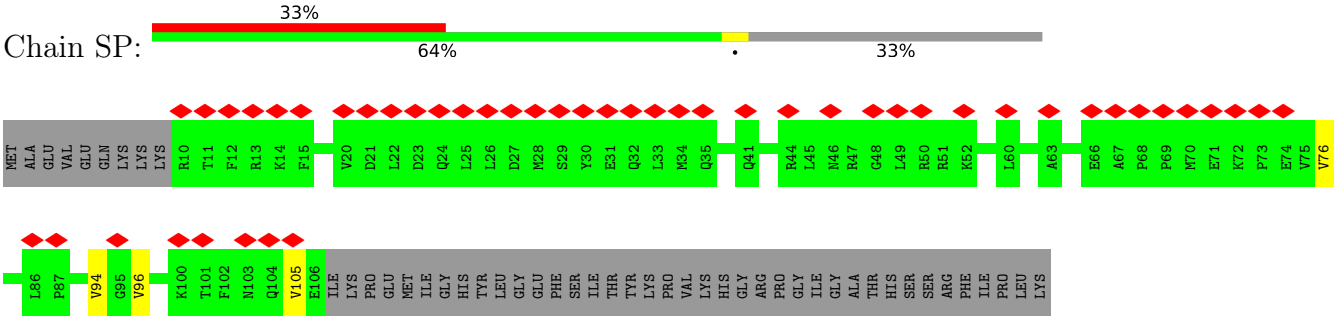
• Molecule 22: 40S ribosomal protein S10



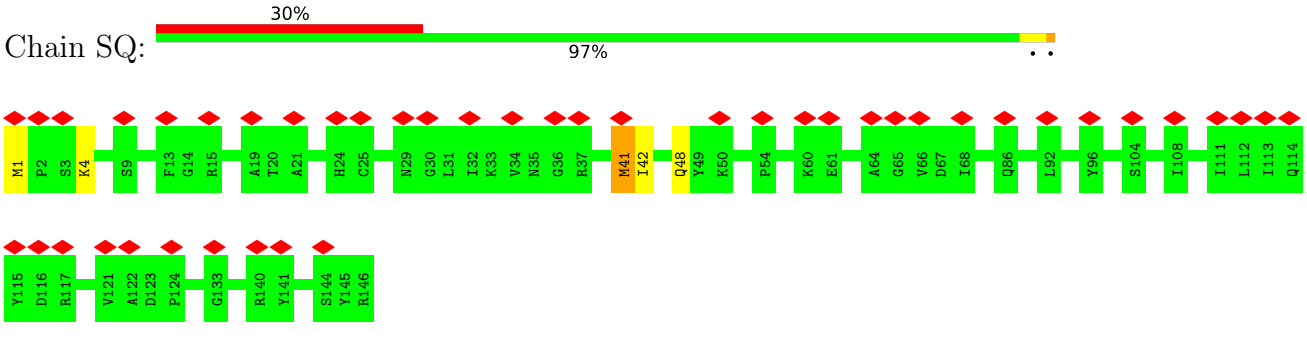
• Molecule 23: 40S ribosomal protein S11



• Molecule 24: 40S ribosomal protein S15

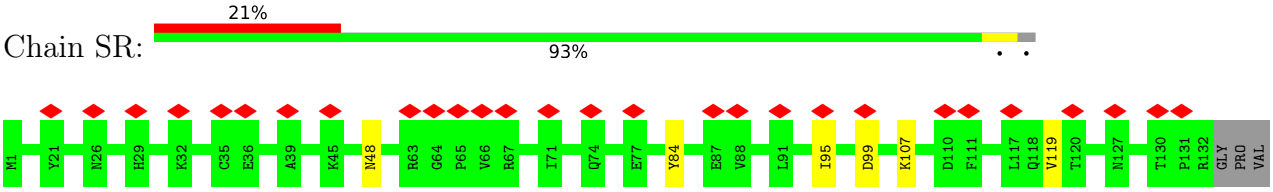


• Molecule 25: 40S ribosomal protein S16



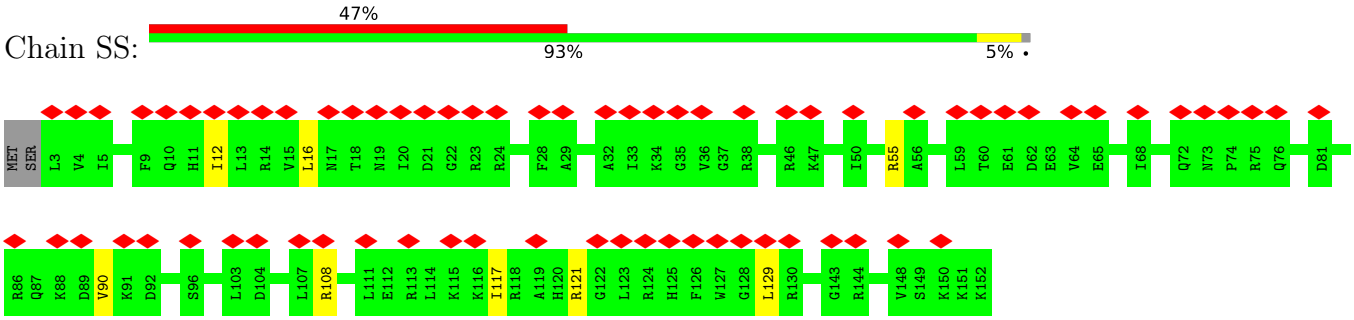
• Molecule 26: 40S ribosomal protein S17

Chain SR:



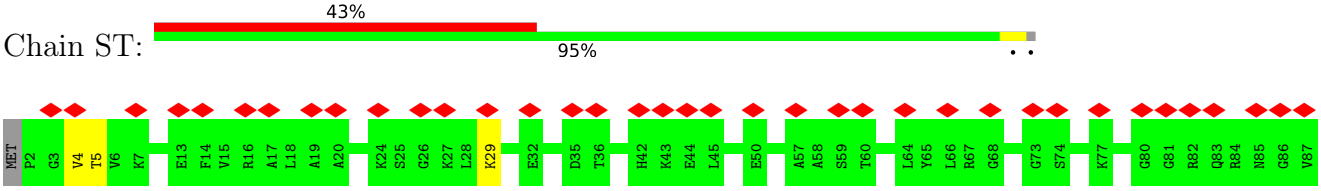
• Molecule 27: 40S ribosomal protein S18

Chain SS:



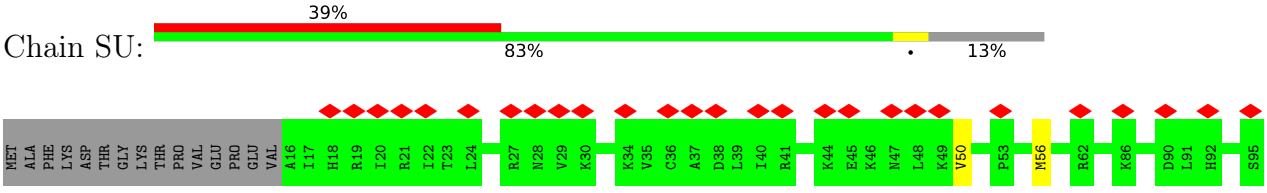
• Molecule 28: 40S ribosomal protein S19

Chain ST:



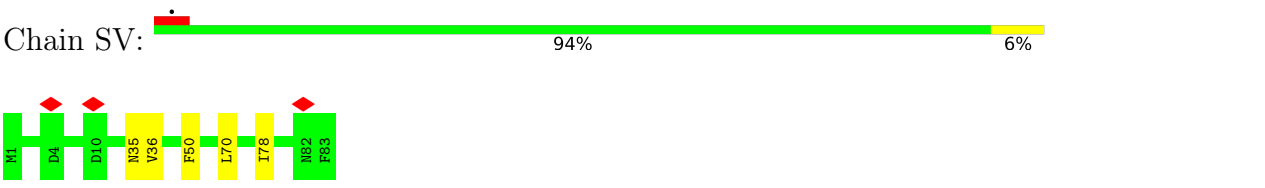
• Molecule 29: 40S ribosomal protein S20

Chain SU:



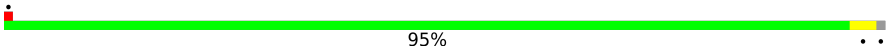
• Molecule 30: 40S ribosomal protein S21

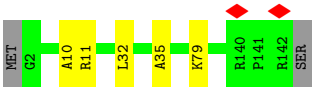
Chain SV:



• Molecule 31: 40S ribosomal protein S23

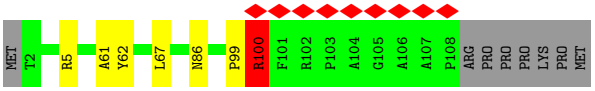
Chain SX:





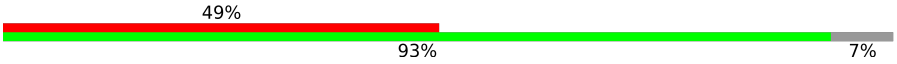
• Molecule 32: 40S ribosomal protein S26

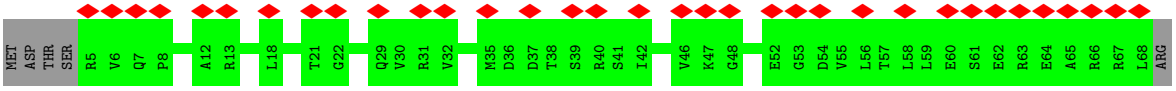
Chain Sa:



• Molecule 33: 40S ribosomal protein S28

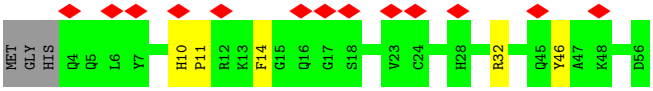
Chain Sc:





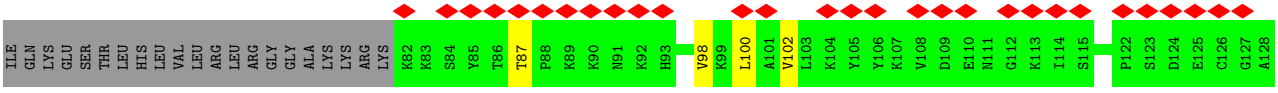
• Molecule 34: 40S ribosomal protein S29

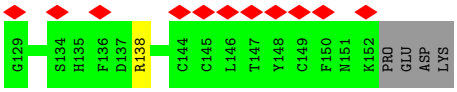
Chain Sd:



• Molecule 35: Ubiquitin

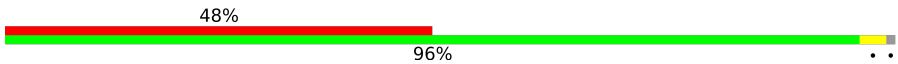
Chain Sf:

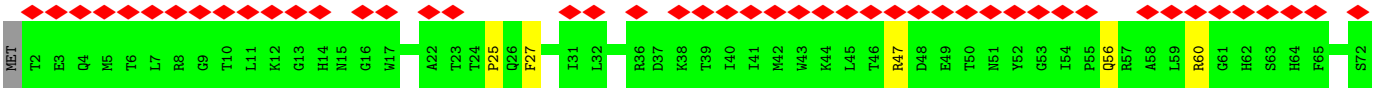


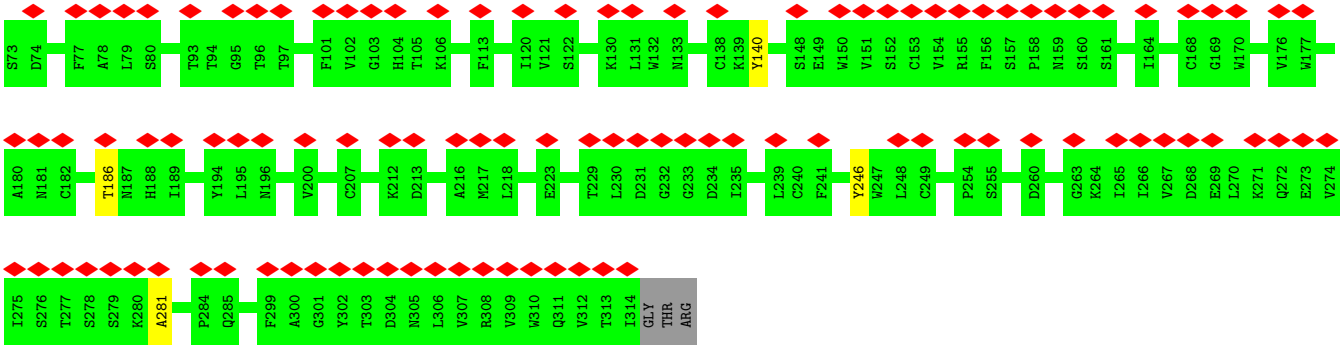


• Molecule 36: Receptor of activated protein C kinase 1

Chain Sg:

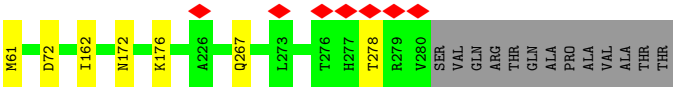






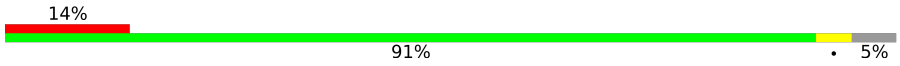
• Molecule 37: 40S ribosomal protein S2

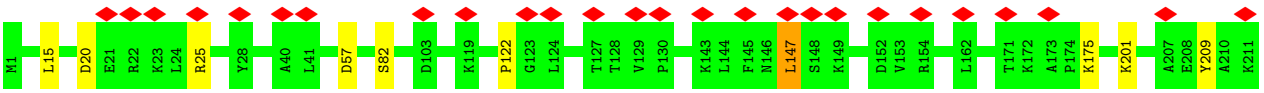
Chain SC:

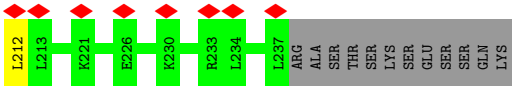


• Molecule 38: 40S ribosomal protein S6

Chain SG:

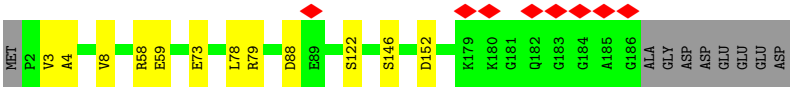






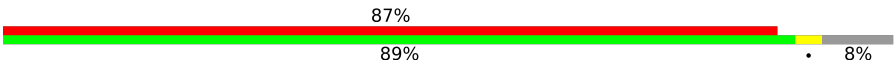
• Molecule 39: 40S ribosomal protein S9

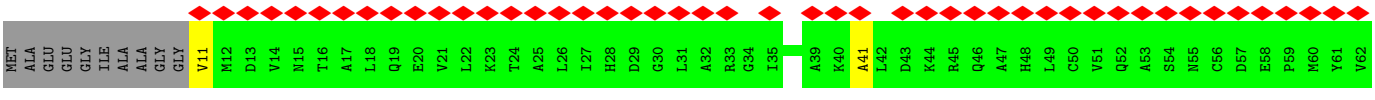
Chain SJ:

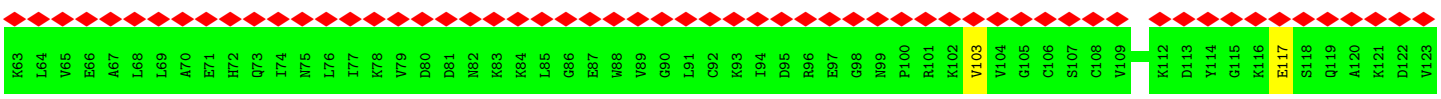


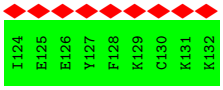
• Molecule 40: 40S ribosomal protein S12

Chain SM:



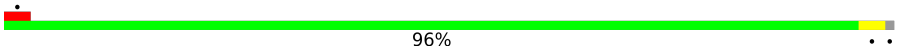


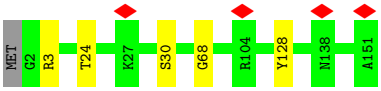




• Molecule 41: 40S ribosomal protein S13

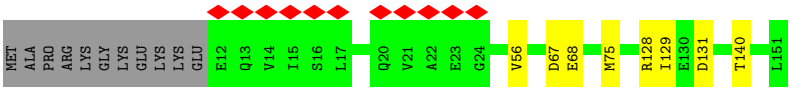
Chain SN:





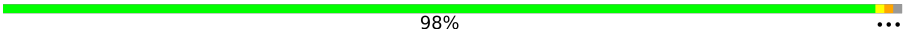
• Molecule 42: 40S ribosomal protein S14

Chain SO:



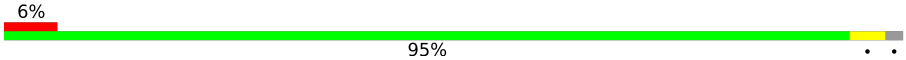
• Molecule 43: 40S ribosomal protein S15a

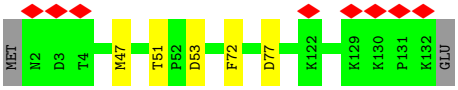
Chain SW:



• Molecule 44: 40S ribosomal protein S24

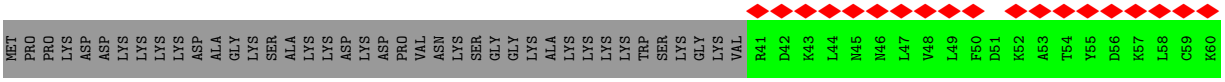
Chain SY:

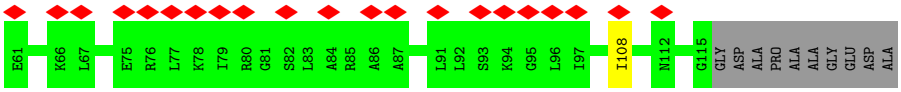




• Molecule 45: 40S ribosomal protein S25

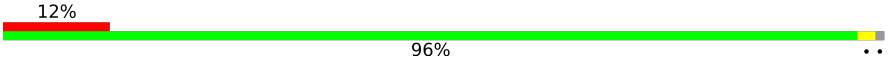
Chain SZ:

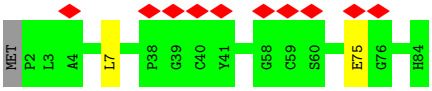




• Molecule 46: 40S ribosomal protein S27

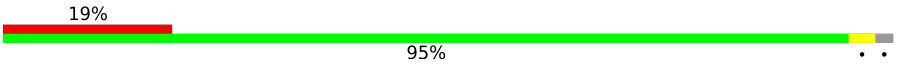
Chain Sb:

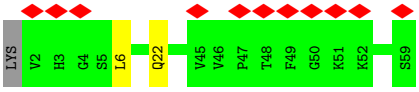




• Molecule 47: 40S ribosomal protein S30

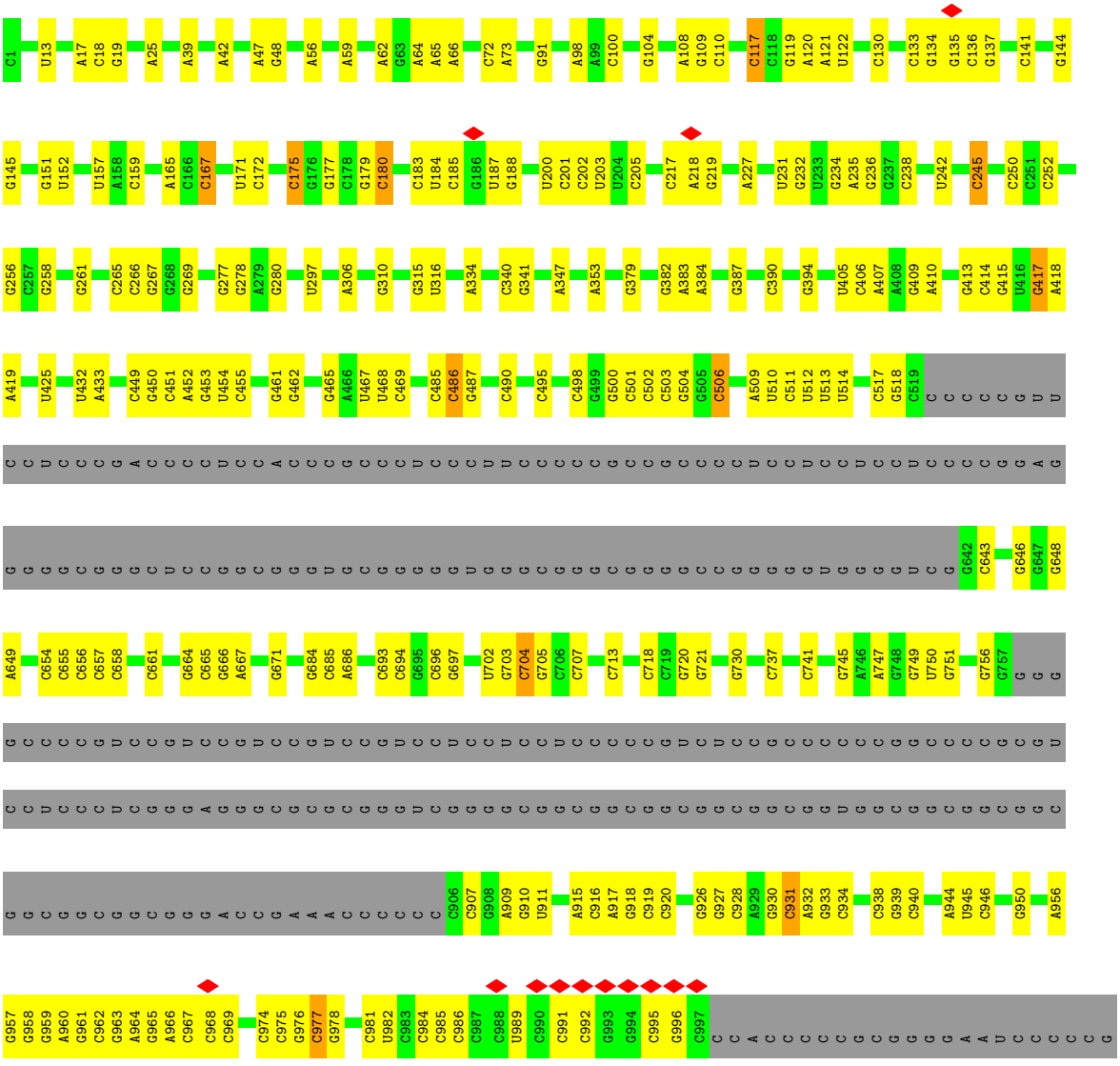
Chain Se:

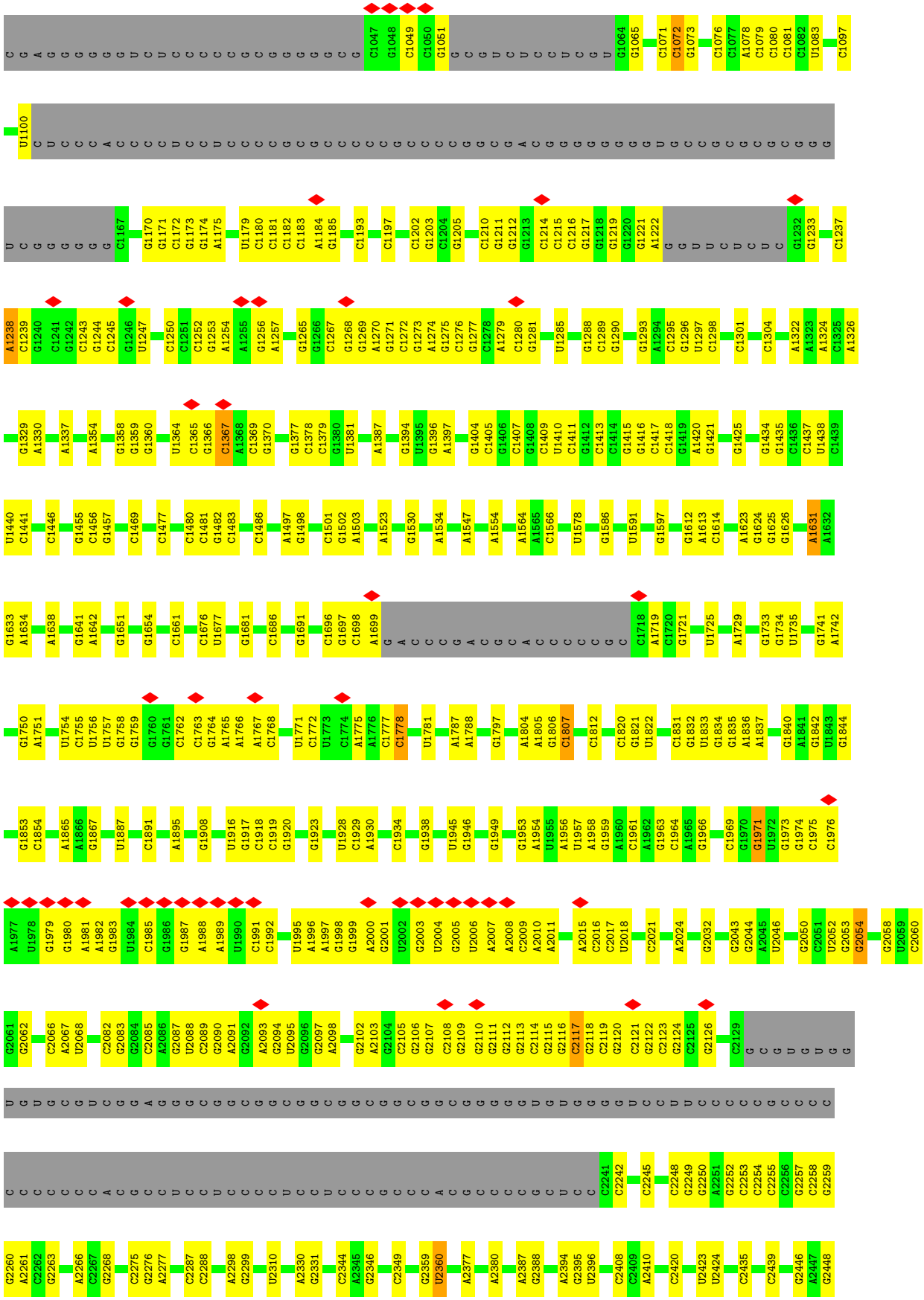


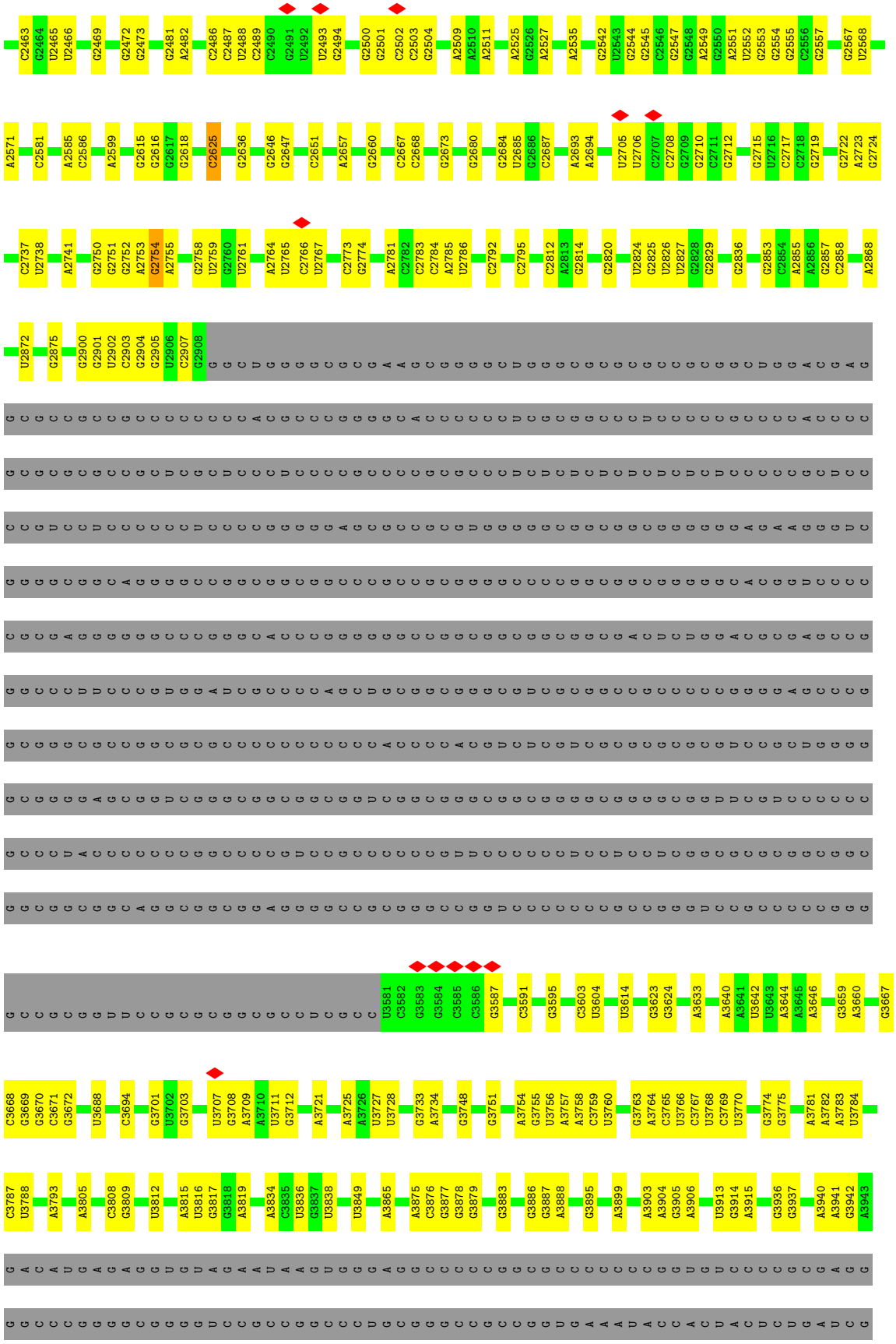


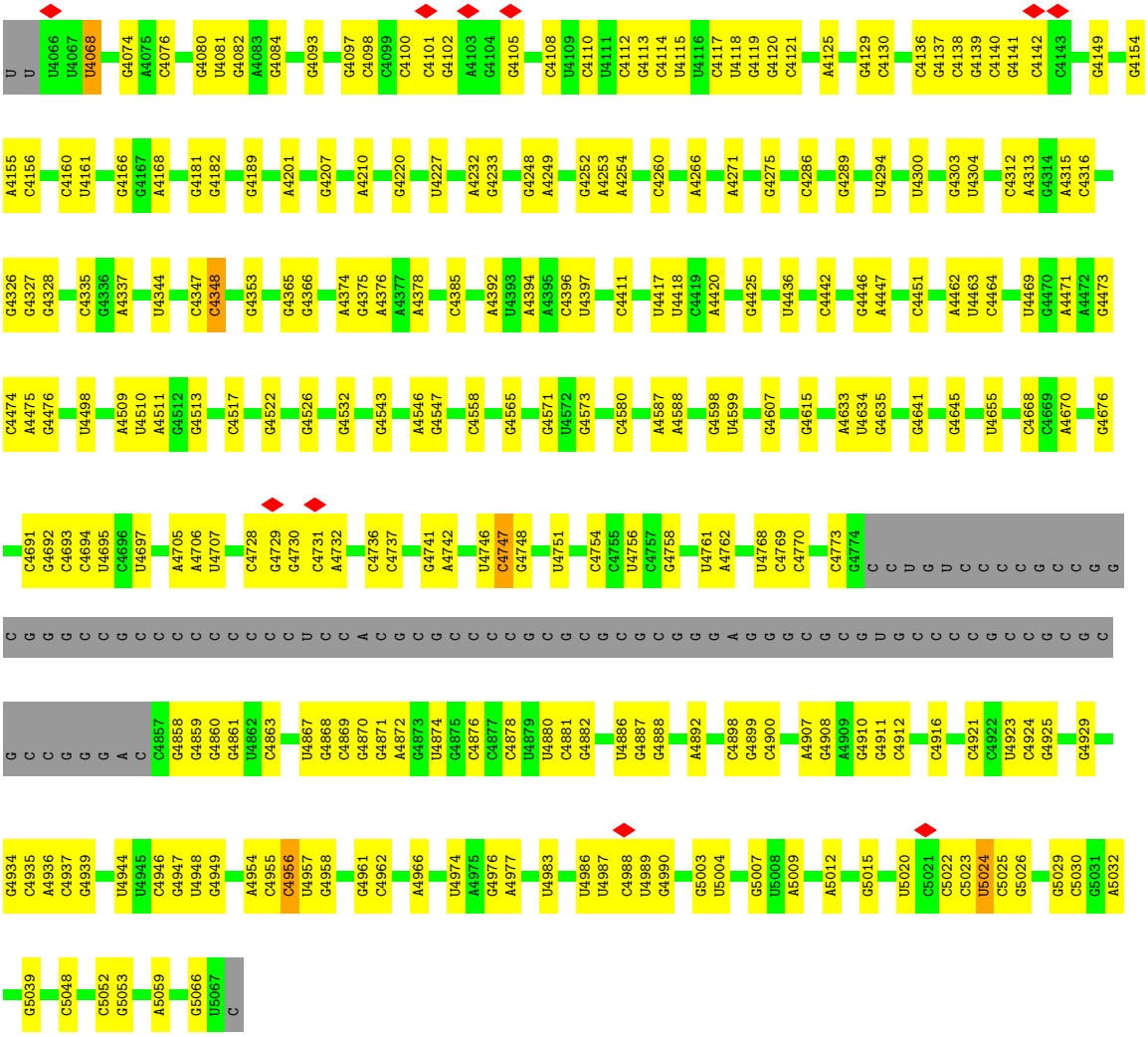
• Molecule 48: 28S ribosomal RNA

Chain L5:







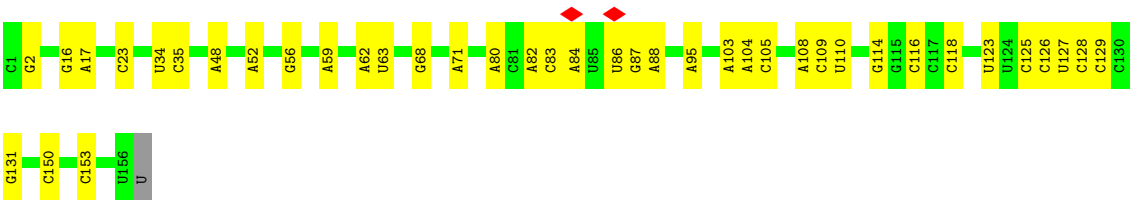


• Molecule 49: 5S ribosomal RNA

Chain L7:

• Molecule 50: 5.8S ribosomal RNA

Chain L8:

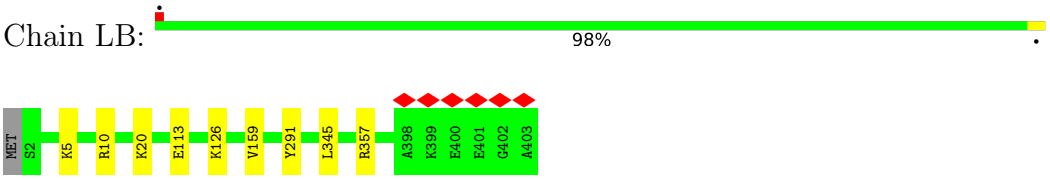


• Molecule 51: 60S ribosomal protein L8

Chain LA:

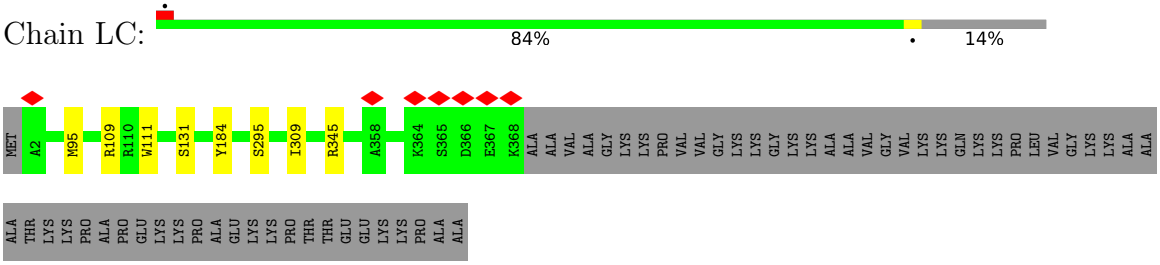
• Molecule 52: 60S ribosomal protein L3

Chain LB:



• Molecule 53: 60S ribosomal protein L4

Chain LC:

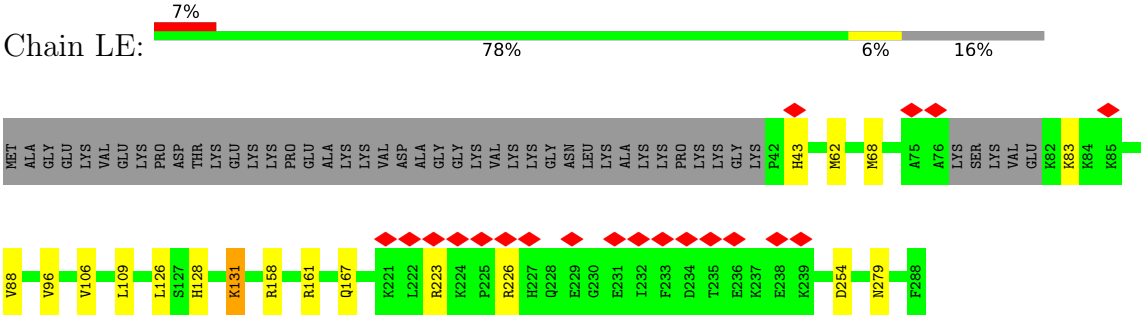


• Molecule 54: 60S ribosomal protein L5

Chain LD:

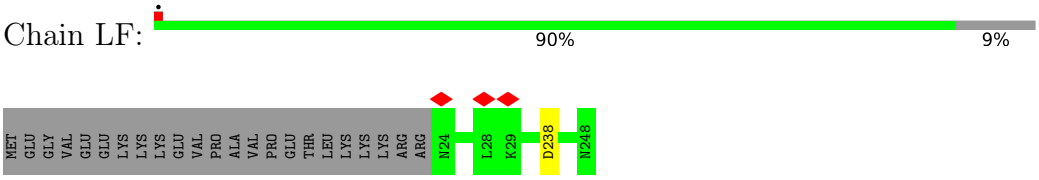
• Molecule 55: Large ribosomal subunit protein eL6

Chain LE:



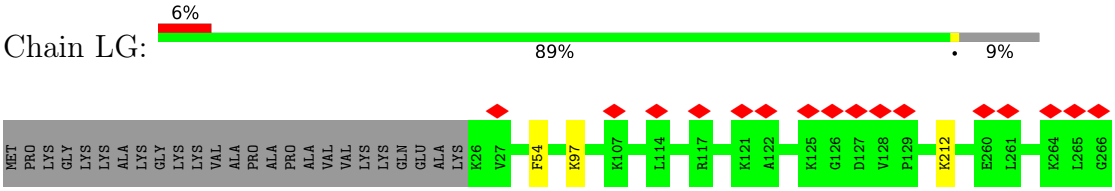
• Molecule 56: Large ribosomal subunit protein uL30

Chain LF:



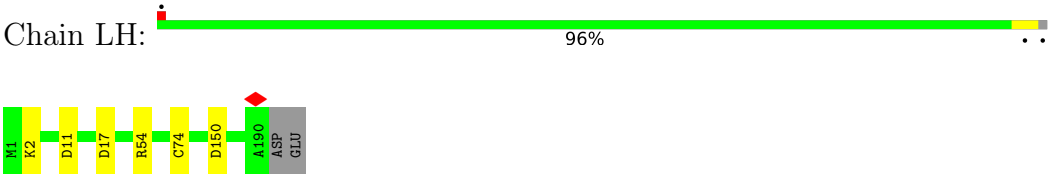
• Molecule 57: 60S ribosomal protein L7a

Chain LG:



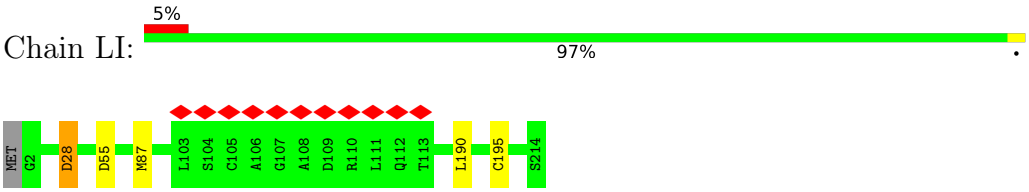
• Molecule 58: 60S ribosomal protein L9

Chain LH:



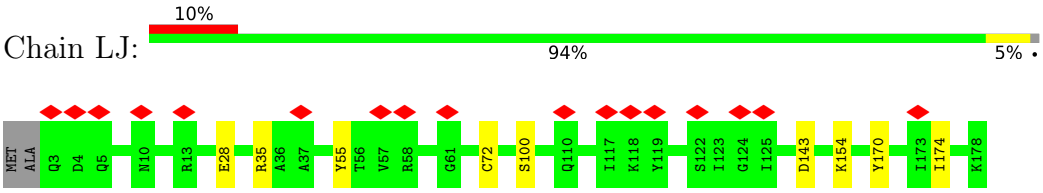
• Molecule 59: Ribosomal protein uL16-like

Chain LI:



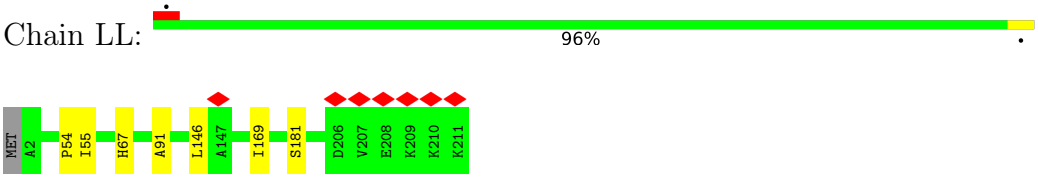
• Molecule 60: 60S ribosomal protein L11

Chain LJ:



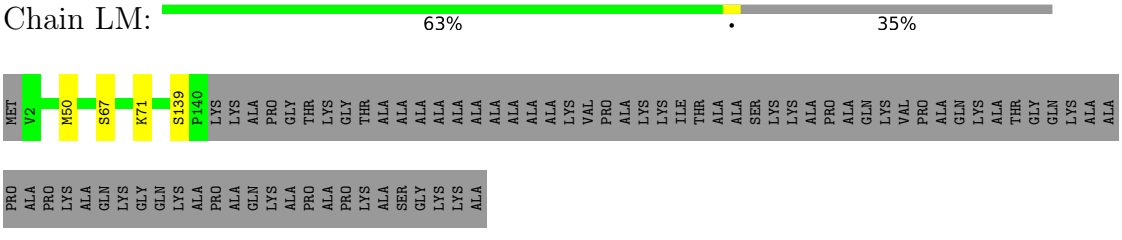
• Molecule 61: 60S ribosomal protein L13

Chain LL:



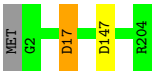
• Molecule 62: 60S ribosomal protein L14

Chain LM:



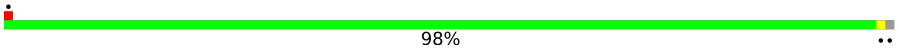
• Molecule 63: 60S ribosomal protein L15

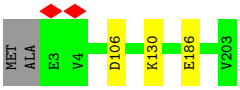
Chain LN:



• Molecule 64: 60S ribosomal protein L13a

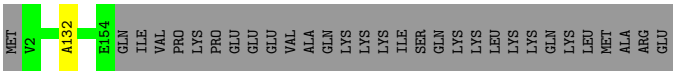
Chain LO:





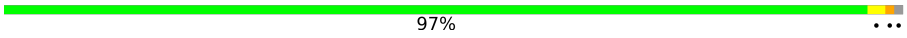
• Molecule 65: 60S ribosomal protein L17

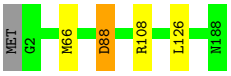
Chain LP:



• Molecule 66: 60S ribosomal protein L18

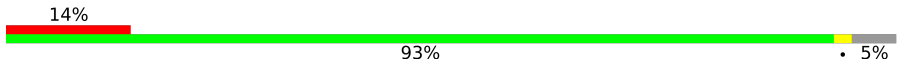
Chain LQ:

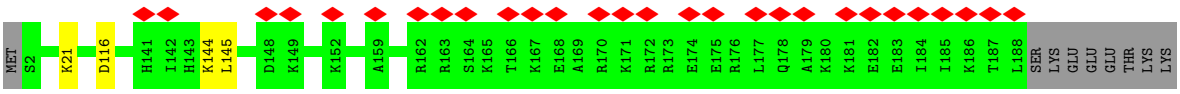




• Molecule 67: 60S ribosomal protein L19

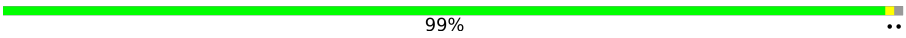
Chain LR:

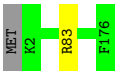




• Molecule 68: 60S ribosomal protein L18a

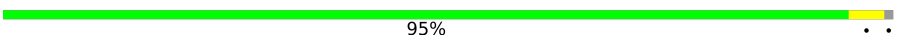
Chain LS:

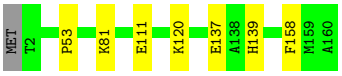




• Molecule 69: 60S ribosomal protein L21

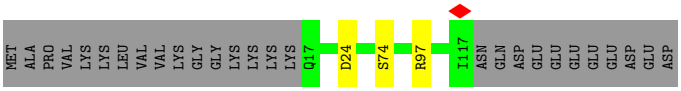
Chain LT:





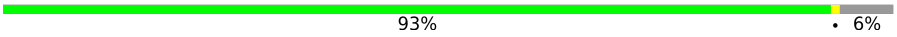
• Molecule 70: 60S ribosomal protein L22

Chain LU:



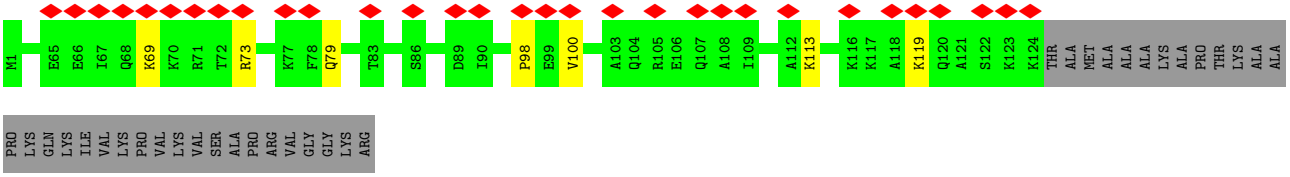
• Molecule 71: 60S ribosomal protein L23

Chain LV:



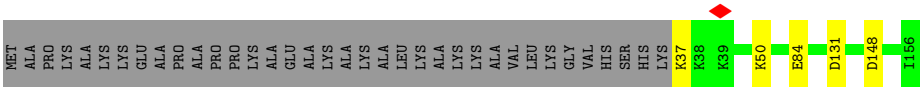
• Molecule 72: 60S ribosomal protein L24

Chain LW:



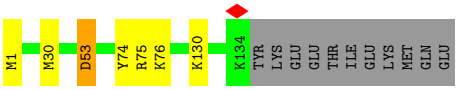
• Molecule 73: 60S ribosomal protein L23a

Chain LX:



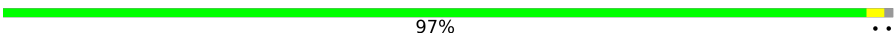
• Molecule 74: 60S ribosomal protein L26

Chain LY:



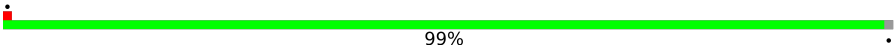
• Molecule 75: 60S ribosomal protein L27

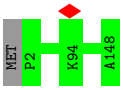
Chain LZ:



• Molecule 76: 60S ribosomal protein L27a

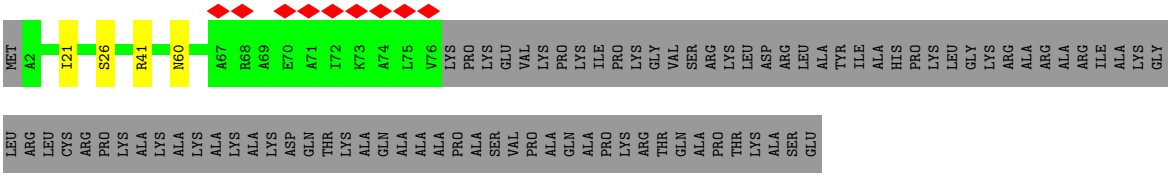
Chain La:





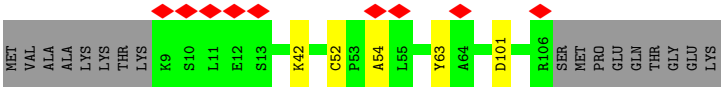
• Molecule 77: 60S ribosomal protein L29

Chain Lb:



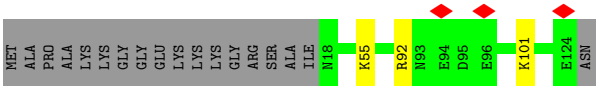
• Molecule 78: 60S ribosomal protein L30

Chain Lc:



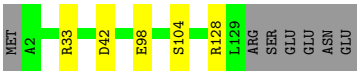
• Molecule 79: 60S ribosomal protein L31

Chain Ld:



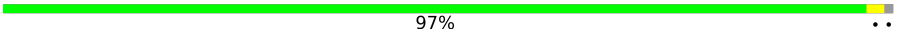
• Molecule 80: 60S ribosomal protein L32

Chain Le:



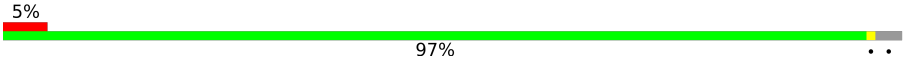
• Molecule 81: 60S ribosomal protein L35a

Chain Lf:



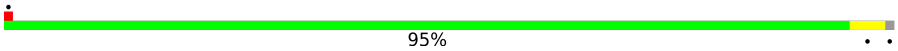
• Molecule 82: 60S ribosomal protein L34

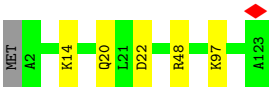
Chain Lg:



• Molecule 83: 60S ribosomal protein L35

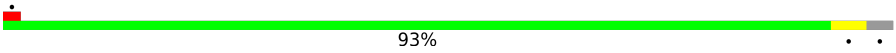
Chain Lh:

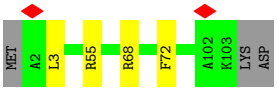




• Molecule 84: 60S ribosomal protein L36

Chain Li:



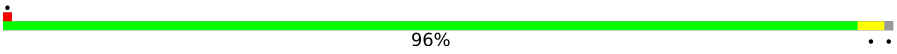


• Molecule 85: 60S ribosomal protein L37

Chain Lj:

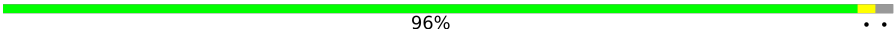
• Molecule 86: 60S ribosomal protein L38

Chain Lk:



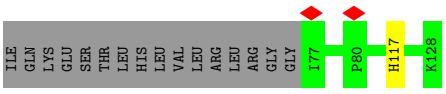
• Molecule 87: 60S ribosomal protein L39

Chain Ll:



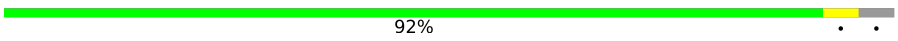
• Molecule 88: Ubiquitin-60S ribosomal protein L40

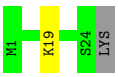
Chain Lm:



• Molecule 89: 60S ribosomal protein L41

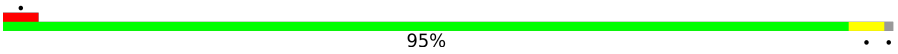
Chain Ln:

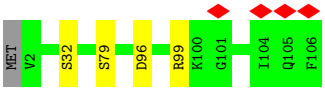




• Molecule 90: 60S ribosomal protein L36a

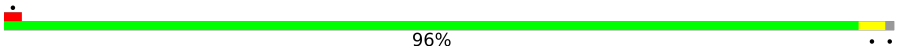
Chain Lo:

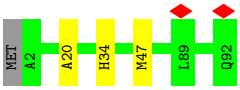




• Molecule 91: 60S ribosomal protein L37a

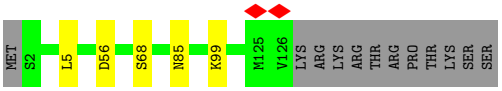
Chain Lp:





• Molecule 92: 60S ribosomal protein L28

Chain Lr:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	79353	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	64.2	Depositor
Minimum defocus (nm)	600	Depositor
Maximum defocus (nm)	2400	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.070	Depositor
Minimum map value	-0.023	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.002	Depositor
Recommended contour level	0.01	Depositor
Map size (Å)	708.19836, 708.19836, 708.19836	wwPDB
Map dimensions	832, 832, 832	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.8512, 0.8512, 0.8512	Depositor

5 Model quality

5.1 Standard geometry

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

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|$ >5	RMSZ	#$\|Z\|$ >5
1	A	0.26	0/7577	0.55	2/10257 (0.0%)
2	L	0.32	1/1843 (0.1%)	0.54	0/2492
3	N	0.73	2/2053 (0.1%)	0.81	5/2786 (0.2%)
4	O	0.25	0/1586	0.52	0/2145
5	F	0.24	0/2225	0.52	1/3007 (0.0%)
6	G	0.26	0/1881	0.59	1/2551 (0.0%)
7	H	0.26	0/1837	0.55	1/2474 (0.0%)
8	I	0.24	0/2296	0.54	0/3092
9	J	0.25	0/1438	0.54	0/1942
10	K	0.25	0/2714	0.51	0/3665
11	E	0.25	0/509	0.49	0/687
12	M	0.32	2/8139 (0.0%)	0.56	5/11009 (0.0%)
13	X	0.53	2/4477 (0.0%)	1.19	38/6954 (0.5%)
14	S2	0.25	0/41243	0.84	37/64257 (0.1%)
15	SA	0.27	0/1784	0.56	1/2424 (0.0%)
16	SB	0.28	0/1765	0.56	0/2362
17	SD	0.30	0/1793	0.60	0/2414
18	SE	0.26	0/2118	0.57	0/2849
19	SF	0.28	0/1531	0.60	1/2059 (0.0%)
20	SH	0.28	0/1544	0.60	1/2068 (0.0%)
21	SI	0.28	0/1715	0.59	0/2287
22	SK	0.36	0/851	0.74	2/1147 (0.2%)
23	SL	0.28	0/1268	0.59	0/1696
24	SP	0.28	0/815	0.72	0/1087
25	SQ	0.27	0/1177	0.62	1/1575 (0.1%)
26	SR	0.27	0/1086	0.67	2/1457 (0.1%)
27	SS	0.31	0/1253	0.59	0/1676
28	ST	0.26	0/1131	0.59	1/1515 (0.1%)
29	SU	0.26	0/832	0.63	0/1117
30	SV	0.27	0/643	0.57	0/860
31	SX	0.26	0/1116	0.54	0/1490
32	Sa	0.32	0/863	0.65	1/1159 (0.1%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
33	Sc	0.25	0/508	0.65	0/680
34	Sd	1.45	3/455 (0.7%)	1.45	6/603 (1.0%)
35	Sf	0.26	0/593	0.56	0/786
36	Sg	0.33	1/2493 (0.0%)	0.67	3/3394 (0.1%)
37	SC	0.28	0/1762	0.55	0/2381
38	SG	0.26	0/1946	0.63	1/2590 (0.0%)
39	SJ	0.27	0/1550	0.62	2/2069 (0.1%)
40	SM	0.39	1/962 (0.1%)	0.55	0/1290
41	SN	0.26	0/1232	0.51	0/1656
42	SO	0.29	0/1062	0.66	1/1425 (0.1%)
43	SW	0.29	0/1051	0.58	1/1406 (0.1%)
44	SY	0.26	0/1083	0.59	0/1438
45	SZ	0.24	0/604	0.53	0/810
46	Sb	0.31	0/665	0.56	0/891
47	Se	0.27	0/465	0.64	1/612 (0.2%)
48	L5	0.31	0/87605	0.87	64/136661 (0.0%)
49	L7	0.29	0/2858	0.81	0/4455
50	L8	0.28	0/3701	0.79	0/5766
51	LA	0.31	0/1936	0.61	0/2596
52	LB	0.30	0/3306	0.56	0/4424
53	LC	0.29	0/2973	0.58	0/3992
54	LD	0.29	0/2428	0.54	0/3252
55	LE	0.30	0/1996	0.69	4/2673 (0.1%)
56	LF	0.30	0/1905	0.57	1/2539 (0.0%)
57	LG	0.29	0/1960	0.56	0/2637
58	LH	0.32	0/1537	0.62	1/2066 (0.0%)
59	LI	0.31	0/1751	0.59	1/2340 (0.0%)
60	LJ	0.31	0/1433	0.63	0/1915
61	LL	0.28	0/1732	0.66	2/2315 (0.1%)
62	LM	0.29	0/1161	0.54	0/1554
63	LN	0.31	0/1746	0.64	2/2338 (0.1%)
64	LO	0.30	0/1682	0.57	0/2250
65	LP	0.30	0/1268	0.59	0/1701
66	LQ	0.30	0/1537	0.64	1/2052 (0.0%)
67	LR	0.28	0/1582	0.65	1/2091 (0.0%)
68	LS	0.32	0/1493	0.60	0/2003
69	LT	0.31	0/1326	0.60	0/1770
70	LU	0.35	0/839	0.63	1/1126 (0.1%)
71	LV	0.31	0/993	0.58	0/1332
72	LW	0.28	0/1030	0.69	3/1364 (0.2%)
73	LX	0.29	0/1002	0.63	1/1345 (0.1%)
74	LY	0.29	0/1132	0.60	0/1504
75	LZ	0.31	0/1130	0.58	0/1507

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
76	La	0.32	0/1191	0.57	0/1591
77	Lb	0.26	0/620	0.52	0/819
78	Lc	0.38	0/774	0.59	0/1038
79	Ld	0.30	0/903	0.60	0/1216
80	Le	0.32	0/1071	0.60	0/1429
81	Lf	0.30	0/895	0.60	0/1198
82	Lg	0.29	0/916	0.60	0/1220
83	Lh	0.30	0/1023	0.61	1/1351 (0.1%)
84	Li	0.29	0/843	0.64	0/1115
85	Lj	0.34	0/720	0.64	0/952
86	Lk	0.36	0/575	0.64	0/761
87	Ll	0.28	0/454	0.62	0/599
88	Lm	0.27	0/435	0.60	0/575
89	Ln	0.30	0/231	0.75	0/294
90	Lo	0.31	0/876	0.58	0/1156
91	Lp	0.32	0/718	0.56	0/953
92	Lr	0.32	0/1017	0.67	1/1364 (0.1%)
All	All	0.31	12/267838 (0.0%)	0.76	199/389790 (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
1	A	0	1
32	Sa	0	3
70	LU	0	1
All	All	0	5

All (12) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	N	128	PRO	CB-CG	24.45	2.72	1.50
34	Sd	11	PRO	CB-CG	22.51	2.62	1.50
34	Sd	11	PRO	CG-CD	-19.04	0.87	1.50
3	N	128	PRO	CG-CD	-18.96	0.88	1.50
12	M	980	PRO	CG-CD	-16.59	0.95	1.50
36	Sg	25	PRO	CG-CD	-9.86	1.18	1.50
40	SM	11	VAL	CB-CG1	-8.23	1.35	1.52
2	L	194	GLN	CB-CG	-7.67	1.31	1.52
13	X	37	G	P-O5'	6.47	1.66	1.59

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
13	X	137	C	C1'-N1	6.35	1.58	1.48
34	Sd	11	PRO	N-CD	6.22	1.56	1.47
12	M	980	PRO	N-CD	5.55	1.55	1.47

All (199) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	N	128	PRO	CB-CG-CD	-27.30	0.01	106.50
34	Sd	11	PRO	CB-CG-CD	-25.88	5.56	106.50
12	M	980	PRO	N-CD-CG	-19.36	74.17	103.20
36	Sg	25	PRO	N-CD-CG	-18.20	75.91	103.20
14	S2	1568	C	C5-C4-N4	-17.51	107.94	120.20
13	X	37	G	OP1-P-O3'	-16.84	68.15	105.20
13	X	37	G	OP2-P-O3'	-16.77	68.30	105.20
13	X	37	G	P-O3'-C3'	16.40	139.38	119.70
3	N	128	PRO	CA-CB-CG	-12.61	80.03	104.00
14	S2	1568	C	N3-C4-N4	12.51	126.76	118.00
36	Sg	25	PRO	CA-CB-CG	-11.94	81.31	104.00
13	X	33	G	P-O3'-C3'	-11.23	106.22	119.70
22	SK	30	PRO	CA-N-CD	-11.18	95.84	111.50
3	N	128	PRO	CA-N-CD	-10.45	96.87	111.50
13	X	125	A	P-O3'-C3'	-10.36	107.26	119.70
61	LL	54	PRO	C-N-CA	10.32	147.51	121.70
13	X	3	A	P-O3'-C3'	-10.20	107.46	119.70
1	A	1037	MET	CG-SD-CE	10.12	116.39	100.20
34	Sd	11	PRO	CA-N-CD	-10.03	97.46	111.50
13	X	9	G	P-O3'-C3'	-9.99	107.71	119.70
34	Sd	11	PRO	CA-CB-CG	-9.74	85.49	104.00
13	X	37	G	O3'-P-O5'	-9.71	85.55	104.00
13	X	31	U	P-O3'-C3'	-9.48	108.32	119.70
12	M	980	PRO	CA-CB-CG	-9.39	86.16	104.00
13	X	14	U	P-O3'-C3'	-9.19	108.67	119.70
34	Sd	11	PRO	N-CA-CB	-9.10	92.39	103.30
13	X	206	U	P-O3'-C3'	8.95	130.43	119.70
48	L5	4956	C	N3-C2-O2	-8.57	115.90	121.90
14	S2	1568	C	N3-C4-C5	8.49	125.30	121.90
72	LW	69	LYS	C-N-CA	8.46	142.86	121.70
14	S2	1453	C	C2-N1-C1'	8.45	128.09	118.80
13	X	116	C	P-O3'-C3'	-8.43	109.59	119.70
13	X	32	U	P-O3'-C3'	-8.40	109.62	119.70
13	X	36	A	C4'-C3'-C2'	-8.30	94.30	102.60
19	SF	50	PRO	CA-N-CD	-8.27	99.92	111.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
48	L5	977	C	C6-N1-C2	-8.15	117.04	120.30
22	SK	30	PRO	N-CD-CG	-8.11	91.03	103.20
26	SR	95	ILE	C-N-CA	7.95	141.57	121.70
55	LE	96	VAL	C-N-CA	7.95	138.99	122.30
14	S2	1453	C	C6-N1-C2	-7.92	117.13	120.30
48	L5	1250	C	N3-C2-O2	-7.89	116.38	121.90
13	X	215	U	C2-N1-C1'	7.75	127.01	117.70
3	N	127	SER	C-N-CD	7.70	144.57	128.40
48	L5	5024	U	C2-N1-C1'	7.61	126.83	117.70
13	X	65	U	P-O3'-C3'	-7.59	110.59	119.70
13	X	36	A	P-O3'-C3'	-7.54	110.65	119.70
55	LE	223	ARG	C-N-CA	7.48	140.40	121.70
36	Sg	25	PRO	N-CA-CB	-7.38	94.44	103.30
13	X	215	U	N1-C2-O2	7.37	127.96	122.80
14	S2	1016	U	C2-N1-C1'	7.33	126.50	117.70
3	N	128	PRO	N-CA-CB	-7.32	94.51	103.30
48	L5	175	C	N3-C2-O2	-7.30	116.79	121.90
48	L5	977	C	C5-C6-N1	7.22	124.61	121.00
39	SJ	4	ALA	C-N-CA	7.20	139.69	121.70
92	Lr	56	ASP	CB-CG-OD1	7.16	124.74	118.30
48	L5	1250	C	N1-C2-O2	7.14	123.19	118.90
14	S2	341	C	C2-N1-C1'	7.13	126.64	118.80
1	A	789	LEU	CB-CG-CD2	7.12	123.11	111.00
72	LW	98	PRO	C-N-CA	7.12	139.49	121.70
13	X	36	A	C2'-C3'-O3'	7.08	125.07	109.50
12	M	980	PRO	N-CA-CB	-7.01	94.89	103.30
34	Sd	10	HIS	C-N-CD	6.98	143.06	128.40
55	LE	83	LYS	C-N-CA	6.94	139.05	121.70
48	L5	5024	U	N1-C2-O2	6.84	127.59	122.80
13	X	60	U	P-O3'-C3'	-6.84	111.50	119.70
25	SQ	41	MET	CB-CG-SD	6.83	132.89	112.40
13	X	7	G	P-O3'-C3'	-6.82	111.52	119.70
14	S2	1568	C	C2-N3-C4	-6.82	116.49	119.90
14	S2	1453	C	C5-C6-N1	6.80	124.40	121.00
48	L5	486	C	C2-N1-C1'	6.79	126.26	118.80
13	X	100	G	N3-C4-N9	-6.76	121.94	126.00
13	X	215	U	N3-C2-O2	-6.76	117.47	122.20
13	X	29	U	P-O3'-C3'	-6.74	111.62	119.70
48	L5	1072	C	C2-N1-C1'	6.68	126.15	118.80
28	ST	107	LEU	CB-CG-CD1	-6.67	99.66	111.00
14	S2	1016	U	N1-C2-O2	6.61	127.42	122.80
48	L5	704	C	C2-N1-C1'	6.60	126.06	118.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
48	L5	1971	G	O4'-C1'-N9	6.58	113.47	108.20
13	X	56	G	P-O3'-C3'	-6.52	111.88	119.70
48	L5	2054	G	O4'-C1'-N9	6.46	113.37	108.20
43	SW	51	GLU	OE1-CD-OE2	-6.43	115.58	123.30
48	L5	245	C	N1-C2-O2	6.43	122.75	118.90
63	LN	147	ASP	CB-CG-OD1	6.42	124.08	118.30
48	L5	2625	C	N1-C2-O2	6.41	122.74	118.90
14	S2	429	C	C2-N1-C1'	6.38	125.82	118.80
12	M	980	PRO	CA-N-CD	-6.34	102.62	111.50
48	L5	1367	C	C2-N1-C1'	6.33	125.76	118.80
48	L5	4068	U	C2-N1-C1'	6.32	125.28	117.70
55	LE	88	VAL	C-N-CA	6.31	137.48	121.70
14	S2	341	C	N1-C2-O2	6.30	122.68	118.90
14	S2	1453	C	N1-C2-O2	6.29	122.67	118.90
34	Sd	11	PRO	N-CD-CG	-6.26	93.81	103.20
13	X	110	U	C2-N1-C1'	6.22	125.17	117.70
48	L5	5024	U	N3-C2-O2	-6.22	117.85	122.20
14	S2	319	C	C2-N1-C1'	6.20	125.62	118.80
6	G	91	ALA	C-N-CA	6.17	137.12	121.70
48	L5	2625	C	C2-N1-C1'	6.14	125.55	118.80
48	L5	245	C	C2-N1-C1'	6.13	125.54	118.80
13	X	100	G	C4-N9-C1'	-6.09	118.58	126.50
20	SH	40	LEU	CA-CB-CG	6.07	129.27	115.30
48	L5	2754	G	N3-C4-N9	6.05	129.63	126.00
14	S2	341	C	C6-N1-C1'	-6.04	113.55	120.80
48	L5	704	C	N1-C2-O2	6.01	122.51	118.90
13	X	37	G	C3'-C2'-C1'	-6.01	96.69	101.50
42	SO	131	ASP	CB-CG-OD1	5.99	123.69	118.30
48	L5	1631	A	N1-C2-N3	5.98	132.29	129.30
14	S2	1016	U	N3-C2-O2	-5.97	118.02	122.20
7	H	223	LYS	CD-CE-NZ	5.95	125.37	111.70
48	L5	4081	U	C2-N1-C1'	5.94	124.83	117.70
14	S2	80	G	N3-C4-N9	5.93	129.56	126.00
48	L5	1072	C	N1-C2-O2	5.93	122.46	118.90
13	X	100	G	C8-N9-C1'	5.92	134.70	127.00
14	S2	694	G	O4'-C1'-N9	5.92	112.94	108.20
48	L5	2360	U	N1-C2-O2	5.91	126.94	122.80
48	L5	2408	C	C2-N1-C1'	5.90	125.30	118.80
32	Sa	100	ARG	C-N-CA	-5.90	106.96	121.70
48	L5	4081	U	N3-C2-O2	-5.88	118.08	122.20
48	L5	2360	U	C2-N1-C1'	5.88	124.75	117.70
14	S2	1172	U	C2-N1-C1'	5.87	124.74	117.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
67	LR	145	LEU	CA-CB-CG	5.85	128.76	115.30
48	L5	1367	C	N1-C2-O2	5.83	122.40	118.90
14	S2	69	C	C2-N1-C1'	5.82	125.20	118.80
13	X	77	U	P-O3'-C3'	-5.80	112.73	119.70
48	L5	1076	C	N1-C2-O2	5.80	122.38	118.90
14	S2	1123	C	N1-C2-O2	5.77	122.36	118.90
70	LU	24	ASP	CB-CG-OD1	5.77	123.50	118.30
48	L5	4081	U	N1-C2-O2	5.77	126.84	122.80
48	L5	3769	C	C2-N1-C1'	5.76	125.14	118.80
61	LL	146	LEU	C-N-CA	5.75	136.08	121.70
48	L5	167	C	N3-C2-O2	-5.75	117.88	121.90
59	LI	28	ASP	CB-CG-OD1	5.75	123.47	118.30
13	X	234	C	C2-N1-C1'	5.74	125.11	118.80
48	L5	704	C	C6-N1-C1'	-5.72	113.94	120.80
5	F	171	LEU	CA-CB-CG	5.70	128.41	115.30
14	S2	1453	C	N3-C2-O2	-5.63	117.96	121.90
15	SA	4	ALA	C-N-CA	5.62	135.76	121.70
48	L5	931	C	C2-N1-C1'	5.61	124.97	118.80
72	LW	79	GLN	C-N-CA	5.60	135.71	121.70
14	S2	1172	U	N1-C2-O2	5.55	126.68	122.80
48	L5	3769	C	C6-N1-C2	-5.53	118.09	120.30
48	L5	1238	A	OP1-P-O3'	5.53	117.36	105.20
47	Se	6	LEU	CA-CB-CG	5.52	128.00	115.30
73	LX	131	ASP	CB-CG-OD1	5.51	123.26	118.30
48	L5	417	G	P-O3'-C3'	5.48	126.28	119.70
13	X	234	C	N1-C2-O2	5.47	122.18	118.90
48	L5	1072	C	C6-N1-C1'	-5.45	114.26	120.80
48	L5	117	C	N1-C2-O2	5.42	122.15	118.90
48	L5	3769	C	N1-C2-O2	5.42	122.15	118.90
48	L5	4935	C	C2-N1-C1'	5.41	124.76	118.80
13	X	58	G	P-O3'-C3'	-5.41	113.21	119.70
48	L5	117	C	C2-N1-C1'	5.39	124.73	118.80
48	L5	4976	G	O4'-C1'-N9	5.38	112.50	108.20
48	L5	4747	C	C2-N1-C1'	5.37	124.71	118.80
48	L5	2360	U	N3-C2-O2	-5.36	118.45	122.20
12	M	387	LEU	CA-CB-CG	5.36	127.63	115.30
83	Lh	22	ASP	CB-CG-OD1	5.33	123.10	118.30
26	SR	99	ASP	CB-CG-OD1	5.32	123.09	118.30
48	L5	486	C	C6-N1-C1'	-5.30	114.44	120.80
48	L5	3769	C	N3-C2-O2	-5.29	118.19	121.90
48	L5	655	C	N1-C2-O2	5.29	122.08	118.90
38	SG	147	LEU	CA-CB-CG	5.27	127.43	115.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
48	L5	1807	C	C2-N1-C1'	5.27	124.60	118.80
14	S2	1666	C	N1-C2-O2	5.25	122.05	118.90
48	L5	1778	C	C2-N1-C1'	5.25	124.57	118.80
63	LN	17	ASP	CB-CG-OD1	5.25	123.02	118.30
48	L5	4348	C	C2-N1-C1'	5.24	124.57	118.80
66	LQ	88	ASP	CB-CG-OD1	5.24	123.02	118.30
14	S2	1123	C	N3-C2-O2	-5.22	118.25	121.90
14	S2	801	U	C2-N1-C1'	5.21	123.95	117.70
13	X	66	U	OP2-P-O3'	5.19	116.62	105.20
14	S2	1520	G	N3-C4-N9	5.19	129.11	126.00
48	L5	2117	C	P-O3'-C3'	5.19	125.93	119.70
48	L5	5024	U	C5-C6-N1	5.18	125.29	122.70
48	L5	1304	C	C2-N1-C1'	5.17	124.49	118.80
58	LH	17	ASP	CB-CG-OD1	5.17	122.95	118.30
48	L5	4068	U	C6-N1-C1'	-5.17	113.97	121.20
48	L5	100	C	C2-N1-C1'	5.15	124.46	118.80
48	L5	180	C	C2-N1-C1'	5.14	124.46	118.80
14	S2	429	C	C6-N1-C1'	-5.14	114.64	120.80
13	X	215	U	C6-N1-C1'	-5.13	114.02	121.20
13	X	124	U	OP2-P-O3'	5.12	116.46	105.20
14	S2	1261	C	C2-N1-C1'	5.12	124.43	118.80
48	L5	506	C	C2-N1-C1'	5.10	124.41	118.80
14	S2	69	C	N1-C2-O2	5.09	121.96	118.90
56	LF	238	ASP	CB-CG-OD1	5.09	122.89	118.30
48	L5	4348	C	N1-C2-O2	5.09	121.95	118.90
14	S2	1022	U	C2-N1-C1'	5.09	123.80	117.70
48	L5	4956	C	N1-C2-O2	5.08	121.95	118.90
14	S2	1419	C	P-O3'-C3'	5.07	125.78	119.70
14	S2	1419	C	O4'-C1'-N1	5.07	112.25	108.20
39	SJ	152	ASP	CB-CG-OD1	5.04	122.83	118.30
14	S2	80	G	N3-C4-C5	-5.03	126.08	128.60
48	L5	4935	C	N1-C2-O2	5.03	121.92	118.90
14	S2	1823	A	P-O3'-C3'	5.03	125.74	119.70
13	X	110	U	C6-N1-C1'	-5.03	114.16	121.20
14	S2	1453	C	C6-N1-C1'	-5.03	114.77	120.80
14	S2	1567	G	C5-C6-O6	-5.02	125.59	128.60
48	L5	2667	C	O4'-C1'-N1	5.02	112.21	108.20
13	X	42	A	OP2-P-O3'	5.01	116.23	105.20

There are no chirality outliers.

All (5) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	1017	SER	Peptide
70	LU	97	ARG	Peptide
32	Sa	100	ARG	Sidechain
32	Sa	99	PRO	Mainchain,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
1	A	945/1246 (76%)	874 (92%)	70 (7%)	1 (0%)	48 76
2	L	239/245 (98%)	227 (95%)	11 (5%)	1 (0%)	30 61
3	N	263/280 (94%)	251 (95%)	12 (5%)	0	100 100
4	O	206/239 (86%)	204 (99%)	2 (1%)	0	100 100
5	F	284/295 (96%)	257 (90%)	24 (8%)	3 (1%)	12 40
6	G	247/272 (91%)	238 (96%)	8 (3%)	1 (0%)	30 61
7	H	233/371 (63%)	210 (90%)	23 (10%)	0	100 100
8	I	285/297 (96%)	253 (89%)	31 (11%)	1 (0%)	30 61
9	J	182/199 (92%)	157 (86%)	25 (14%)	0	100 100
10	K	339/443 (76%)	313 (92%)	26 (8%)	0	100 100
11	E	57/274 (21%)	48 (84%)	8 (14%)	1 (2%)	7 30
12	M	975/1096 (89%)	914 (94%)	59 (6%)	2 (0%)	44 71
15	SA	220/295 (75%)	195 (89%)	24 (11%)	1 (0%)	25 56
16	SB	212/264 (80%)	192 (91%)	18 (8%)	2 (1%)	14 44
17	SD	225/243 (93%)	192 (85%)	30 (13%)	3 (1%)	10 36
18	SE	260/263 (99%)	232 (89%)	25 (10%)	3 (1%)	11 38

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
19	SF	189/204 (93%)	154 (82%)	32 (17%)	3 (2%)	8 32
20	SH	187/194 (96%)	152 (81%)	33 (18%)	2 (1%)	12 40
21	SI	204/208 (98%)	176 (86%)	26 (13%)	2 (1%)	13 42
22	SK	96/165 (58%)	81 (84%)	13 (14%)	2 (2%)	5 27
23	SL	151/158 (96%)	134 (89%)	16 (11%)	1 (1%)	19 50
24	SP	95/145 (66%)	70 (74%)	21 (22%)	4 (4%)	2 15
25	SQ	144/146 (99%)	124 (86%)	17 (12%)	3 (2%)	5 27
26	SR	130/135 (96%)	114 (88%)	15 (12%)	1 (1%)	16 46
27	SS	148/152 (97%)	124 (84%)	19 (13%)	5 (3%)	3 19
28	ST	141/145 (97%)	128 (91%)	11 (8%)	2 (1%)	9 34
29	SU	102/119 (86%)	93 (91%)	7 (7%)	2 (2%)	6 28
30	SV	81/83 (98%)	68 (84%)	11 (14%)	2 (2%)	4 24
31	SX	139/143 (97%)	122 (88%)	14 (10%)	3 (2%)	5 26
32	Sa	105/115 (91%)	85 (81%)	18 (17%)	2 (2%)	6 29
33	Sc	62/69 (90%)	49 (79%)	13 (21%)	0	100 100
34	Sd	51/56 (91%)	50 (98%)	1 (2%)	0	100 100
35	Sf	69/156 (44%)	51 (74%)	14 (20%)	4 (6%)	1 9
36	Sg	311/317 (98%)	256 (82%)	52 (17%)	3 (1%)	13 42
37	SC	220/293 (75%)	191 (87%)	26 (12%)	3 (1%)	9 34
38	SG	235/249 (94%)	204 (87%)	25 (11%)	6 (3%)	4 23
39	SJ	183/194 (94%)	163 (89%)	17 (9%)	3 (2%)	8 32
40	SM	120/132 (91%)	99 (82%)	18 (15%)	3 (2%)	4 24
41	SN	148/151 (98%)	142 (96%)	3 (2%)	3 (2%)	6 28
42	SO	138/151 (91%)	110 (80%)	23 (17%)	5 (4%)	3 18
43	SW	127/130 (98%)	117 (92%)	10 (8%)	0	100 100
44	SY	129/133 (97%)	114 (88%)	14 (11%)	1 (1%)	16 46
45	SZ	73/125 (58%)	63 (86%)	9 (12%)	1 (1%)	9 34
46	Sb	81/84 (96%)	70 (86%)	10 (12%)	1 (1%)	11 38
47	Se	56/59 (95%)	44 (79%)	12 (21%)	0	100 100
51	LA	246/257 (96%)	221 (90%)	24 (10%)	1 (0%)	30 61
52	LB	400/403 (99%)	359 (90%)	37 (9%)	4 (1%)	13 42

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
53	LC	365/427 (86%)	316 (87%)	47 (13%)	2 (0%)	25 56
54	LD	291/297 (98%)	270 (93%)	17 (6%)	4 (1%)	9 34
55	LE	238/288 (83%)	188 (79%)	44 (18%)	6 (2%)	4 24
56	LF	223/248 (90%)	212 (95%)	11 (5%)	0	100 100
57	LG	239/266 (90%)	213 (89%)	26 (11%)	0	100 100
58	LH	188/192 (98%)	175 (93%)	13 (7%)	0	100 100
59	LI	211/214 (99%)	202 (96%)	9 (4%)	0	100 100
60	LJ	174/178 (98%)	163 (94%)	9 (5%)	2 (1%)	12 40
61	LL	208/211 (99%)	185 (89%)	19 (9%)	4 (2%)	6 29
62	LM	137/215 (64%)	118 (86%)	17 (12%)	2 (2%)	8 33
63	LN	201/204 (98%)	190 (94%)	11 (6%)	0	100 100
64	LO	199/203 (98%)	191 (96%)	8 (4%)	0	100 100
65	LP	151/184 (82%)	139 (92%)	11 (7%)	1 (1%)	19 50
66	LQ	185/188 (98%)	172 (93%)	13 (7%)	0	100 100
67	LR	185/196 (94%)	180 (97%)	5 (3%)	0	100 100
68	LS	173/176 (98%)	153 (88%)	19 (11%)	1 (1%)	22 53
69	LT	157/160 (98%)	146 (93%)	8 (5%)	3 (2%)	6 29
70	LU	99/128 (77%)	91 (92%)	8 (8%)	0	100 100
71	LV	129/140 (92%)	119 (92%)	10 (8%)	0	100 100
72	LW	122/157 (78%)	104 (85%)	16 (13%)	2 (2%)	8 32
73	LX	118/156 (76%)	111 (94%)	7 (6%)	0	100 100
74	LY	132/145 (91%)	123 (93%)	8 (6%)	1 (1%)	16 46
75	LZ	133/136 (98%)	120 (90%)	13 (10%)	0	100 100
76	La	145/148 (98%)	127 (88%)	18 (12%)	0	100 100
77	Lb	73/159 (46%)	68 (93%)	4 (6%)	1 (1%)	9 34
78	Lc	96/115 (84%)	85 (88%)	9 (9%)	2 (2%)	5 27
79	Ld	105/125 (84%)	98 (93%)	7 (7%)	0	100 100
80	Le	126/135 (93%)	116 (92%)	9 (7%)	1 (1%)	16 46
81	Lf	107/110 (97%)	100 (94%)	6 (6%)	1 (1%)	14 44
82	Lg	112/117 (96%)	108 (96%)	4 (4%)	0	100 100
83	Lh	120/123 (98%)	112 (93%)	7 (6%)	1 (1%)	16 46

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
84	Li	100/105 (95%)	93 (93%)	7 (7%)	0	100	100
85	Lj	84/97 (87%)	76 (90%)	7 (8%)	1 (1%)	11	38
86	Lk	67/70 (96%)	58 (87%)	8 (12%)	1 (2%)	8	33
87	Ll	48/51 (94%)	45 (94%)	3 (6%)	0	100	100
88	Lm	50/128 (39%)	49 (98%)	0	1 (2%)	6	28
89	Ln	22/25 (88%)	20 (91%)	2 (9%)	0	100	100
90	Lo	103/106 (97%)	96 (93%)	6 (6%)	1 (1%)	13	42
91	Lp	89/92 (97%)	80 (90%)	8 (9%)	1 (1%)	12	40
92	Lr	123/137 (90%)	109 (89%)	13 (11%)	1 (1%)	16	46
All	All	15561/17945 (87%)	14006 (90%)	1424 (9%)	131 (1%)	19	46

All (131) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	1018	PRO
12	M	14	PHE
16	SB	147	ASN
18	SE	76	VAL
19	SF	15	PRO
20	SH	66	VAL
21	SI	130	THR
22	SK	3	MET
24	SP	94	VAL
25	SQ	48	GLN
27	SS	117	ILE
27	SS	121	ARG
28	ST	4	VAL
28	ST	5	THR
29	SU	50	VAL
29	SU	107	GLU
30	SV	36	VAL
30	SV	78	ILE
31	SX	10	ALA
31	SX	35	ALA
36	Sg	56	GLN
38	SG	25	ARG
38	SG	122	PRO
39	SJ	3	VAL
39	SJ	8	VAL

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Mol	Chain	Res	Type
41	SN	24	THR
42	SO	68	GLU
61	LL	91	ALA
62	LM	71	LYS
80	Le	104	SER
83	Lh	97	LYS
91	Lp	20	ALA
5	F	177	SER
16	SB	22	VAL
19	SF	17	ILE
19	SF	20	PHE
24	SP	76	VAL
24	SP	105	VAL
25	SQ	42	ILE
26	SR	119	VAL
27	SS	12	ILE
35	Sf	102	VAL
36	Sg	281	ALA
37	SC	278	THR
40	SM	41	ALA
40	SM	103	VAL
40	SM	117	GLU
52	LB	113	GLU
52	LB	291	TYR
54	LD	4	VAL
54	LD	21	ARG
55	LE	106	VAL
55	LE	226	ARG
55	LE	279	ASN
60	LJ	174	ILE
61	LL	67	HIS
68	LS	83	ARG
69	LT	81	LYS
78	Lc	54	ALA
90	Lo	99	ARG
92	Lr	68	SER
2	L	60	SER
5	F	175	GLU
6	G	92	LEU
11	E	614	SER
15	SA	31	ASP
17	SD	44	THR

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Mol	Chain	Res	Type
17	SD	223	ILE
21	SI	143	LYS
31	SX	79	LYS
32	Sa	5	ARG
32	Sa	61	ALA
38	SG	147	LEU
38	SG	175	LYS
38	SG	212	LEU
41	SN	3	ARG
51	LA	116	LEU
53	LC	111	TRP
54	LD	178	LYS
55	LE	126	LEU
60	LJ	28	GLU
65	LP	132	ALA
85	Lj	63	ARG
88	Lm	117	HIS
8	I	21	ASP
17	SD	214	LYS
22	SK	39	ASN
25	SQ	4	LYS
27	SS	16	LEU
35	Sf	100	LEU
36	Sg	246	TYR
38	SG	20	ASP
42	SO	128	ARG
42	SO	129	ILE
46	Sb	75	GLU
52	LB	5	LYS
61	LL	169	ILE
69	LT	53	PRO
69	LT	137	GLU
74	LY	53	ASP
12	M	526	ALA
18	SE	131	VAL
20	SH	100	ILE
23	SL	3	ASP
35	Sf	98	VAL
39	SJ	122	SER
42	SO	56	VAL
42	SO	140	THR
44	SY	51	THR

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Mol	Chain	Res	Type
45	SZ	108	ILE
52	LB	159	VAL
53	LC	309	ILE
55	LE	109	LEU
61	LL	55	ILE
72	LW	73	ARG
77	Lb	21	ILE
81	Lf	83	MET
86	Lk	32	VAL
24	SP	96	VAL
54	LD	177	THR
37	SC	176	LYS
35	Sf	87	THR
55	LE	131	LYS
78	Lc	52	CYS
27	SS	90	VAL
41	SN	68	GLY
5	F	248	ASP
18	SE	90	ILE
62	LM	139	SER
72	LW	100	VAL
37	SC	162	ILE

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	813/1062 (77%)	806 (99%)	7 (1%)	75 85
2	L	183/186 (98%)	183 (100%)	0	100 100
3	N	227/238 (95%)	222 (98%)	5 (2%)	47 69
4	O	172/196 (88%)	171 (99%)	1 (1%)	84 90
5	F	249/255 (98%)	246 (99%)	3 (1%)	67 80
6	G	178/188 (95%)	174 (98%)	4 (2%)	47 69
7	H	196/290 (68%)	196 (100%)	0	100 100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
8	I	251/257 (98%)	247 (98%)	4 (2%)	58 76
9	J	160/173 (92%)	160 (100%)	0	100 100
10	K	297/384 (77%)	295 (99%)	2 (1%)	81 88
11	E	54/251 (22%)	54 (100%)	0	100 100
12	M	881/973 (90%)	869 (99%)	12 (1%)	62 78
15	SA	184/243 (76%)	178 (97%)	6 (3%)	33 60
16	SB	195/231 (84%)	189 (97%)	6 (3%)	35 61
17	SD	190/202 (94%)	184 (97%)	6 (3%)	34 61
18	SE	224/225 (100%)	221 (99%)	3 (1%)	65 79
19	SF	161/170 (95%)	158 (98%)	3 (2%)	52 72
20	SH	169/174 (97%)	165 (98%)	4 (2%)	44 68
21	SI	178/180 (99%)	171 (96%)	7 (4%)	27 55
22	SK	89/136 (65%)	87 (98%)	2 (2%)	47 69
23	SL	137/142 (96%)	136 (99%)	1 (1%)	81 88
24	SP	87/130 (67%)	87 (100%)	0	100 100
25	SQ	121/121 (100%)	119 (98%)	2 (2%)	56 74
26	SR	120/122 (98%)	117 (98%)	3 (2%)	42 67
27	SS	130/132 (98%)	127 (98%)	3 (2%)	45 68
28	ST	113/115 (98%)	111 (98%)	2 (2%)	54 74
29	SU	94/107 (88%)	91 (97%)	3 (3%)	34 61
30	SV	67/67 (100%)	64 (96%)	3 (4%)	23 52
31	SX	113/115 (98%)	111 (98%)	2 (2%)	54 74
32	Sa	90/98 (92%)	86 (96%)	4 (4%)	24 52
33	Sc	57/62 (92%)	57 (100%)	0	100 100
34	Sd	47/49 (96%)	44 (94%)	3 (6%)	14 40
35	Sf	64/140 (46%)	63 (98%)	1 (2%)	58 76
36	Sg	272/275 (99%)	267 (98%)	5 (2%)	54 74
37	SC	188/225 (84%)	184 (98%)	4 (2%)	48 70
38	SG	207/218 (95%)	202 (98%)	5 (2%)	44 68
39	SJ	161/168 (96%)	154 (96%)	7 (4%)	25 53
40	SM	104/108 (96%)	104 (100%)	0	100 100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
41	SN	130/131 (99%)	128 (98%)	2 (2%)	60	77
42	SO	110/119 (92%)	108 (98%)	2 (2%)	54	74
43	SW	112/113 (99%)	110 (98%)	2 (2%)	54	74
44	SY	113/115 (98%)	109 (96%)	4 (4%)	31	58
45	SZ	66/103 (64%)	66 (100%)	0	100	100
46	Sb	75/76 (99%)	74 (99%)	1 (1%)	65	79
47	Se	47/48 (98%)	46 (98%)	1 (2%)	48	70
51	LA	190/199 (96%)	186 (98%)	4 (2%)	48	70
52	LB	348/349 (100%)	343 (99%)	5 (1%)	62	78
53	LC	305/348 (88%)	299 (98%)	6 (2%)	50	71
54	LD	246/250 (98%)	242 (98%)	4 (2%)	58	76
55	LE	215/252 (85%)	206 (96%)	9 (4%)	25	53
56	LF	194/215 (90%)	194 (100%)	0	100	100
57	LG	203/223 (91%)	200 (98%)	3 (2%)	60	77
58	LH	169/171 (99%)	164 (97%)	5 (3%)	36	62
59	LI	180/181 (99%)	175 (97%)	5 (3%)	38	64
60	LJ	148/149 (99%)	141 (95%)	7 (5%)	22	51
61	LL	176/177 (99%)	175 (99%)	1 (1%)	84	90
62	LM	118/161 (73%)	116 (98%)	2 (2%)	56	74
63	LN	171/172 (99%)	170 (99%)	1 (1%)	84	90
64	LO	173/174 (99%)	170 (98%)	3 (2%)	56	74
65	LP	134/163 (82%)	134 (100%)	0	100	100
66	LQ	164/165 (99%)	160 (98%)	4 (2%)	44	68
67	LR	166/175 (95%)	163 (98%)	3 (2%)	54	74
68	LS	156/157 (99%)	156 (100%)	0	100	100
69	LT	139/140 (99%)	135 (97%)	4 (3%)	37	63
70	LU	91/115 (79%)	90 (99%)	1 (1%)	70	82
71	LV	101/107 (94%)	100 (99%)	1 (1%)	73	84
72	LW	103/126 (82%)	101 (98%)	2 (2%)	52	72
73	LX	108/133 (81%)	104 (96%)	4 (4%)	29	56
74	LY	124/135 (92%)	117 (94%)	7 (6%)	17	45

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
75	LZ	117/118 (99%)	114 (97%)	3 (3%)	41 66
76	La	120/121 (99%)	120 (100%)	0	100 100
77	Lb	63/126 (50%)	60 (95%)	3 (5%)	21 50
78	Lc	83/97 (86%)	80 (96%)	3 (4%)	30 57
79	Ld	98/110 (89%)	95 (97%)	3 (3%)	35 61
80	Le	114/121 (94%)	110 (96%)	4 (4%)	31 58
81	Lf	88/89 (99%)	87 (99%)	1 (1%)	70 82
82	Lg	98/100 (98%)	97 (99%)	1 (1%)	73 84
83	Lh	109/110 (99%)	106 (97%)	3 (3%)	38 64
84	Li	86/89 (97%)	82 (95%)	4 (5%)	22 51
85	Lj	73/80 (91%)	73 (100%)	0	100 100
86	Lk	64/65 (98%)	63 (98%)	1 (2%)	58 76
87	Ll	47/48 (98%)	46 (98%)	1 (2%)	48 70
88	Lm	48/116 (41%)	48 (100%)	0	100 100
89	Ln	23/24 (96%)	22 (96%)	1 (4%)	25 53
90	Lo	93/94 (99%)	90 (97%)	3 (3%)	34 61
91	Lp	74/75 (99%)	72 (97%)	2 (3%)	40 65
92	Lr	109/121 (90%)	106 (97%)	3 (3%)	38 64
All	All	13505/15254 (88%)	13253 (98%)	252 (2%)	52 72

All (252) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	564	ARG
1	A	590	ASP
1	A	710	ASP
1	A	750	MET
1	A	776	ARG
1	A	1003	ARG
1	A	1058	ARG
3	N	33	ARG
3	N	111	ASP
3	N	154	PHE
3	N	226	MET
3	N	273	MET
4	O	94	ARG

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Mol	Chain	Res	Type
5	F	21	ASP
5	F	149	PHE
5	F	284	ARG
6	G	6	ARG
6	G	120	ARG
6	G	216	MET
6	G	255	LEU
8	I	31	ASP
8	I	39	PHE
8	I	65	LYS
8	I	250	MET
10	K	190	MET
10	K	241	MET
12	M	58	TYR
12	M	108	LYS
12	M	172	GLN
12	M	342	TRP
12	M	391	ARG
12	M	484	ASP
12	M	557	TYR
12	M	684	CYS
12	M	756	ARG
12	M	837	CYS
12	M	932	LYS
12	M	964	SER
15	SA	13	GLU
15	SA	126	ASP
15	SA	130	ASP
15	SA	158	ASP
15	SA	193	HIS
15	SA	198	MET
16	SB	38	MET
16	SB	56	LYS
16	SB	76	ASN
16	SB	152	LYS
16	SB	222	LYS
16	SB	231	LEU
17	SD	24	PHE
17	SD	97	CYS
17	SD	125	PHE
17	SD	167	TYR
17	SD	207	HIS

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Mol	Chain	Res	Type
17	SD	209	SER
18	SE	41	CYS
18	SE	50	ASN
18	SE	117	GLU
19	SF	76	MET
19	SF	107	ASN
19	SF	163	PHE
20	SH	15	LYS
20	SH	19	PHE
20	SH	159	ASP
20	SH	189	PHE
21	SI	12	ARG
21	SI	21	TYR
21	SI	117	TYR
21	SI	137	LEU
21	SI	164	GLU
21	SI	186	ASP
21	SI	205	ARG
22	SK	26	ASP
22	SK	49	MET
23	SL	117	PHE
25	SQ	1	MET
25	SQ	41	MET
26	SR	48	ASN
26	SR	84	TYR
26	SR	107	LYS
27	SS	55	ARG
27	SS	108	ARG
27	SS	129	LEU
28	ST	29	LYS
28	ST	112	MET
29	SU	56	MET
29	SU	99	LYS
29	SU	111	GLU
30	SV	35	ASN
30	SV	50	PHE
30	SV	70	LEU
31	SX	11	ARG
31	SX	32	LEU
32	Sa	62	TYR
32	Sa	67	LEU
32	Sa	86	ASN

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Mol	Chain	Res	Type
32	Sa	100	ARG
34	Sd	14	PHE
34	Sd	32	ARG
34	Sd	46	TYR
35	Sf	138	ARG
36	Sg	27	PHE
36	Sg	47	ARG
36	Sg	60	ARG
36	Sg	140	TYR
36	Sg	186	THR
37	SC	61	MET
37	SC	72	ASP
37	SC	172	ASN
37	SC	267	GLN
38	SG	15	LEU
38	SG	57	ASP
38	SG	82	SER
38	SG	201	LYS
38	SG	209	TYR
39	SJ	58	ARG
39	SJ	59	GLU
39	SJ	73	GLU
39	SJ	78	LEU
39	SJ	79	ARG
39	SJ	88	ASP
39	SJ	146	SER
41	SN	30	SER
41	SN	128	TYR
42	SO	67	ASP
42	SO	75	MET
43	SW	28	ARG
43	SW	51	GLU
44	SY	47	MET
44	SY	53	ASP
44	SY	72	PHE
44	SY	77	ASP
46	Sb	7	LEU
47	Se	22	GLN
51	LA	23	ARG
51	LA	184	ARG
51	LA	217	GLN
51	LA	247	ARG

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Mol	Chain	Res	Type
52	LB	10	ARG
52	LB	20	LYS
52	LB	126	LYS
52	LB	345	LEU
52	LB	357	ARG
53	LC	95	MET
53	LC	109	ARG
53	LC	131	SER
53	LC	184	TYR
53	LC	295	SER
53	LC	345	ARG
54	LD	62	CYS
54	LD	185	SER
54	LD	208	MET
54	LD	229	ASN
55	LE	43	HIS
55	LE	62	MET
55	LE	68	MET
55	LE	128	HIS
55	LE	131	LYS
55	LE	158	ARG
55	LE	161	ARG
55	LE	167	GLN
55	LE	254	ASP
57	LG	54	PHE
57	LG	97	LYS
57	LG	212	LYS
58	LH	2	LYS
58	LH	11	ASP
58	LH	54	ARG
58	LH	74	CYS
58	LH	150	ASP
59	LI	28	ASP
59	LI	55	ASP
59	LI	87	MET
59	LI	190	LEU
59	LI	195	CYS
60	LJ	35	ARG
60	LJ	55	TYR
60	LJ	72	CYS
60	LJ	100	SER
60	LJ	143	ASP

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Mol	Chain	Res	Type
60	LJ	154	LYS
60	LJ	170	TYR
61	LL	181	SER
62	LM	50	MET
62	LM	67	SER
63	LN	17	ASP
64	LO	106	ASP
64	LO	130	LYS
64	LO	186	GLU
66	LQ	66	MET
66	LQ	88	ASP
66	LQ	108	ARG
66	LQ	126	LEU
67	LR	21	LYS
67	LR	116	ASP
67	LR	144	LYS
69	LT	111	GLU
69	LT	120	LYS
69	LT	139	HIS
69	LT	158	PHE
70	LU	74	SER
71	LV	30	ASP
72	LW	113	LYS
72	LW	119	LYS
73	LX	37	LYS
73	LX	50	LYS
73	LX	84	GLU
73	LX	148	ASP
74	LY	1	MET
74	LY	30	MET
74	LY	53	ASP
74	LY	74	TYR
74	LY	75	ARG
74	LY	76	LYS
74	LY	130	LYS
75	LZ	57	MET
75	LZ	86	SER
75	LZ	97	ASN
77	Lb	26	SER
77	Lb	41	ARG
77	Lb	60	ASN
78	Lc	42	LYS

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Mol	Chain	Res	Type
78	Lc	63	TYR
78	Lc	101	ASP
79	Ld	55	LYS
79	Ld	92	ARG
79	Ld	101	LYS
80	Le	33	ARG
80	Le	42	ASP
80	Le	98	GLU
80	Le	128	ARG
81	Lf	95	LYS
82	Lg	32	TYR
83	Lh	14	LYS
83	Lh	20	GLN
83	Lh	48	ARG
84	Li	3	LEU
84	Li	55	ARG
84	Li	68	ARG
84	Li	72	PHE
86	Lk	26	LYS
87	Ll	46	ARG
89	Ln	19	LYS
90	Lo	32	SER
90	Lo	79	SER
90	Lo	96	ASP
91	Lp	34	HIS
91	Lp	47	MET
92	Lr	5	LEU
92	Lr	85	ASN
92	Lr	99	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (28) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	1156	GLN
2	L	119	GLN
2	L	194	GLN
5	F	196	ASN
12	M	841	ASN
15	SA	33	GLN
16	SB	118	GLN
16	SB	202	GLN
19	SF	83	ASN

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Mol	Chain	Res	Type
19	SF	107	ASN
23	SL	11	GLN
24	SP	104	GLN
27	SS	134	GLN
35	Sf	91	ASN
37	SC	113	GLN
38	SG	65	GLN
38	SG	225	GLN
39	SJ	124	HIS
40	SM	28	HIS
42	SO	113	GLN
52	LB	158	GLN
54	LD	195	HIS
54	LD	267	ASN
55	LE	136	HIS
62	LM	34	ASN
75	LZ	97	ASN
77	Lb	60	ASN
92	Lr	6	GLN

5.3.3 RNA

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
13	X	192/249 (77%)	128 (66%)	13 (6%)
14	S2	1716/1869 (91%)	624 (36%)	23 (1%)
48	L5	3640/5066 (71%)	1082 (29%)	52 (1%)
49	L7	119/121 (98%)	18 (15%)	0
50	L8	155/157 (98%)	39 (25%)	2 (1%)
All	All	5822/7462 (78%)	1891 (32%)	90 (1%)

All (1891) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
13	X	3	A
13	X	8	U
13	X	9	G
13	X	10	A
13	X	12	C
13	X	13	U
13	X	14	U
13	X	15	G

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Mol	Chain	Res	Type
13	X	17	U
13	X	21	A
13	X	24	U
13	X	25	A
13	X	26	C
13	X	27	A
13	X	28	A
13	X	32	U
13	X	33	G
13	X	35	G
13	X	36	A
13	X	37	G
13	X	38	G
13	X	39	U
13	X	40	U
13	X	41	A
13	X	43	U
13	X	46	A
13	X	47	U
13	X	52	A
13	X	53	G
13	X	54	U
13	X	55	A
13	X	57	U
13	X	58	G
13	X	59	C
13	X	60	U
13	X	61	A
13	X	64	U
13	X	65	U
13	X	66	U
13	X	67	G
13	X	68	U
13	X	69	A
13	X	70	U
13	X	71	U
13	X	72	U
13	X	73	A
13	X	75	G
13	X	77	U
13	X	78	A
13	X	81	U

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Mol	Chain	Res	Type
13	X	82	A
13	X	83	U
13	X	84	U
13	X	85	U
13	X	86	A
13	X	87	G
13	X	88	C
13	X	89	U
13	X	92	A
13	X	93	C
13	X	94	G
13	X	95	U
13	X	96	U
13	X	99	A
13	X	100	G
13	X	101	G
13	X	103	U
13	X	107	U
13	X	108	A
13	X	109	G
13	X	110	U
13	X	111	G
13	X	112	G
13	X	113	C
13	X	114	A
13	X	115	G
13	X	116	C
13	X	117	C
13	X	120	A
13	X	121	C
13	X	122	A
13	X	124	U
13	X	125	A
13	X	128	C
13	X	129	A
13	X	130	G
13	X	133	A
13	X	134	G
13	X	136	C
13	X	194	U
13	X	195	U
13	X	196	U

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Mol	Chain	Res	Type
13	X	197	U
13	X	198	U
13	X	199	A
13	X	200	A
13	X	201	A
13	X	202	A
13	X	204	A
13	X	205	A
13	X	206	U
13	X	207	U
13	X	208	U
13	X	210	U
13	X	213	U
13	X	214	U
13	X	215	U
13	X	219	U
13	X	220	U
13	X	223	U
13	X	224	U
13	X	225	U
13	X	228	U
13	X	229	U
13	X	230	U
13	X	231	U
13	X	235	C
13	X	236	U
13	X	237	C
13	X	238	U
13	X	239	U
13	X	242	U
13	X	243	U
13	X	244	U
13	X	246	U
13	X	247	U
13	X	248	U
13	X	249	U
14	S2	2	A
14	S2	3	C
14	S2	4	C
14	S2	9	U
14	S2	25	A
14	S2	31	U

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Mol	Chain	Res	Type
14	S2	33	G
14	S2	41	G
14	S2	42	A
14	S2	44	U
14	S2	45	A
14	S2	46	A
14	S2	52	G
14	S2	56	G
14	S2	60	A
14	S2	61	A
14	S2	64	A
14	S2	67	C
14	S2	68	A
14	S2	72	C
14	S2	73	C
14	S2	74	G
14	S2	76	U
14	S2	77	A
14	S2	78	C
14	S2	79	A
14	S2	83	A
14	S2	84	A
14	S2	103	A
14	S2	111	A
14	S2	113	G
14	S2	121	U
14	S2	126	G
14	S2	127	C
14	S2	139	C
14	S2	140	C
14	S2	141	A
14	S2	142	C
14	S2	144	U
14	S2	148	U
14	S2	153	G
14	S2	154	U
14	S2	156	G
14	S2	159	A
14	S2	160	U
14	S2	161	U
14	S2	162	C
14	S2	163	U

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Mol	Chain	Res	Type
14	S2	167	G
14	S2	175	A
14	S2	177	G
14	S2	180	G
14	S2	181	A
14	S2	184	G
14	S2	185	G
14	S2	190	G
14	S2	191	A
14	S2	192	C
14	S2	198	U
14	S2	201	C
14	S2	202	G
14	S2	206	G
14	S2	208	G
14	S2	209	A
14	S2	210	U
14	S2	211	G
14	S2	214	U
14	S2	215	G
14	S2	216	C
14	S2	291	G
14	S2	292	A
14	S2	293	C
14	S2	295	C
14	S2	296	U
14	S2	299	A
14	S2	304	C
14	S2	305	U
14	S2	306	C
14	S2	307	G
14	S2	308	G
14	S2	309	G
14	S2	310	C
14	S2	312	G
14	S2	313	A
14	S2	314	U
14	S2	315	C
14	S2	316	G
14	S2	320	G
14	S2	323	C
14	S2	324	C

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Mol	Chain	Res	Type
14	S2	325	C
14	S2	326	C
14	S2	328	U
14	S2	329	G
14	S2	330	G
14	S2	334	C
14	S2	338	G
14	S2	339	A
14	S2	340	C
14	S2	341	C
14	S2	343	A
14	S2	347	G
14	S2	360	A
14	S2	361	U
14	S2	362	C
14	S2	364	A
14	S2	369	C
14	S2	370	G
14	S2	373	G
14	S2	385	G
14	S2	386	C
14	S2	388	U
14	S2	400	C
14	S2	401	A
14	S2	407	G
14	S2	408	A
14	S2	409	C
14	S2	413	G
14	S2	418	A
14	S2	426	A
14	S2	428	U
14	S2	429	C
14	S2	434	G
14	S2	435	A
14	S2	437	G
14	S2	438	G
14	S2	441	C
14	S2	448	A
14	S2	449	A
14	S2	450	C
14	S2	452	G
14	S2	461	U

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Mol	Chain	Res	Type
14	S2	464	A
14	S2	465	A
14	S2	466	G
14	S2	469	A
14	S2	472	C
14	S2	473	A
14	S2	474	G
14	S2	482	G
14	S2	487	U
14	S2	488	U
14	S2	489	A
14	S2	492	C
14	S2	493	A
14	S2	496	C
14	S2	502	C
14	S2	503	C
14	S2	505	G
14	S2	516	A
14	S2	517	C
14	S2	530	U
14	S2	531	A
14	S2	532	C
14	S2	533	A
14	S2	534	G
14	S2	537	C
14	S2	538	U
14	S2	539	C
14	S2	540	U
14	S2	544	G
14	S2	545	A
14	S2	547	G
14	S2	549	C
14	S2	551	U
14	S2	556	U
14	S2	557	U
14	S2	559	G
14	S2	560	A
14	S2	563	G
14	S2	566	U
14	S2	574	A
14	S2	575	A
14	S2	576	A

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Mol	Chain	Res	Type
14	S2	578	C
14	S2	582	C
14	S2	584	G
14	S2	585	C
14	S2	587	A
14	S2	588	G
14	S2	589	G
14	S2	590	A
14	S2	591	U
14	S2	592	C
14	S2	593	C
14	S2	596	U
14	S2	604	A
14	S2	605	A
14	S2	606	G
14	S2	607	U
14	S2	608	C
14	S2	621	C
14	S2	624	C
14	S2	627	U
14	S2	628	A
14	S2	629	A
14	S2	631	U
14	S2	638	C
14	S2	643	A
14	S2	644	G
14	S2	656	G
14	S2	660	C
14	S2	666	U
14	S2	668	A
14	S2	669	A
14	S2	671	A
14	S2	672	A
14	S2	686	U
14	S2	687	C
14	S2	688	U
14	S2	689	U
14	S2	690	G
14	S2	691	G
14	S2	692	G
14	S2	694	G
14	S2	696	G

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Mol	Chain	Res	Type
14	S2	697	G
14	S2	698	G
14	S2	731	G
14	S2	733	C
14	S2	734	C
14	S2	735	C
14	S2	736	C
14	S2	738	C
14	S2	739	C
14	S2	745	C
14	S2	746	C
14	S2	747	U
14	S2	749	U
14	S2	750	C
14	S2	751	G
14	S2	752	G
14	S2	753	C
14	S2	787	G
14	S2	788	G
14	S2	789	G
14	S2	790	C
14	S2	791	C
14	S2	795	A
14	S2	796	G
14	S2	797	C
14	S2	798	A
14	S2	800	U
14	S2	810	A
14	S2	811	A
14	S2	812	A
14	S2	813	A
14	S2	818	A
14	S2	821	G
14	S2	822	U
14	S2	823	U
14	S2	830	A
14	S2	834	C
14	S2	835	C
14	S2	837	A
14	S2	838	G
14	S2	839	C
14	S2	840	C

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Mol	Chain	Res	Type
14	S2	841	G
14	S2	842	C
14	S2	843	C
14	S2	847	A
14	S2	848	U
14	S2	853	C
14	S2	864	A
14	S2	865	A
14	S2	869	A
14	S2	870	A
14	S2	873	G
14	S2	874	G
14	S2	876	C
14	S2	877	C
14	S2	878	G
14	S2	879	C
14	S2	881	G
14	S2	883	U
14	S2	887	U
14	S2	888	U
14	S2	890	U
14	S2	891	G
14	S2	892	U
14	S2	893	U
14	S2	894	G
14	S2	896	U
14	S2	897	U
14	S2	899	U
14	S2	900	C
14	S2	901	G
14	S2	902	G
14	S2	903	A
14	S2	904	A
14	S2	907	G
14	S2	908	A
14	S2	911	C
14	S2	913	A
14	S2	914	U
14	S2	917	U
14	S2	919	A
14	S2	920	A
14	S2	930	C

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Mol	Chain	Res	Type
14	S2	933	G
14	S2	934	G
14	S2	938	A
14	S2	943	U
14	S2	954	U
14	S2	956	G
14	S2	958	G
14	S2	959	G
14	S2	961	G
14	S2	965	U
14	S2	970	G
14	S2	971	G
14	S2	972	A
14	S2	973	C
14	S2	979	C
14	S2	980	A
14	S2	981	A
14	S2	990	A
14	S2	992	A
14	S2	996	A
14	S2	997	A
14	S2	999	G
14	S2	1001	A
14	S2	1002	U
14	S2	1008	A
14	S2	1017	U
14	S2	1018	U
14	S2	1022	U
14	S2	1023	A
14	S2	1027	A
14	S2	1028	A
14	S2	1032	C
14	S2	1042	A
14	S2	1044	G
14	S2	1060	A
14	S2	1061	U
14	S2	1062	A
14	S2	1065	G
14	S2	1081	U
14	S2	1083	A
14	S2	1084	A
14	S2	1085	C

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Mol	Chain	Res	Type
14	S2	1087	A
14	S2	1110	G
14	S2	1113	A
14	S2	1114	U
14	S2	1115	U
14	S2	1118	C
14	S2	1119	A
14	S2	1133	A
14	S2	1138	C
14	S2	1139	C
14	S2	1148	A
14	S2	1149	A
14	S2	1153	C
14	S2	1154	U
14	S2	1155	U
14	S2	1157	G
14	S2	1170	A
14	S2	1171	G
14	S2	1172	U
14	S2	1175	G
14	S2	1181	A
14	S2	1195	A
14	S2	1198	G
14	S2	1208	A
14	S2	1211	G
14	S2	1214	A
14	S2	1215	C
14	S2	1216	C
14	S2	1217	A
14	S2	1220	A
14	S2	1221	G
14	S2	1224	G
14	S2	1231	C
14	S2	1238	U
14	S2	1240	A
14	S2	1241	A
14	S2	1242	U
14	S2	1243	U
14	S2	1251	A
14	S2	1253	A
14	S2	1256	G
14	S2	1257	G

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Mol	Chain	Res	Type
14	S2	1258	A
14	S2	1259	A
14	S2	1262	C
14	S2	1264	C
14	S2	1265	A
14	S2	1268	C
14	S2	1269	G
14	S2	1270	G
14	S2	1271	C
14	S2	1274	G
14	S2	1275	G
14	S2	1276	A
14	S2	1280	G
14	S2	1281	G
14	S2	1283	C
14	S2	1284	A
14	S2	1287	A
14	S2	1288	U
14	S2	1289	U
14	S2	1290	G
14	S2	1292	C
14	S2	1294	G
14	S2	1295	A
14	S2	1296	U
14	S2	1297	U
14	S2	1298	G
14	S2	1299	A
14	S2	1300	U
14	S2	1301	A
14	S2	1302	G
14	S2	1303	C
14	S2	1305	C
14	S2	1306	U
14	S2	1307	U
14	S2	1308	U
14	S2	1309	C
14	S2	1310	U
14	S2	1311	C
14	S2	1313	A
14	S2	1314	U
14	S2	1315	U
14	S2	1317	C

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Mol	Chain	Res	Type
14	S2	1318	G
14	S2	1321	G
14	S2	1330	G
14	S2	1331	C
14	S2	1337	C
14	S2	1341	C
14	S2	1342	U
14	S2	1363	C
14	S2	1364	U
14	S2	1371	U
14	S2	1372	U
14	S2	1373	C
14	S2	1378	A
14	S2	1383	A
14	S2	1393	G
14	S2	1396	A
14	S2	1397	U
14	S2	1398	G
14	S2	1401	A
14	S2	1403	C
14	S2	1404	U
14	S2	1407	U
14	S2	1409	A
14	S2	1410	C
14	S2	1412	C
14	S2	1413	G
14	S2	1414	A
14	S2	1415	C
14	S2	1416	C
14	S2	1418	C
14	S2	1419	C
14	S2	1420	G
14	S2	1423	C
14	S2	1424	G
14	S2	1425	G
14	S2	1427	C
14	S2	1428	G
14	S2	1431	G
14	S2	1432	U
14	S2	1434	C
14	S2	1436	C
14	S2	1437	C

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Mol	Chain	Res	Type
14	S2	1438	A
14	S2	1448	A
14	S2	1449	G
14	S2	1454	A
14	S2	1455	A
14	S2	1456	G
14	S2	1457	U
14	S2	1458	G
14	S2	1463	U
14	S2	1464	C
14	S2	1468	C
14	S2	1471	C
14	S2	1472	C
14	S2	1473	G
14	S2	1475	G
14	S2	1476	A
14	S2	1477	U
14	S2	1480	A
14	S2	1487	A
14	S2	1489	A
14	S2	1490	G
14	S2	1493	C
14	S2	1494	U
14	S2	1495	G
14	S2	1497	G
14	S2	1498	A
14	S2	1505	U
14	S2	1507	G
14	S2	1508	A
14	S2	1509	U
14	S2	1510	G
14	S2	1512	C
14	S2	1513	C
14	S2	1515	G
14	S2	1520	G
14	S2	1521	C
14	S2	1522	A
14	S2	1523	C
14	S2	1525	C
14	S2	1526	G
14	S2	1527	C
14	S2	1531	A

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Mol	Chain	Res	Type
14	S2	1533	A
14	S2	1535	U
14	S2	1536	G
14	S2	1538	C
14	S2	1543	U
14	S2	1546	G
14	S2	1548	G
14	S2	1550	G
14	S2	1552	G
14	S2	1553	C
14	S2	1554	C
14	S2	1556	A
14	S2	1558	C
14	S2	1560	U
14	S2	1567	G
14	S2	1568	C
14	S2	1569	A
14	S2	1570	G
14	S2	1573	G
14	S2	1579	A
14	S2	1580	A
14	S2	1585	U
14	S2	1586	U
14	S2	1587	G
14	S2	1588	A
14	S2	1589	A
14	S2	1597	C
14	S2	1598	G
14	S2	1599	U
14	S2	1600	G
14	S2	1602	U
14	S2	1603	G
14	S2	1621	U
14	S2	1623	A
14	S2	1626	C
14	S2	1634	A
14	S2	1636	G
14	S2	1637	A
14	S2	1638	G
14	S2	1639	G
14	S2	1640	A
14	S2	1643	U

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Mol	Chain	Res	Type
14	S2	1644	C
14	S2	1648	G
14	S2	1653	U
14	S2	1654	G
14	S2	1655	C
14	S2	1661	A
14	S2	1662	U
14	S2	1663	A
14	S2	1665	G
14	S2	1666	C
14	S2	1673	U
14	S2	1679	A
14	S2	1680	G
14	S2	1686	G
14	S2	1688	C
14	S2	1694	U
14	S2	1695	A
14	S2	1698	C
14	S2	1699	A
14	S2	1714	U
14	S2	1719	A
14	S2	1721	U
14	S2	1722	G
14	S2	1730	U
14	S2	1742	C
14	S2	1743	G
14	S2	1744	G
14	S2	1745	A
14	S2	1746	U
14	S2	1748	G
14	S2	1751	C
14	S2	1752	C
14	S2	1754	G
14	S2	1755	C
14	S2	1757	G
14	S2	1758	G
14	S2	1772	C
14	S2	1773	C
14	S2	1777	G
14	S2	1781	A
14	S2	1783	C
14	S2	1784	G

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Mol	Chain	Res	Type
14	S2	1786	U
14	S2	1787	G
14	S2	1805	G
14	S2	1813	A
14	S2	1814	G
14	S2	1821	U
14	S2	1823	A
14	S2	1824	A
14	S2	1825	A
14	S2	1826	G
14	S2	1829	G
14	S2	1831	A
14	S2	1835	A
14	S2	1838	U
14	S2	1839	U
14	S2	1843	G
14	S2	1848	U
14	S2	1849	G
14	S2	1850	A
14	S2	1851	A
14	S2	1852	C
14	S2	1856	C
14	S2	1857	G
14	S2	1858	G
14	S2	1861	G
14	S2	1862	G
14	S2	1863	A
14	S2	1865	C
14	S2	1868	U
14	S2	1869	A
48	L5	13	U
48	L5	17	A
48	L5	18	C
48	L5	19	G
48	L5	25	A
48	L5	39	A
48	L5	42	A
48	L5	47	A
48	L5	48	G
48	L5	56	A
48	L5	59	A
48	L5	62	A

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Mol	Chain	Res	Type
48	L5	64	A
48	L5	65	A
48	L5	66	A
48	L5	72	C
48	L5	73	A
48	L5	91	G
48	L5	98	A
48	L5	104	G
48	L5	108	A
48	L5	109	G
48	L5	110	C
48	L5	117	C
48	L5	119	G
48	L5	120	A
48	L5	121	A
48	L5	122	U
48	L5	130	C
48	L5	133	C
48	L5	134	G
48	L5	135	G
48	L5	136	C
48	L5	137	G
48	L5	141	C
48	L5	144	G
48	L5	145	G
48	L5	151	G
48	L5	152	U
48	L5	157	U
48	L5	159	C
48	L5	165	A
48	L5	167	C
48	L5	171	U
48	L5	172	C
48	L5	175	C
48	L5	177	G
48	L5	179	G
48	L5	180	C
48	L5	183	C
48	L5	184	U
48	L5	185	C
48	L5	187	U
48	L5	188	G

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Mol	Chain	Res	Type
48	L5	200	U
48	L5	202	C
48	L5	203	U
48	L5	205	C
48	L5	217	C
48	L5	218	A
48	L5	219	G
48	L5	227	A
48	L5	231	U
48	L5	232	G
48	L5	234	G
48	L5	235	A
48	L5	236	G
48	L5	238	C
48	L5	242	U
48	L5	245	C
48	L5	250	C
48	L5	252	C
48	L5	256	G
48	L5	258	G
48	L5	261	G
48	L5	265	C
48	L5	266	C
48	L5	267	G
48	L5	269	G
48	L5	277	G
48	L5	278	G
48	L5	280	G
48	L5	297	U
48	L5	306	A
48	L5	310	G
48	L5	315	G
48	L5	316	U
48	L5	334	A
48	L5	340	C
48	L5	341	G
48	L5	347	A
48	L5	353	A
48	L5	379	G
48	L5	382	G
48	L5	383	A
48	L5	384	A

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Mol	Chain	Res	Type
48	L5	387	G
48	L5	390	C
48	L5	394	G
48	L5	405	U
48	L5	406	C
48	L5	407	A
48	L5	409	G
48	L5	410	A
48	L5	413	G
48	L5	414	C
48	L5	415	G
48	L5	418	A
48	L5	419	A
48	L5	425	U
48	L5	432	U
48	L5	433	A
48	L5	449	C
48	L5	450	G
48	L5	451	C
48	L5	452	A
48	L5	453	G
48	L5	454	U
48	L5	455	C
48	L5	461	G
48	L5	462	G
48	L5	465	G
48	L5	467	U
48	L5	468	U
48	L5	469	C
48	L5	485	C
48	L5	486	C
48	L5	487	G
48	L5	490	C
48	L5	495	C
48	L5	498	C
48	L5	500	G
48	L5	501	C
48	L5	502	C
48	L5	503	C
48	L5	504	G
48	L5	506	C
48	L5	509	A

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Mol	Chain	Res	Type
48	L5	510	U
48	L5	511	C
48	L5	512	U
48	L5	513	U
48	L5	514	U
48	L5	517	C
48	L5	518	G
48	L5	643	C
48	L5	646	G
48	L5	649	A
48	L5	654	C
48	L5	656	C
48	L5	657	C
48	L5	658	C
48	L5	661	C
48	L5	664	G
48	L5	665	C
48	L5	666	G
48	L5	667	A
48	L5	671	G
48	L5	684	G
48	L5	685	C
48	L5	686	A
48	L5	694	C
48	L5	696	C
48	L5	697	G
48	L5	702	U
48	L5	703	G
48	L5	704	C
48	L5	705	G
48	L5	707	C
48	L5	713	C
48	L5	718	C
48	L5	720	G
48	L5	721	G
48	L5	730	G
48	L5	737	C
48	L5	741	C
48	L5	745	G
48	L5	747	A
48	L5	749	G
48	L5	750	U

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Mol	Chain	Res	Type
48	L5	751	G
48	L5	756	G
48	L5	907	C
48	L5	909	A
48	L5	910	G
48	L5	911	U
48	L5	915	A
48	L5	916	C
48	L5	917	A
48	L5	918	G
48	L5	919	C
48	L5	920	C
48	L5	926	G
48	L5	927	G
48	L5	928	C
48	L5	930	G
48	L5	931	C
48	L5	932	A
48	L5	933	G
48	L5	934	C
48	L5	938	C
48	L5	939	G
48	L5	940	C
48	L5	945	U
48	L5	946	C
48	L5	950	G
48	L5	956	A
48	L5	957	G
48	L5	958	G
48	L5	959	G
48	L5	960	A
48	L5	961	G
48	L5	962	C
48	L5	963	G
48	L5	964	A
48	L5	965	G
48	L5	966	A
48	L5	967	C
48	L5	968	C
48	L5	969	C
48	L5	975	C
48	L5	976	G

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Mol	Chain	Res	Type
48	L5	977	C
48	L5	978	G
48	L5	981	C
48	L5	982	U
48	L5	984	C
48	L5	985	C
48	L5	986	C
48	L5	989	U
48	L5	991	C
48	L5	992	C
48	L5	995	C
48	L5	996	G
48	L5	1049	C
48	L5	1051	G
48	L5	1065	G
48	L5	1071	C
48	L5	1072	C
48	L5	1073	G
48	L5	1078	A
48	L5	1079	C
48	L5	1080	C
48	L5	1081	C
48	L5	1083	U
48	L5	1097	C
48	L5	1100	U
48	L5	1170	G
48	L5	1171	G
48	L5	1172	C
48	L5	1173	G
48	L5	1174	G
48	L5	1175	A
48	L5	1179	U
48	L5	1180	C
48	L5	1181	C
48	L5	1182	C
48	L5	1183	C
48	L5	1184	A
48	L5	1185	G
48	L5	1193	C
48	L5	1197	C
48	L5	1202	C
48	L5	1203	G

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Mol	Chain	Res	Type
48	L5	1205	G
48	L5	1210	C
48	L5	1211	G
48	L5	1212	G
48	L5	1214	C
48	L5	1215	C
48	L5	1216	C
48	L5	1217	G
48	L5	1219	G
48	L5	1221	G
48	L5	1222	A
48	L5	1233	G
48	L5	1237	C
48	L5	1238	A
48	L5	1239	C
48	L5	1243	C
48	L5	1244	G
48	L5	1245	C
48	L5	1247	U
48	L5	1252	C
48	L5	1253	G
48	L5	1254	A
48	L5	1256	G
48	L5	1257	A
48	L5	1265	G
48	L5	1267	C
48	L5	1268	G
48	L5	1269	G
48	L5	1270	A
48	L5	1271	G
48	L5	1272	C
48	L5	1273	G
48	L5	1274	A
48	L5	1275	G
48	L5	1276	C
48	L5	1277	G
48	L5	1279	A
48	L5	1280	C
48	L5	1281	G
48	L5	1285	U
48	L5	1288	G
48	L5	1289	C

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Mol	Chain	Res	Type
48	L5	1290	G
48	L5	1293	G
48	L5	1295	C
48	L5	1296	G
48	L5	1297	U
48	L5	1298	C
48	L5	1301	C
48	L5	1322	A
48	L5	1324	A
48	L5	1326	A
48	L5	1330	A
48	L5	1337	A
48	L5	1354	A
48	L5	1358	G
48	L5	1359	G
48	L5	1360	G
48	L5	1364	U
48	L5	1365	C
48	L5	1366	G
48	L5	1367	C
48	L5	1369	C
48	L5	1370	G
48	L5	1377	G
48	L5	1378	C
48	L5	1379	C
48	L5	1381	U
48	L5	1387	A
48	L5	1394	G
48	L5	1396	G
48	L5	1397	A
48	L5	1404	G
48	L5	1405	C
48	L5	1407	C
48	L5	1409	C
48	L5	1410	U
48	L5	1411	C
48	L5	1413	C
48	L5	1415	G
48	L5	1416	G
48	L5	1417	C
48	L5	1418	C
48	L5	1420	A

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Mol	Chain	Res	Type
48	L5	1421	G
48	L5	1425	G
48	L5	1434	G
48	L5	1435	G
48	L5	1437	C
48	L5	1438	U
48	L5	1440	U
48	L5	1441	C
48	L5	1446	C
48	L5	1456	C
48	L5	1457	G
48	L5	1469	C
48	L5	1477	C
48	L5	1480	C
48	L5	1481	C
48	L5	1482	G
48	L5	1483	C
48	L5	1486	C
48	L5	1497	A
48	L5	1498	G
48	L5	1501	C
48	L5	1502	G
48	L5	1503	A
48	L5	1523	A
48	L5	1530	G
48	L5	1534	A
48	L5	1547	A
48	L5	1554	A
48	L5	1564	A
48	L5	1566	C
48	L5	1578	U
48	L5	1586	G
48	L5	1591	U
48	L5	1597	G
48	L5	1612	G
48	L5	1613	A
48	L5	1614	C
48	L5	1623	A
48	L5	1624	G
48	L5	1625	G
48	L5	1626	G
48	L5	1631	A

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Mol	Chain	Res	Type
48	L5	1633	G
48	L5	1634	A
48	L5	1638	A
48	L5	1641	G
48	L5	1642	A
48	L5	1651	G
48	L5	1654	G
48	L5	1661	C
48	L5	1676	C
48	L5	1677	U
48	L5	1681	G
48	L5	1686	C
48	L5	1691	G
48	L5	1696	C
48	L5	1697	G
48	L5	1698	C
48	L5	1699	A
48	L5	1719	A
48	L5	1721	G
48	L5	1725	U
48	L5	1729	A
48	L5	1733	G
48	L5	1734	G
48	L5	1735	U
48	L5	1741	G
48	L5	1742	A
48	L5	1750	G
48	L5	1751	A
48	L5	1754	U
48	L5	1755	C
48	L5	1756	U
48	L5	1757	U
48	L5	1758	G
48	L5	1759	G
48	L5	1762	C
48	L5	1763	C
48	L5	1764	G
48	L5	1765	A
48	L5	1766	A
48	L5	1767	A
48	L5	1768	C
48	L5	1771	U

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Mol	Chain	Res	Type
48	L5	1772	C
48	L5	1775	A
48	L5	1777	C
48	L5	1778	C
48	L5	1781	U
48	L5	1787	A
48	L5	1788	A
48	L5	1797	G
48	L5	1804	A
48	L5	1805	A
48	L5	1806	G
48	L5	1807	C
48	L5	1812	C
48	L5	1820	C
48	L5	1821	G
48	L5	1822	U
48	L5	1831	C
48	L5	1832	G
48	L5	1833	U
48	L5	1834	G
48	L5	1835	G
48	L5	1836	A
48	L5	1837	A
48	L5	1840	G
48	L5	1842	G
48	L5	1844	G
48	L5	1853	G
48	L5	1854	C
48	L5	1865	A
48	L5	1867	G
48	L5	1887	U
48	L5	1891	C
48	L5	1895	A
48	L5	1908	G
48	L5	1916	U
48	L5	1917	G
48	L5	1918	C
48	L5	1919	C
48	L5	1920	G
48	L5	1923	G
48	L5	1928	U
48	L5	1929	C

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Mol	Chain	Res	Type
48	L5	1930	A
48	L5	1934	C
48	L5	1938	G
48	L5	1946	G
48	L5	1949	G
48	L5	1953	G
48	L5	1954	A
48	L5	1956	A
48	L5	1957	U
48	L5	1958	A
48	L5	1959	G
48	L5	1961	C
48	L5	1963	G
48	L5	1964	C
48	L5	1966	G
48	L5	1969	C
48	L5	1971	G
48	L5	1973	G
48	L5	1974	G
48	L5	1975	C
48	L5	1976	C
48	L5	1979	G
48	L5	1980	G
48	L5	1981	A
48	L5	1982	A
48	L5	1983	G
48	L5	1985	C
48	L5	1987	G
48	L5	1988	A
48	L5	1989	A
48	L5	1991	C
48	L5	1992	C
48	L5	1995	U
48	L5	1996	A
48	L5	1997	A
48	L5	1998	G
48	L5	1999	G
48	L5	2000	A
48	L5	2001	G
48	L5	2003	G
48	L5	2004	U
48	L5	2005	G

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Mol	Chain	Res	Type
48	L5	2006	U
48	L5	2007	A
48	L5	2008	A
48	L5	2009	C
48	L5	2010	A
48	L5	2011	A
48	L5	2015	A
48	L5	2016	C
48	L5	2018	U
48	L5	2021	C
48	L5	2024	A
48	L5	2032	G
48	L5	2043	G
48	L5	2044	G
48	L5	2046	U
48	L5	2050	G
48	L5	2052	U
48	L5	2053	G
48	L5	2054	G
48	L5	2058	G
48	L5	2060	C
48	L5	2062	G
48	L5	2066	C
48	L5	2067	A
48	L5	2068	U
48	L5	2082	C
48	L5	2083	G
48	L5	2085	C
48	L5	2087	G
48	L5	2088	U
48	L5	2089	C
48	L5	2090	G
48	L5	2091	A
48	L5	2093	A
48	L5	2094	G
48	L5	2095	U
48	L5	2097	G
48	L5	2098	A
48	L5	2102	G
48	L5	2103	A
48	L5	2105	C
48	L5	2106	G

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Mol	Chain	Res	Type
48	L5	2107	G
48	L5	2108	C
48	L5	2109	G
48	L5	2110	G
48	L5	2111	G
48	L5	2112	G
48	L5	2113	G
48	L5	2114	C
48	L5	2115	G
48	L5	2116	G
48	L5	2117	C
48	L5	2118	G
48	L5	2119	C
48	L5	2120	G
48	L5	2121	C
48	L5	2122	G
48	L5	2123	C
48	L5	2124	G
48	L5	2126	G
48	L5	2242	C
48	L5	2245	C
48	L5	2248	C
48	L5	2249	G
48	L5	2250	G
48	L5	2252	G
48	L5	2253	C
48	L5	2254	C
48	L5	2255	C
48	L5	2257	G
48	L5	2258	C
48	L5	2259	G
48	L5	2260	G
48	L5	2261	A
48	L5	2263	G
48	L5	2266	A
48	L5	2268	G
48	L5	2275	C
48	L5	2276	G
48	L5	2277	A
48	L5	2287	C
48	L5	2288	C
48	L5	2298	A

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Mol	Chain	Res	Type
48	L5	2299	G
48	L5	2310	U
48	L5	2330	A
48	L5	2331	G
48	L5	2344	C
48	L5	2346	G
48	L5	2349	C
48	L5	2359	G
48	L5	2360	U
48	L5	2377	A
48	L5	2380	A
48	L5	2388	G
48	L5	2394	A
48	L5	2395	G
48	L5	2396	U
48	L5	2410	A
48	L5	2420	C
48	L5	2423	U
48	L5	2424	U
48	L5	2435	C
48	L5	2439	C
48	L5	2446	G
48	L5	2448	G
48	L5	2463	C
48	L5	2466	U
48	L5	2469	G
48	L5	2472	G
48	L5	2473	G
48	L5	2481	G
48	L5	2482	A
48	L5	2486	C
48	L5	2487	C
48	L5	2488	U
48	L5	2489	C
48	L5	2493	U
48	L5	2494	G
48	L5	2500	G
48	L5	2501	G
48	L5	2502	C
48	L5	2503	C
48	L5	2504	G
48	L5	2509	A

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Mol	Chain	Res	Type
48	L5	2511	A
48	L5	2525	A
48	L5	2527	A
48	L5	2535	A
48	L5	2542	G
48	L5	2544	G
48	L5	2545	G
48	L5	2547	G
48	L5	2549	A
48	L5	2551	A
48	L5	2552	U
48	L5	2553	G
48	L5	2554	G
48	L5	2555	G
48	L5	2557	G
48	L5	2567	G
48	L5	2568	U
48	L5	2571	A
48	L5	2581	C
48	L5	2585	A
48	L5	2586	C
48	L5	2599	A
48	L5	2615	G
48	L5	2616	G
48	L5	2618	G
48	L5	2625	C
48	L5	2636	G
48	L5	2646	G
48	L5	2647	G
48	L5	2651	C
48	L5	2657	A
48	L5	2660	G
48	L5	2668	C
48	L5	2673	G
48	L5	2680	G
48	L5	2684	G
48	L5	2685	U
48	L5	2687	C
48	L5	2693	A
48	L5	2694	A
48	L5	2705	U
48	L5	2706	U

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Mol	Chain	Res	Type
48	L5	2708	C
48	L5	2710	G
48	L5	2712	G
48	L5	2715	G
48	L5	2717	C
48	L5	2719	G
48	L5	2722	G
48	L5	2723	A
48	L5	2724	G
48	L5	2737	C
48	L5	2738	U
48	L5	2741	A
48	L5	2750	G
48	L5	2751	G
48	L5	2752	G
48	L5	2753	A
48	L5	2754	G
48	L5	2755	A
48	L5	2758	G
48	L5	2759	U
48	L5	2761	U
48	L5	2764	A
48	L5	2765	U
48	L5	2766	C
48	L5	2767	U
48	L5	2774	G
48	L5	2781	A
48	L5	2784	C
48	L5	2785	A
48	L5	2786	U
48	L5	2792	C
48	L5	2795	C
48	L5	2812	C
48	L5	2814	G
48	L5	2820	G
48	L5	2824	U
48	L5	2825	G
48	L5	2826	U
48	L5	2827	U
48	L5	2829	G
48	L5	2836	G
48	L5	2853	G

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Mol	Chain	Res	Type
48	L5	2855	A
48	L5	2857	G
48	L5	2858	C
48	L5	2868	A
48	L5	2872	U
48	L5	2875	G
48	L5	2900	G
48	L5	2901	G
48	L5	2902	U
48	L5	2903	C
48	L5	2904	G
48	L5	2905	G
48	L5	2907	C
48	L5	3587	G
48	L5	3591	C
48	L5	3595	G
48	L5	3603	C
48	L5	3604	U
48	L5	3614	U
48	L5	3623	G
48	L5	3624	G
48	L5	3633	A
48	L5	3640	A
48	L5	3642	U
48	L5	3644	A
48	L5	3646	A
48	L5	3659	G
48	L5	3660	A
48	L5	3667	G
48	L5	3668	C
48	L5	3669	G
48	L5	3670	G
48	L5	3671	C
48	L5	3672	G
48	L5	3688	U
48	L5	3694	C
48	L5	3701	G
48	L5	3703	G
48	L5	3707	U
48	L5	3708	G
48	L5	3709	A
48	L5	3711	U

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Mol	Chain	Res	Type
48	L5	3712	G
48	L5	3721	A
48	L5	3725	A
48	L5	3727	U
48	L5	3728	U
48	L5	3733	G
48	L5	3734	A
48	L5	3748	G
48	L5	3751	G
48	L5	3754	A
48	L5	3755	G
48	L5	3756	U
48	L5	3757	A
48	L5	3758	A
48	L5	3759	C
48	L5	3760	U
48	L5	3763	G
48	L5	3764	A
48	L5	3765	C
48	L5	3766	U
48	L5	3767	C
48	L5	3768	U
48	L5	3770	U
48	L5	3774	G
48	L5	3775	G
48	L5	3781	A
48	L5	3783	A
48	L5	3784	U
48	L5	3787	C
48	L5	3788	U
48	L5	3793	A
48	L5	3805	A
48	L5	3809	G
48	L5	3812	U
48	L5	3815	A
48	L5	3816	U
48	L5	3817	G
48	L5	3819	A
48	L5	3834	A
48	L5	3836	U
48	L5	3838	U
48	L5	3849	U

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Mol	Chain	Res	Type
48	L5	3865	A
48	L5	3875	A
48	L5	3876	C
48	L5	3877	G
48	L5	3878	G
48	L5	3879	G
48	L5	3883	G
48	L5	3887	G
48	L5	3888	A
48	L5	3895	G
48	L5	3899	A
48	L5	3903	A
48	L5	3904	A
48	L5	3905	G
48	L5	3906	A
48	L5	3913	U
48	L5	3914	G
48	L5	3915	A
48	L5	3936	G
48	L5	3937	G
48	L5	3940	A
48	L5	3941	A
48	L5	3942	G
48	L5	4068	U
48	L5	4074	G
48	L5	4076	C
48	L5	4080	G
48	L5	4082	G
48	L5	4084	G
48	L5	4093	G
48	L5	4098	C
48	L5	4100	C
48	L5	4101	C
48	L5	4102	G
48	L5	4105	G
48	L5	4108	C
48	L5	4110	C
48	L5	4112	C
48	L5	4113	G
48	L5	4114	C
48	L5	4115	U
48	L5	4117	C

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Mol	Chain	Res	Type
48	L5	4118	U
48	L5	4119	G
48	L5	4120	G
48	L5	4121	C
48	L5	4125	A
48	L5	4129	G
48	L5	4130	C
48	L5	4136	C
48	L5	4137	G
48	L5	4138	C
48	L5	4139	G
48	L5	4140	C
48	L5	4141	G
48	L5	4142	C
48	L5	4149	G
48	L5	4154	G
48	L5	4155	A
48	L5	4156	C
48	L5	4160	C
48	L5	4161	U
48	L5	4166	G
48	L5	4168	A
48	L5	4181	G
48	L5	4182	G
48	L5	4189	G
48	L5	4201	A
48	L5	4207	G
48	L5	4210	A
48	L5	4220	G
48	L5	4227	U
48	L5	4232	A
48	L5	4233	G
48	L5	4248	G
48	L5	4249	A
48	L5	4252	G
48	L5	4253	A
48	L5	4254	A
48	L5	4260	C
48	L5	4266	A
48	L5	4271	A
48	L5	4275	G
48	L5	4286	C

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Mol	Chain	Res	Type
48	L5	4289	G
48	L5	4294	U
48	L5	4300	U
48	L5	4303	G
48	L5	4304	U
48	L5	4312	C
48	L5	4313	A
48	L5	4315	A
48	L5	4316	C
48	L5	4326	G
48	L5	4327	G
48	L5	4328	G
48	L5	4335	C
48	L5	4337	A
48	L5	4344	U
48	L5	4347	C
48	L5	4348	C
48	L5	4353	G
48	L5	4365	G
48	L5	4366	G
48	L5	4374	A
48	L5	4375	G
48	L5	4376	A
48	L5	4378	A
48	L5	4385	C
48	L5	4392	A
48	L5	4394	A
48	L5	4396	C
48	L5	4397	U
48	L5	4411	C
48	L5	4417	U
48	L5	4418	U
48	L5	4420	A
48	L5	4425	G
48	L5	4436	U
48	L5	4442	C
48	L5	4446	G
48	L5	4447	A
48	L5	4451	C
48	L5	4462	A
48	L5	4463	U
48	L5	4464	C

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Mol	Chain	Res	Type
48	L5	4469	U
48	L5	4471	A
48	L5	4473	G
48	L5	4474	C
48	L5	4475	A
48	L5	4476	G
48	L5	4498	U
48	L5	4509	A
48	L5	4510	U
48	L5	4511	A
48	L5	4513	G
48	L5	4517	C
48	L5	4522	G
48	L5	4526	G
48	L5	4532	G
48	L5	4543	G
48	L5	4546	A
48	L5	4547	G
48	L5	4558	C
48	L5	4565	G
48	L5	4571	G
48	L5	4573	G
48	L5	4580	C
48	L5	4587	A
48	L5	4588	A
48	L5	4598	G
48	L5	4599	U
48	L5	4607	G
48	L5	4615	G
48	L5	4633	A
48	L5	4634	U
48	L5	4635	G
48	L5	4641	G
48	L5	4645	G
48	L5	4655	U
48	L5	4668	C
48	L5	4670	A
48	L5	4676	G
48	L5	4691	C
48	L5	4692	G
48	L5	4693	C
48	L5	4694	C

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Mol	Chain	Res	Type
48	L5	4695	U
48	L5	4697	U
48	L5	4705	A
48	L5	4706	A
48	L5	4707	U
48	L5	4728	C
48	L5	4729	G
48	L5	4730	G
48	L5	4731	C
48	L5	4732	A
48	L5	4736	C
48	L5	4737	C
48	L5	4741	G
48	L5	4742	A
48	L5	4746	U
48	L5	4747	C
48	L5	4748	G
48	L5	4751	U
48	L5	4754	C
48	L5	4756	U
48	L5	4758	G
48	L5	4761	U
48	L5	4762	A
48	L5	4768	U
48	L5	4769	C
48	L5	4770	C
48	L5	4773	C
48	L5	4858	G
48	L5	4859	G
48	L5	4860	G
48	L5	4861	G
48	L5	4863	C
48	L5	4867	U
48	L5	4868	G
48	L5	4869	C
48	L5	4870	G
48	L5	4871	G
48	L5	4872	A
48	L5	4874	U
48	L5	4876	C
48	L5	4878	C
48	L5	4880	U

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Mol	Chain	Res	Type
48	L5	4881	C
48	L5	4882	G
48	L5	4886	U
48	L5	4888	G
48	L5	4892	A
48	L5	4898	C
48	L5	4899	G
48	L5	4900	C
48	L5	4908	G
48	L5	4910	G
48	L5	4911	G
48	L5	4912	C
48	L5	4916	C
48	L5	4921	C
48	L5	4923	U
48	L5	4924	C
48	L5	4925	G
48	L5	4929	G
48	L5	4934	G
48	L5	4936	A
48	L5	4937	C
48	L5	4939	G
48	L5	4944	U
48	L5	4947	G
48	L5	4948	U
48	L5	4949	G
48	L5	4954	A
48	L5	4955	C
48	L5	4956	C
48	L5	4957	U
48	L5	4958	G
48	L5	4961	G
48	L5	4962	C
48	L5	4966	A
48	L5	4974	U
48	L5	4977	A
48	L5	4983	U
48	L5	4986	U
48	L5	4987	U
48	L5	4988	C
48	L5	4989	U
48	L5	4990	G

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Mol	Chain	Res	Type
48	L5	5004	U
48	L5	5007	G
48	L5	5009	A
48	L5	5012	A
48	L5	5015	G
48	L5	5020	U
48	L5	5022	C
48	L5	5023	C
48	L5	5024	U
48	L5	5025	C
48	L5	5026	G
48	L5	5029	G
48	L5	5030	C
48	L5	5032	A
48	L5	5039	G
48	L5	5048	C
48	L5	5052	C
48	L5	5053	G
48	L5	5059	A
48	L5	5066	G
49	L7	7	G
49	L7	22	A
49	L7	24	C
49	L7	25	G
49	L7	36	C
49	L7	40	U
49	L7	54	A
49	L7	55	A
49	L7	64	G
49	L7	74	A
49	L7	90	A
49	L7	95	C
49	L7	100	A
49	L7	106	G
49	L7	110	G
49	L7	111	C
49	L7	117	G
49	L7	120	U
50	L8	2	G
50	L8	17	A
50	L8	23	C
50	L8	34	U

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Mol	Chain	Res	Type
50	L8	35	C
50	L8	48	A
50	L8	52	A
50	L8	56	G
50	L8	59	A
50	L8	62	A
50	L8	63	U
50	L8	68	G
50	L8	71	A
50	L8	80	A
50	L8	82	A
50	L8	83	C
50	L8	84	A
50	L8	86	U
50	L8	87	G
50	L8	88	A
50	L8	95	A
50	L8	103	A
50	L8	104	A
50	L8	105	C
50	L8	108	A
50	L8	109	C
50	L8	110	U
50	L8	114	G
50	L8	116	C
50	L8	118	C
50	L8	123	U
50	L8	125	C
50	L8	126	C
50	L8	127	U
50	L8	128	C
50	L8	129	C
50	L8	131	G
50	L8	150	C
50	L8	153	C

All (90) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
13	X	9	G
13	X	36	A
13	X	37	G

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
13	X	58	G
13	X	63	U
13	X	84	U
13	X	87	G
13	X	98	C
13	X	108	A
13	X	115	G
13	X	117	C
13	X	200	A
13	X	213	U
14	S2	24	C
14	S2	213	G
14	S2	417	C
14	S2	465	A
14	S2	604	A
14	S2	606	G
14	S2	668	A
14	S2	688	U
14	S2	795	A
14	S2	833	C
14	S2	868	G
14	S2	912	C
14	S2	913	A
14	S2	980	A
14	S2	1061	U
14	S2	1137	U
14	S2	1293	A
14	S2	1419	C
14	S2	1567	G
14	S2	1664	A
14	S2	1813	A
14	S2	1823	A
14	S2	1860	A
48	L5	201	C
48	L5	406	C
48	L5	417	G
48	L5	648	G
48	L5	693	C
48	L5	930	G
48	L5	931	C
48	L5	944	A
48	L5	956	A

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Mol	Chain	Res	Type
48	L5	958	G
48	L5	974	C
48	L5	1072	C
48	L5	1238	A
48	L5	1329	G
48	L5	1359	G
48	L5	1410	U
48	L5	1455	G
48	L5	1633	G
48	L5	1945	U
48	L5	2017	C
48	L5	2066	C
48	L5	2094	G
48	L5	2114	C
48	L5	2117	C
48	L5	2118	G
48	L5	2122	G
48	L5	2387	A
48	L5	2465	U
48	L5	2585	A
48	L5	2693	A
48	L5	2773	C
48	L5	2783	C
48	L5	2826	U
48	L5	3623	G
48	L5	3671	C
48	L5	3711	U
48	L5	3765	C
48	L5	3782	A
48	L5	3808	C
48	L5	3886	G
48	L5	4097	G
48	L5	4417	U
48	L5	4598	G
48	L5	4728	C
48	L5	4729	G
48	L5	4887	G
48	L5	4907	A
48	L5	4911	G
48	L5	4946	C
48	L5	4989	U
48	L5	5003	G

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Mol	Chain	Res	Type
48	L5	5025	C
50	L8	16	G
50	L8	87	G

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

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

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 238 ligands modelled in this entry, 238 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

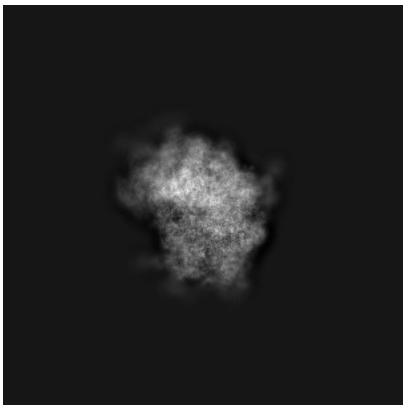
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-51132. These allow visual inspection of the internal detail of the map and identification of artifacts.

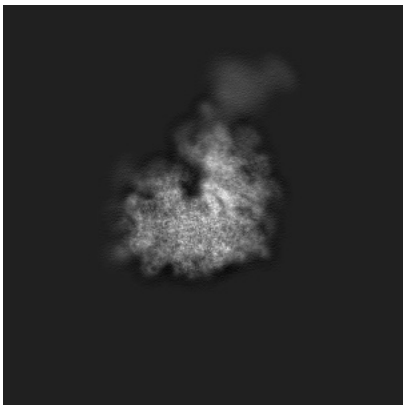
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

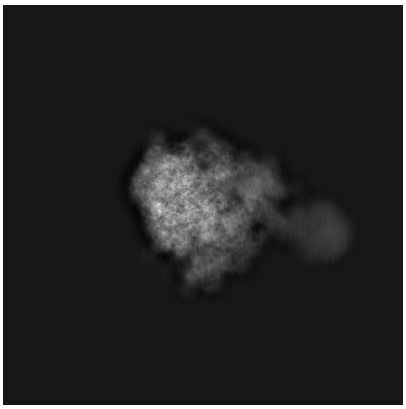
6.1.1 Primary map



X

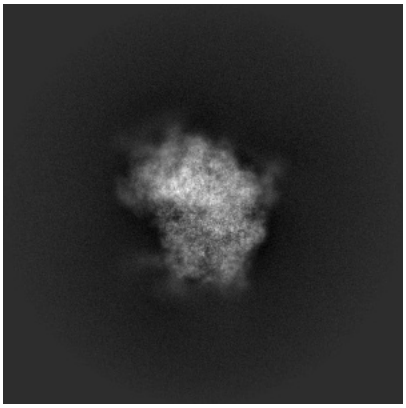


Y

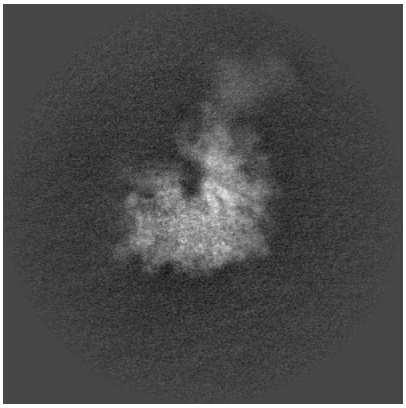


Z

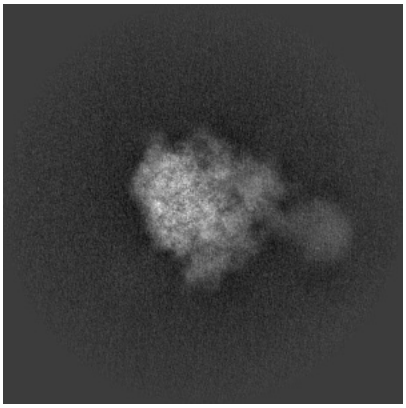
6.1.2 Raw map



X



Y

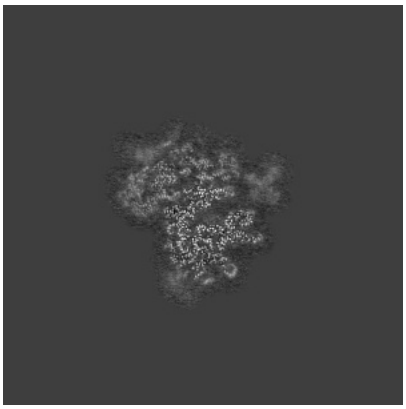


Z

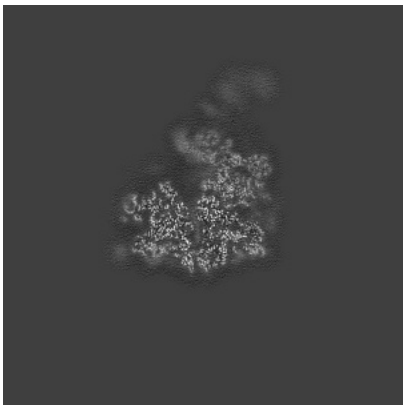
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

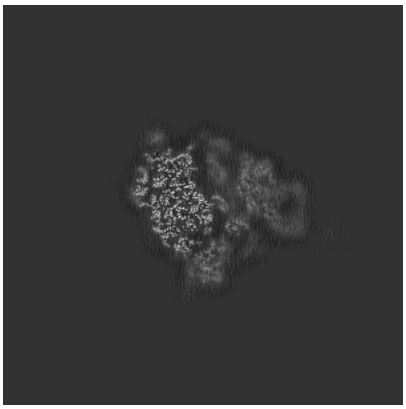
6.2.1 Primary map



X Index: 416

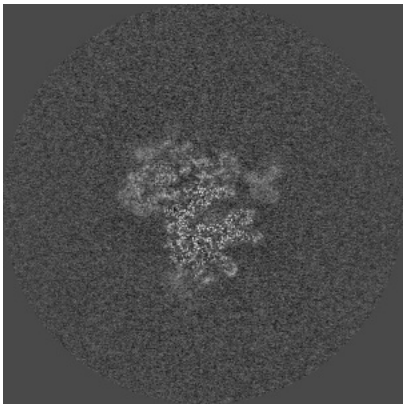


Y Index: 416

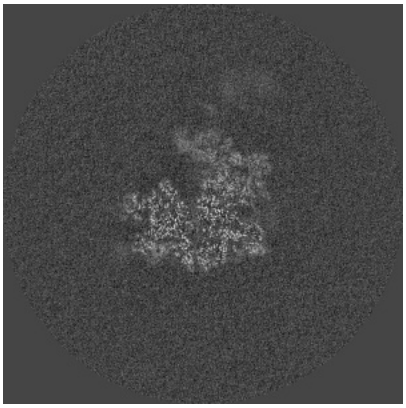


Z Index: 416

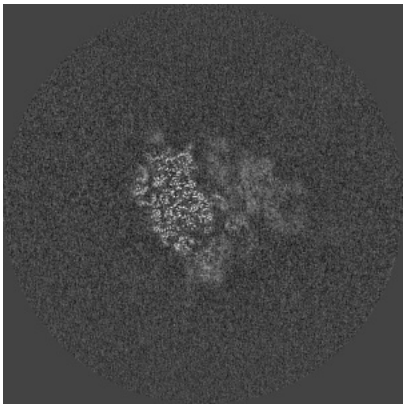
6.2.2 Raw map



X Index: 416



Y Index: 416

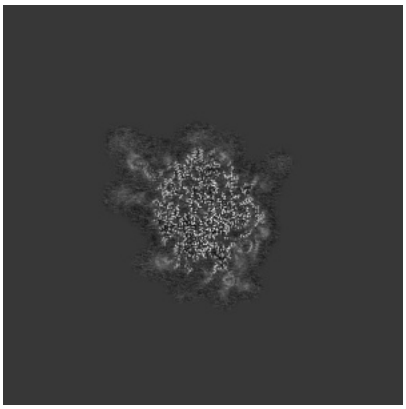


Z Index: 416

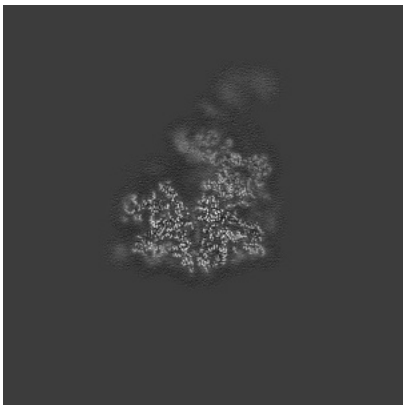
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

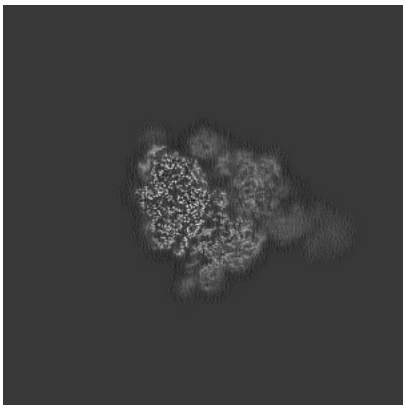
6.3.1 Primary map



X Index: 380

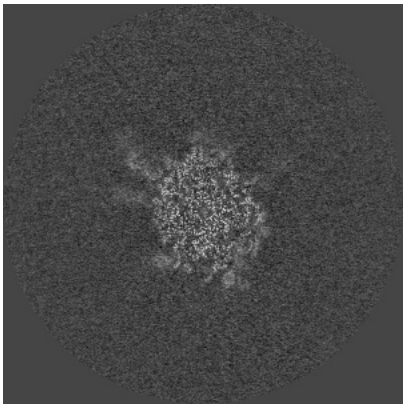


Y Index: 417

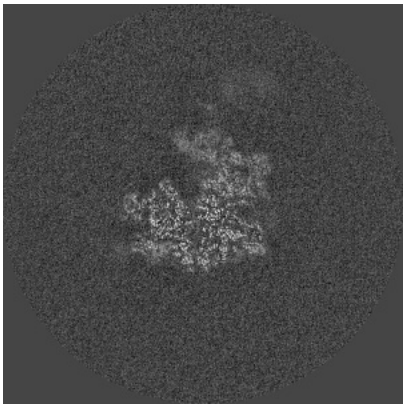


Z Index: 441

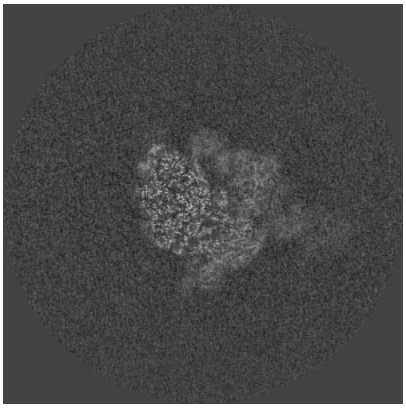
6.3.2 Raw map



X Index: 381



Y Index: 417

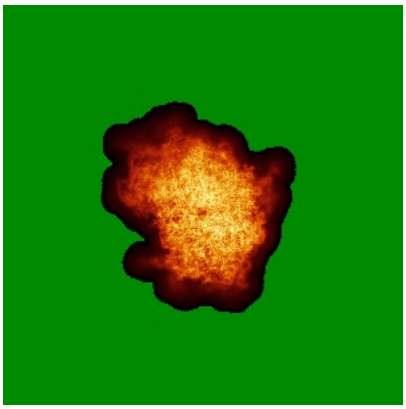


Z Index: 440

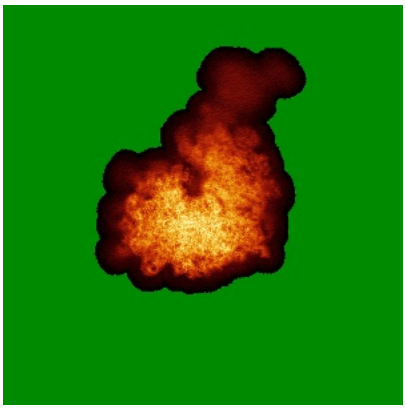
The images above show the largest variance slices of the map in three orthogonal directions.

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

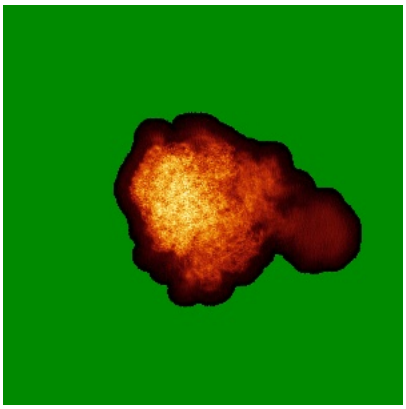
6.4.1 Primary map



X

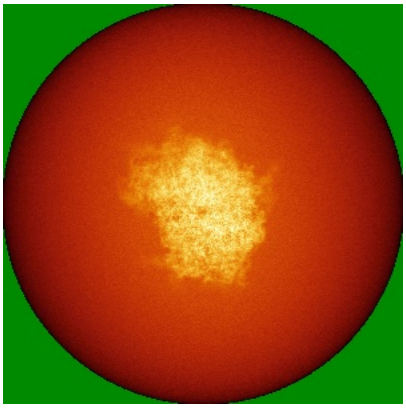


Y

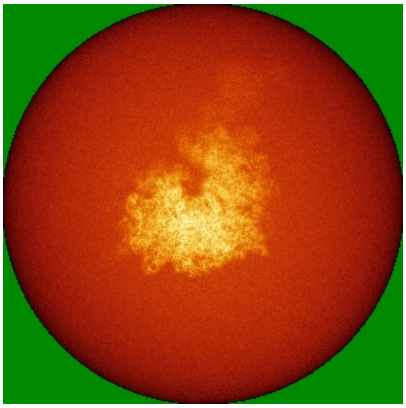


Z

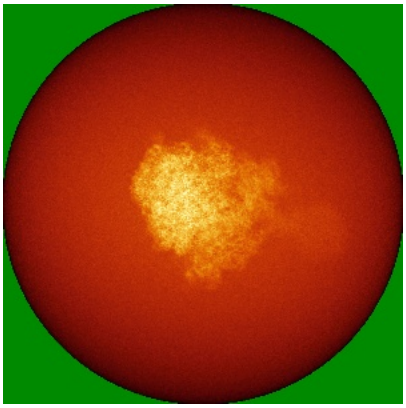
6.4.2 Raw map



X



Y



Z

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

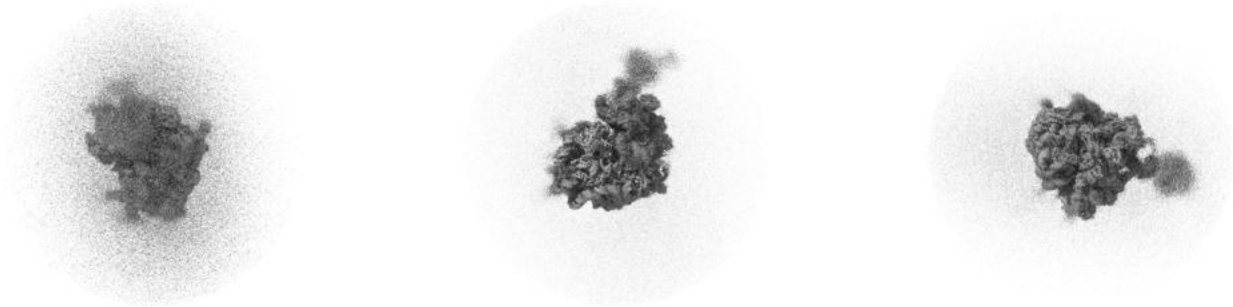
6.5 Orthogonal surface views (i)

6.5.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.01. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



X Y Z

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

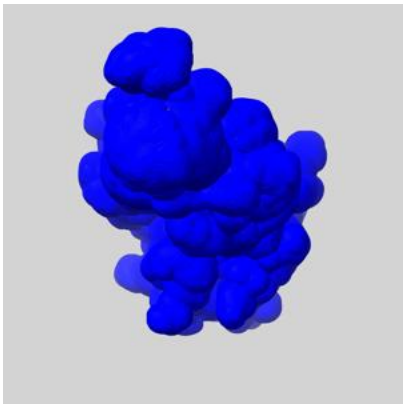
6.6 Mask visualisation

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

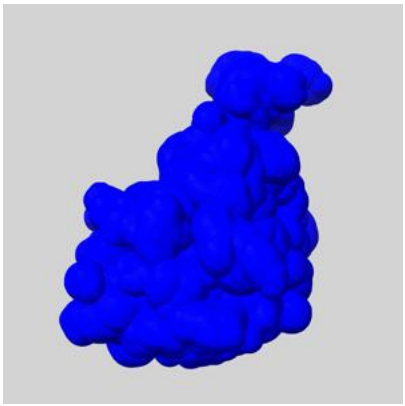
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

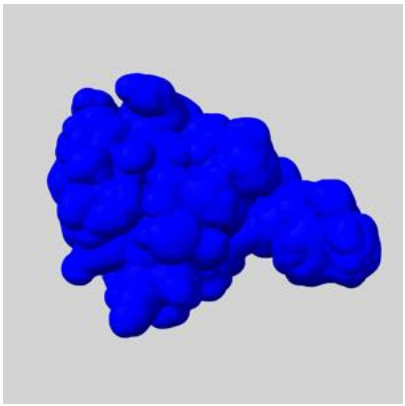
6.6.1 emd_51132_msk_1.map



X



Y

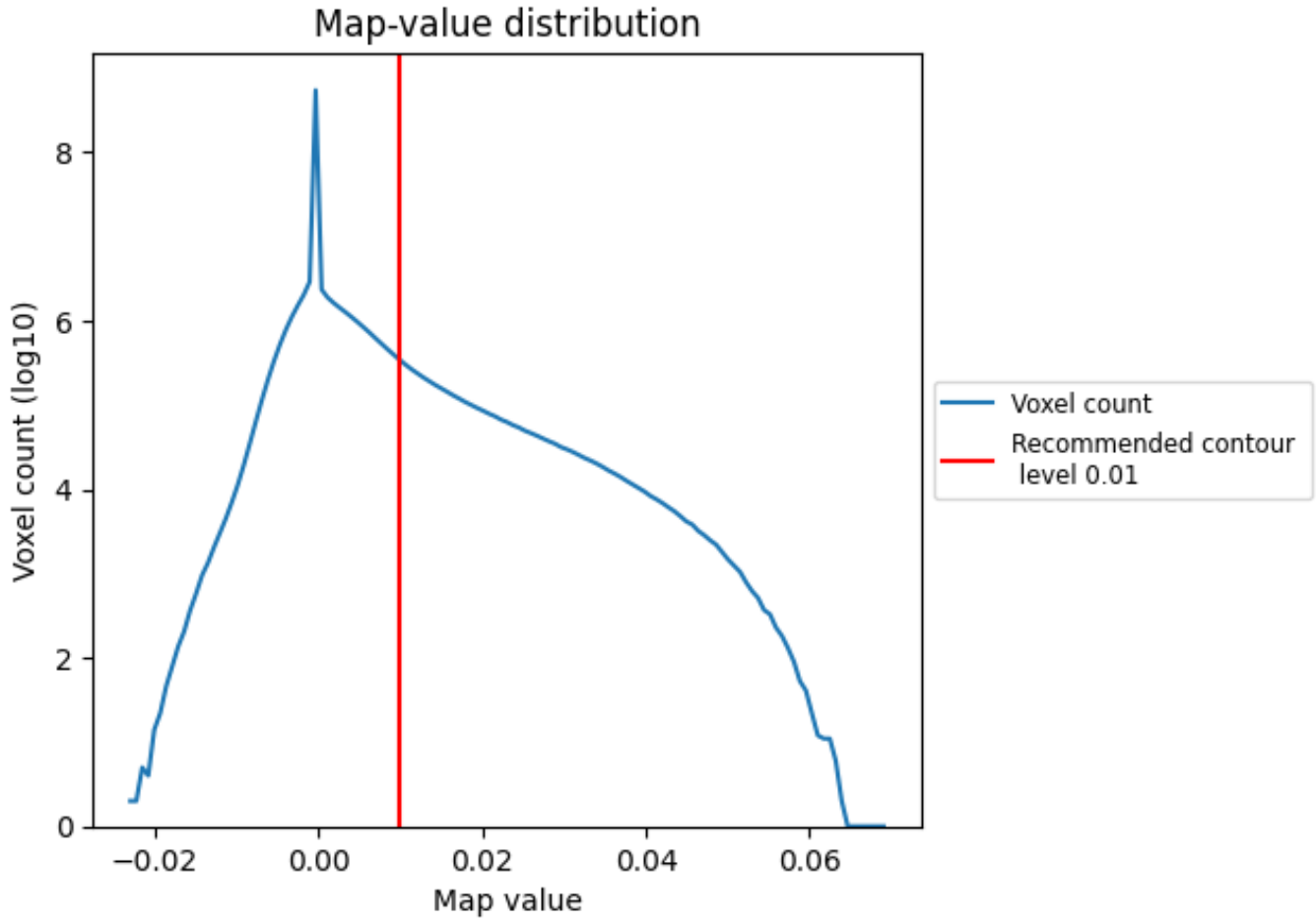


Z

7 Map analysis

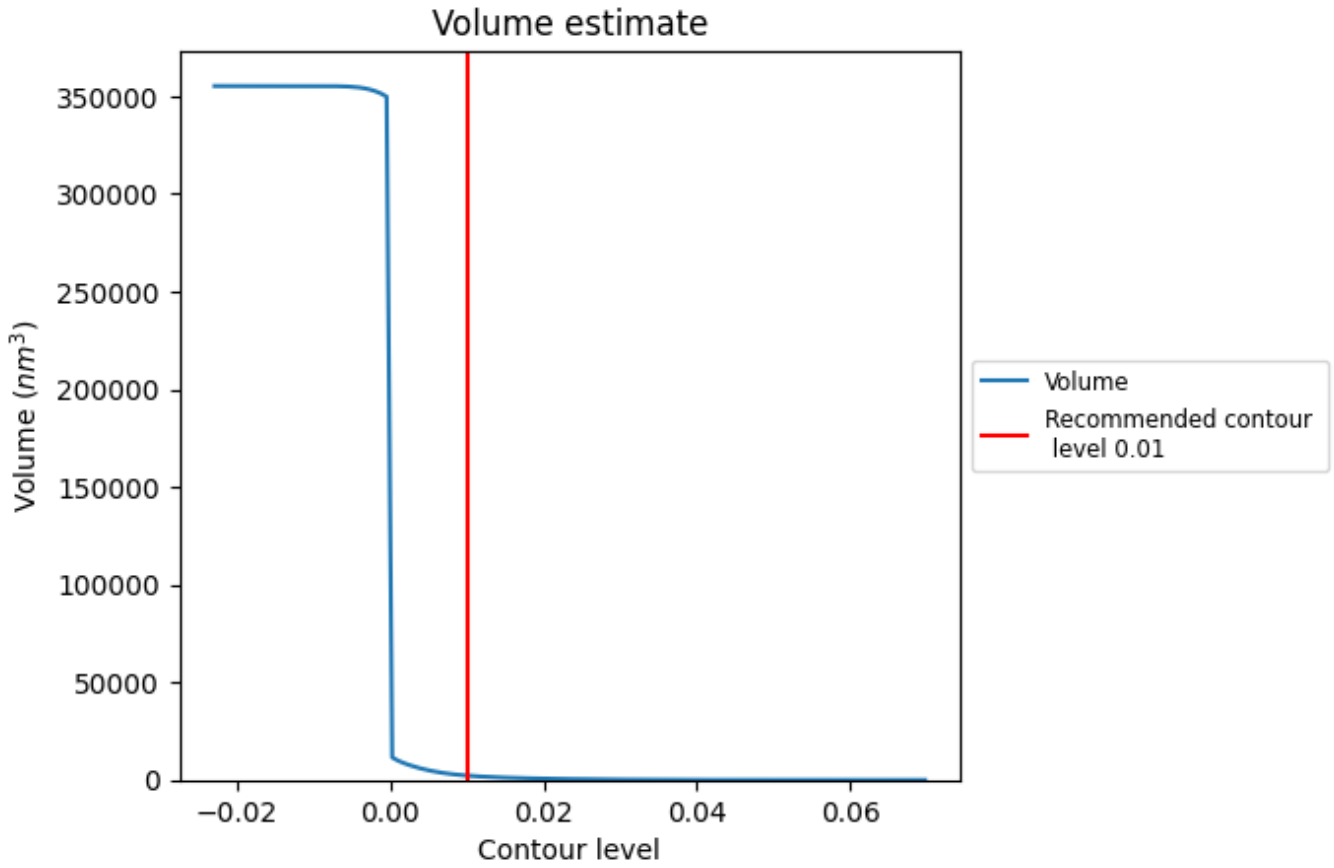
This section contains the results of statistical analysis of the map.

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.

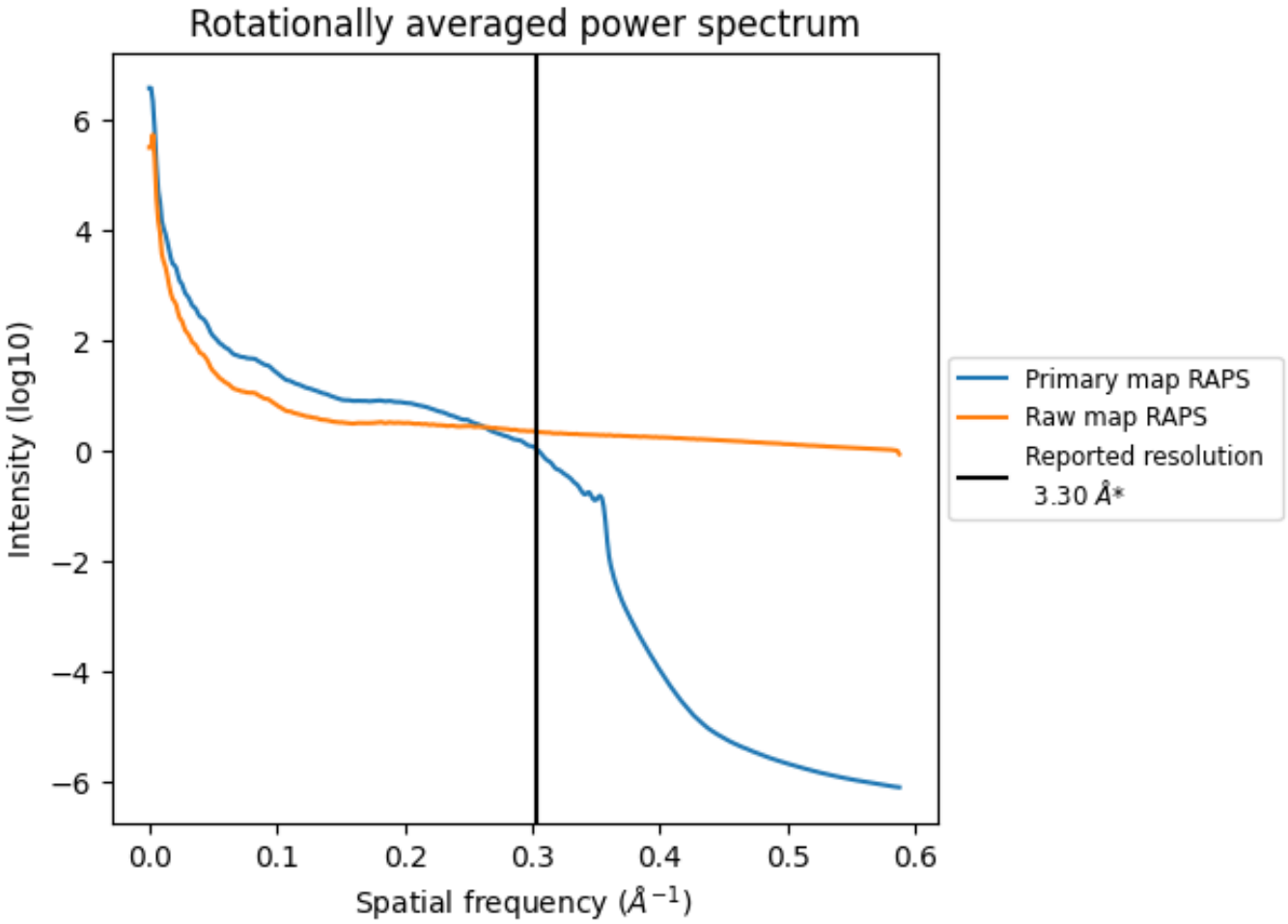
7.2 Volume estimate



The volume at the recommended contour level is 2249 nm^3; this corresponds to an approximate mass of 2031 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)

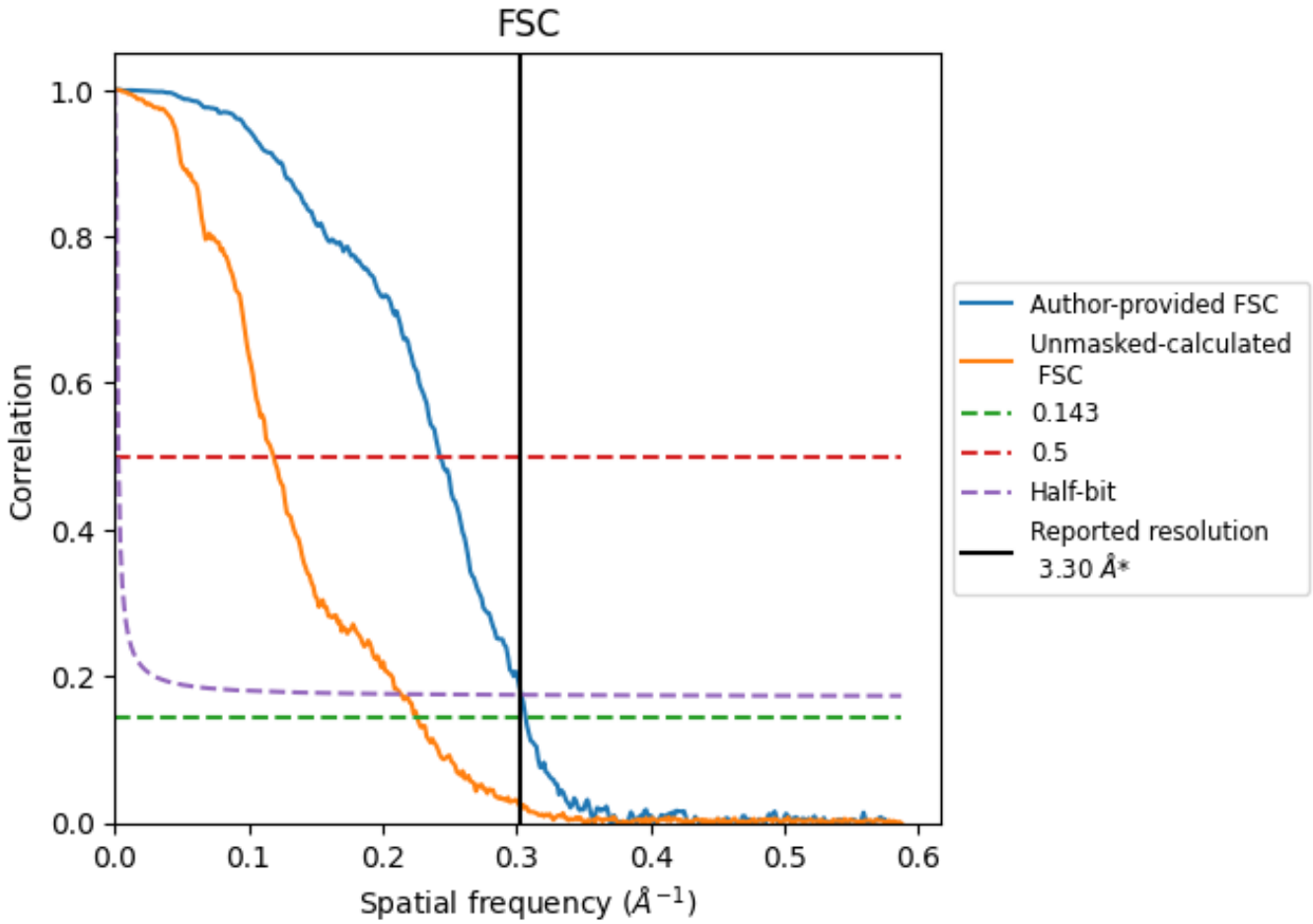


*Reported resolution corresponds to spatial frequency of 0.303 $Å^{-1}$

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 0.303 Å^{-1}

8.2 Resolution estimates (i)

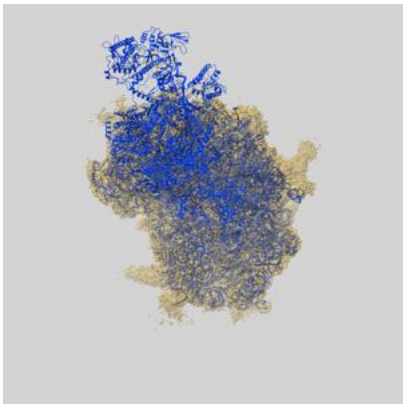
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.30	-	-
Author-provided FSC curve	3.26	4.12	3.29
Unmasked-calculated*	4.42	8.42	4.68

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 4.42 differs from the reported value 3.3 by more than 10 %

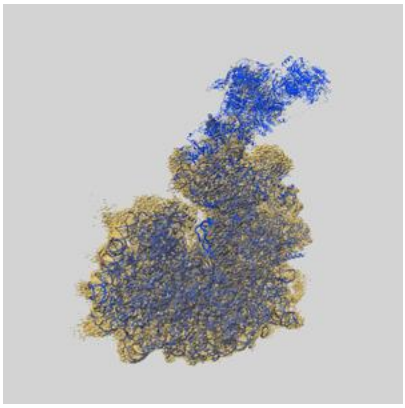
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-51132 and PDB model 9G8M. Per-residue inclusion information can be found in section 3 on page 25.

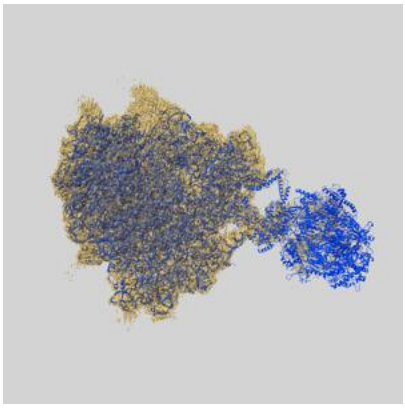
9.1 Map-model overlay



X



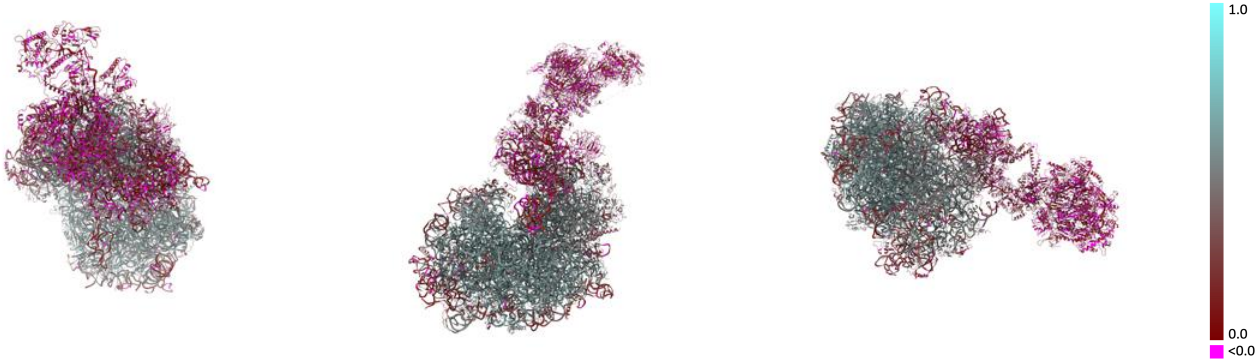
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.01 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.

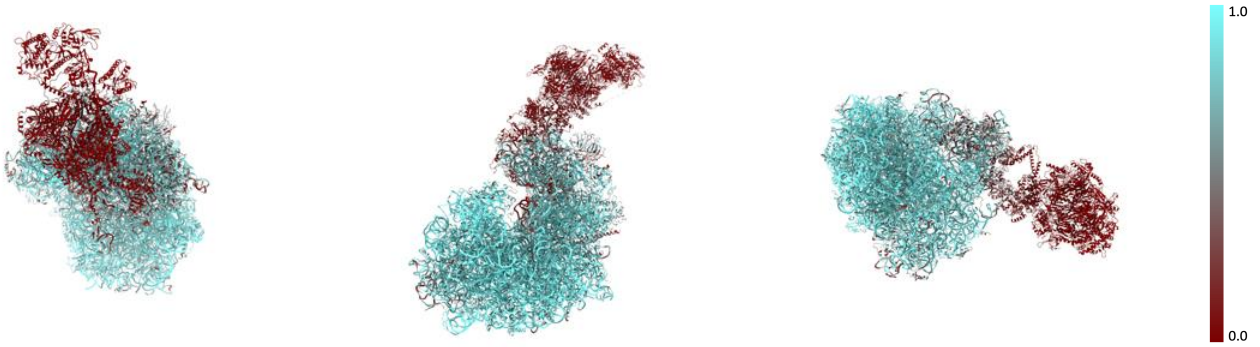
9.2 Q-score mapped to coordinate model



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.

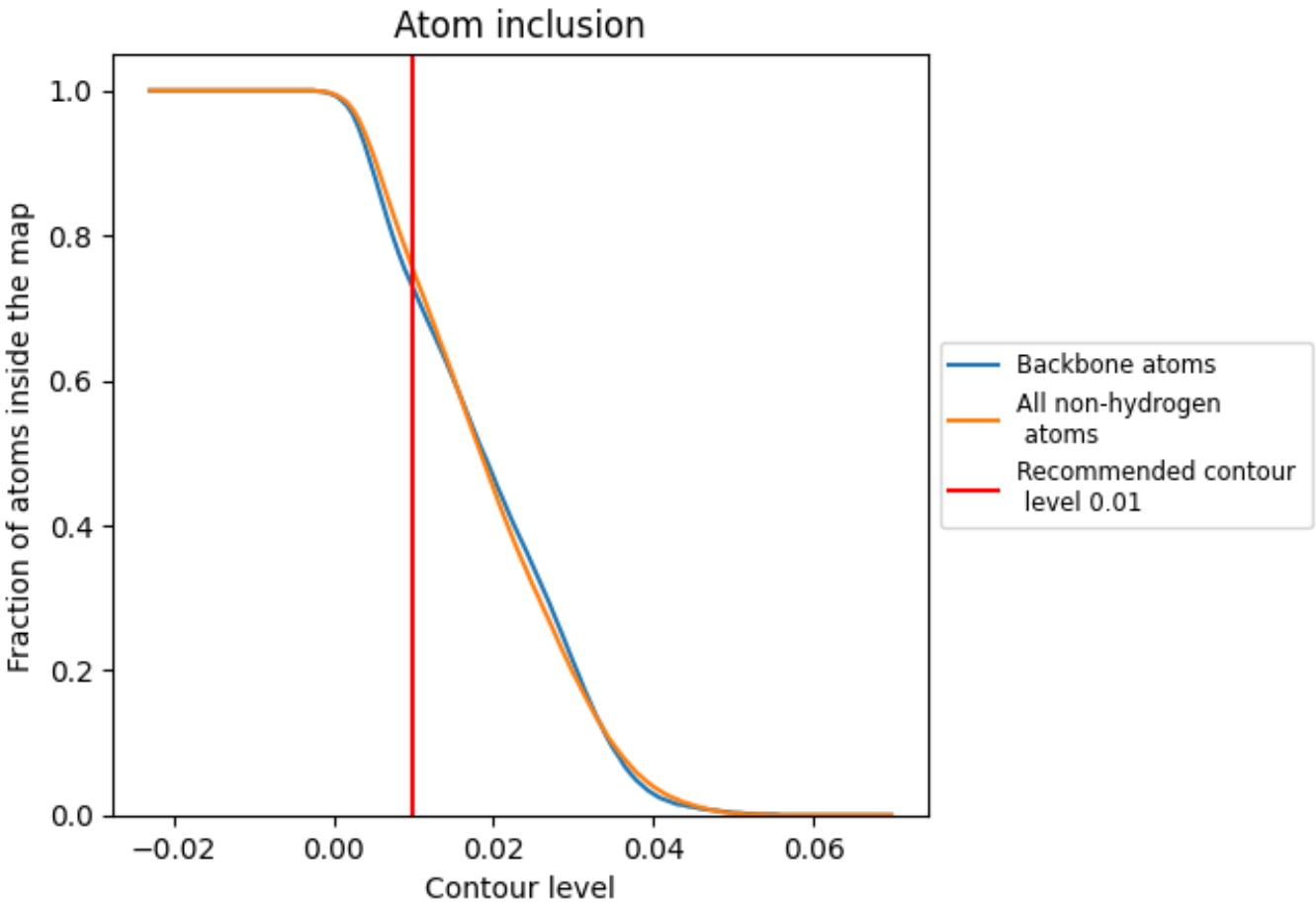
9.3 Atom inclusion mapped to coordinate model



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 (0.01).

9.4 Atom inclusion (i)



At the recommended contour level, 73% of all backbone atoms, 75% 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 (0.01) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7510	0.4050
A	0.0980	0.1490
E	0.0060	0.1440
F	0.0230	0.1110
G	0.0190	0.1170
H	0.0250	0.1240
I	0.0160	0.1330
J	0.0080	0.0860
K	0.0280	0.1260
L	0.0190	0.1140
L5	0.9430	0.4950
L7	0.9930	0.5610
L8	0.9720	0.5360
LA	0.9580	0.5750
LB	0.9280	0.5520
LC	0.9270	0.5460
LD	0.9160	0.5030
LE	0.8410	0.4430
LF	0.9290	0.5550
LG	0.8660	0.4850
LH	0.9320	0.5380
LI	0.8980	0.5380
LJ	0.8170	0.4030
LL	0.9080	0.5290
LM	0.9440	0.5340
LN	0.9680	0.5860
LO	0.9520	0.5650
LP	0.9510	0.5670
LQ	0.9550	0.5700
LR	0.8100	0.4390
LS	0.9620	0.5650
LT	0.9430	0.5510
LU	0.9030	0.4580
LV	0.9400	0.5690
LW	0.6880	0.3800

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Chain	Atom inclusion	Q-score
LX	0.9160	0.5300
LY	0.9370	0.5410
LZ	0.9420	0.5350
La	0.9660	0.5740
Lb	0.8400	0.4950
Lc	0.8550	0.4550
Ld	0.9240	0.5330
Le	0.9500	0.5730
Lf	0.9640	0.5790
Lg	0.9230	0.5420
Lh	0.9180	0.5370
Li	0.9110	0.5300
Lj	0.9600	0.5720
Lk	0.8670	0.4610
Ll	0.9410	0.5580
Lm	0.9250	0.5440
Ln	0.9280	0.5520
Lo	0.8960	0.5310
Lp	0.9170	0.5620
Lr	0.9530	0.5590
M	0.0050	0.1180
N	0.0150	0.1180
O	0.0170	0.0910
S2	0.8560	0.3830
SA	0.8160	0.4250
SB	0.8160	0.4570
SC	0.8570	0.4820
SD	0.4590	0.2350
SE	0.7990	0.4430
SF	0.3850	0.1110
SG	0.7030	0.3060
SH	0.7080	0.3870
SI	0.7660	0.4450
SJ	0.8250	0.4580
SK	0.3680	0.1330
SL	0.7560	0.4790
SM	0.0840	0.1210
SN	0.8530	0.5020
SO	0.8200	0.4770
SP	0.4290	0.1480
SQ	0.5610	0.1250
SR	0.5940	0.2280

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Chain	Atom inclusion	Q-score
SS	0.4700	0.1180
ST	0.5130	0.1250
SU	0.4620	0.1900
SV	0.8540	0.4450
SW	0.8820	0.5120
SX	0.8960	0.5080
SY	0.8220	0.4120
SZ	0.4240	0.1120
Sa	0.8490	0.4650
Sb	0.7570	0.4320
Sc	0.3780	0.1100
Sd	0.6390	0.2680
Se	0.6960	0.3720
Sf	0.3710	0.1380
Sg	0.4180	0.1140
X	0.4040	0.1240