Full wwPDB EM Validation Report ⓘ

Mar 20, 2024 – 09:36 AM JST

PDB ID	:	6LQR
EMDB ID	:	EMD-0951
Title	:	Cryo-EM structure of 90S small subunit preribosomes in transition states (State C)
Authors	:	Du, Y.; Ye, K.
Deposited on	:	2020-01-14
Resolution	:	8.60 Å(reported)
Based on initial model	:	6LQP

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 ①) were used in the production of this report:

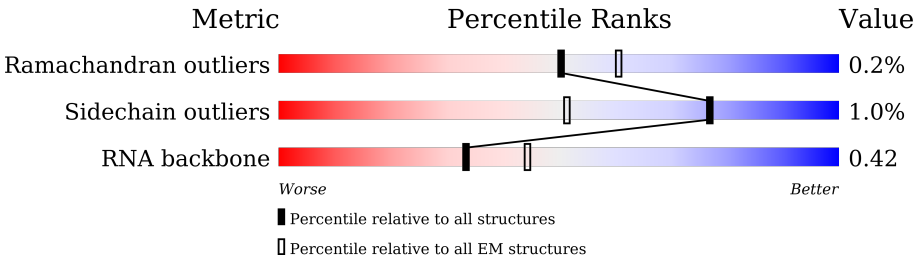
EMDB validation analysis	:	0.0.1.dev70
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

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 8.60 Å.

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



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

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

Mol	Chain	Length	Quality of chain
1	3A	333	34% 15% 47%
2	5A	700	9% 19% 7% 73%
3	SA	1809	15% 41% 26% 29%
4	SC	255	36% 87% 10%
5	SF	261	11% 84% 12%
6	SG	225	7% 95% 5%
7	SH	236	24% 70% 29%
8	SI	190	16% 84% 13%

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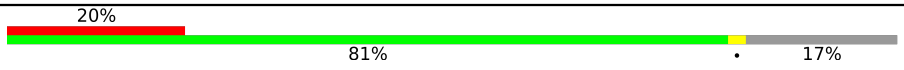
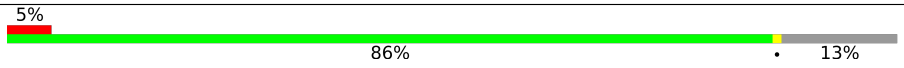
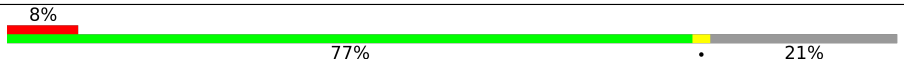
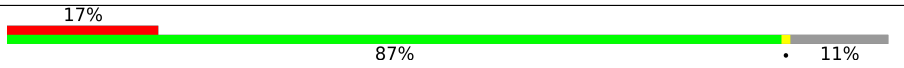
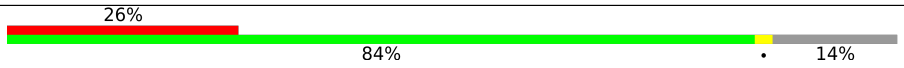
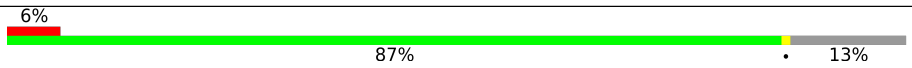
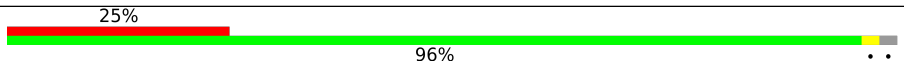
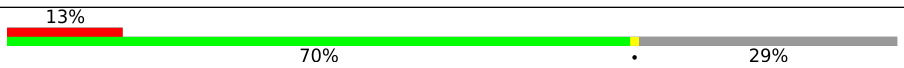
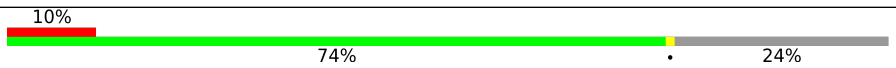
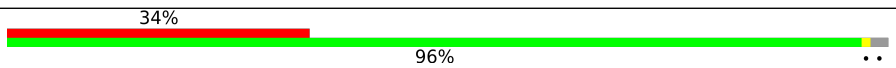
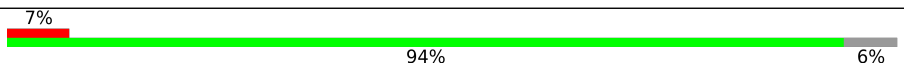
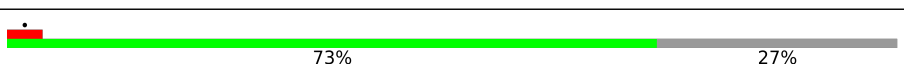
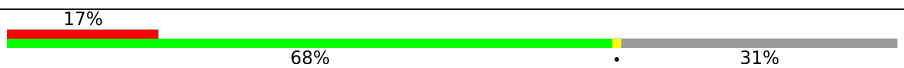
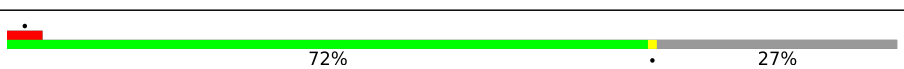
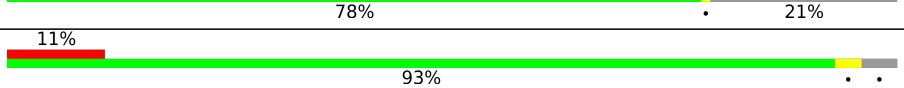
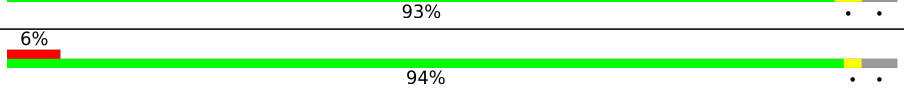
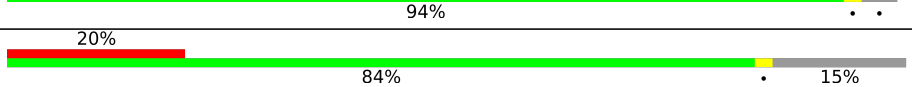
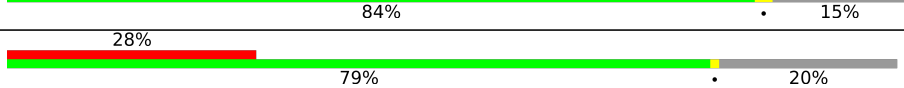
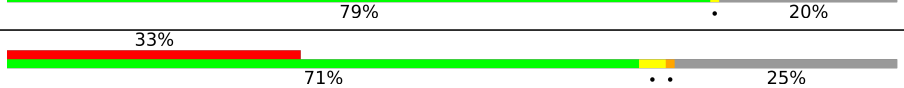
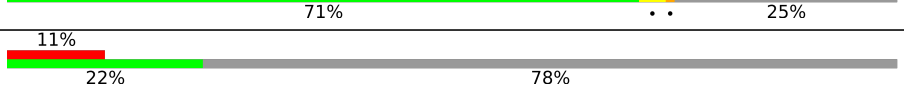
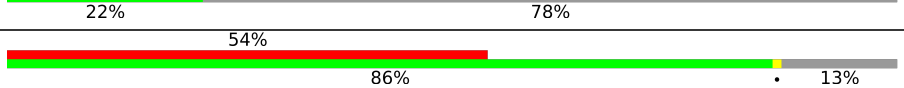
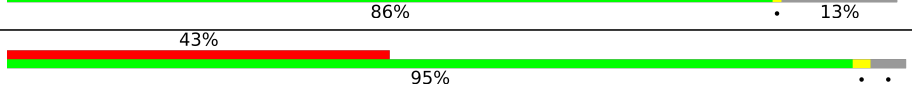
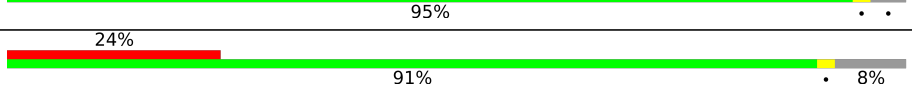
Mol	Chain	Length	Quality of chain
9	SJ	200	
10	SK	197	
11	SM	156	
12	SO	151	
13	SP	137	
14	SR	143	
15	SX	130	
16	SY	145	
17	SZ	135	
18	Sc	82	
19	Sd	67	
20	3B	327	
20	3C	327	
21	3D	504	
22	3E	511	
23	3F	573	
24	3G	126	
24	3H	126	
25	A4	776	
26	A5	643	
27	A8	713	
28	A9	575	
29	AE	1769	
30	AF	513	
31	AG	896	

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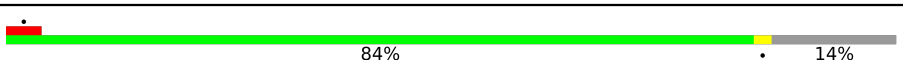
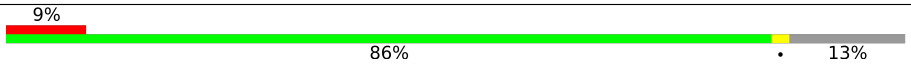
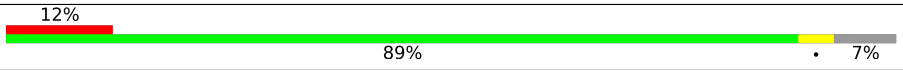
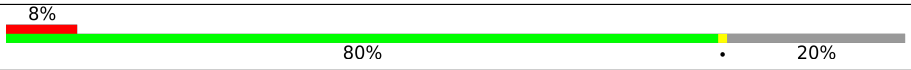
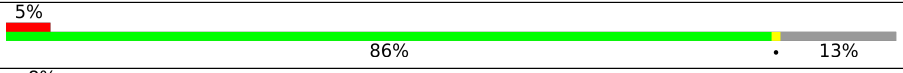
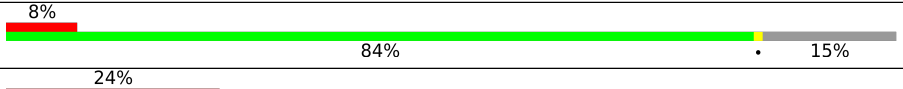
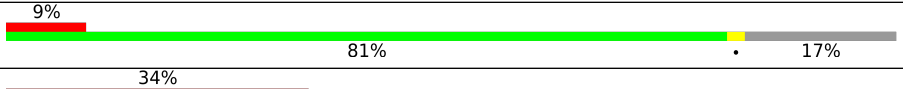
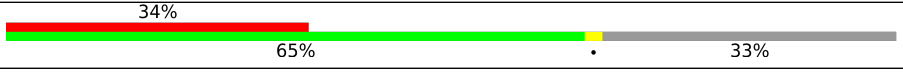
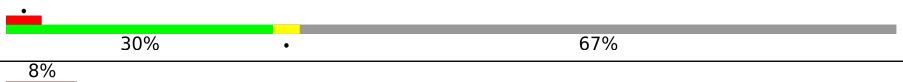
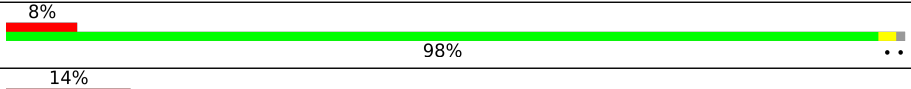
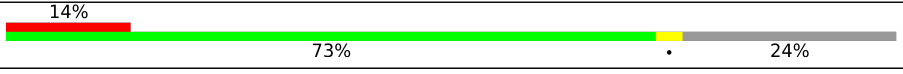
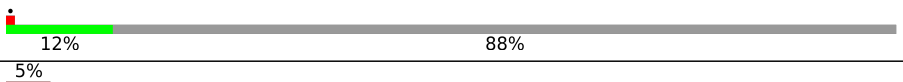
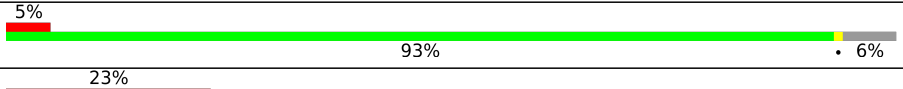
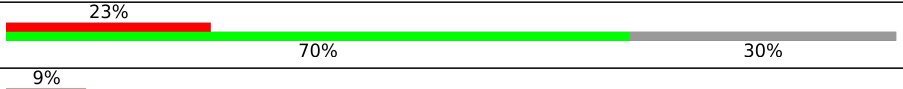
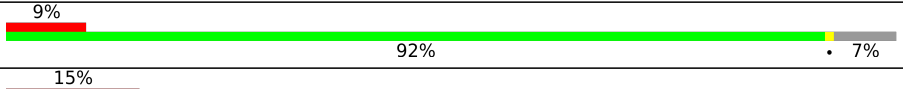
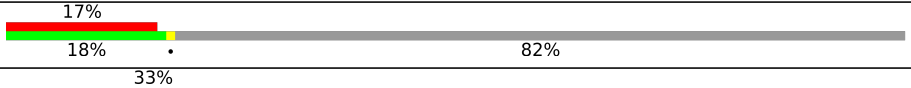
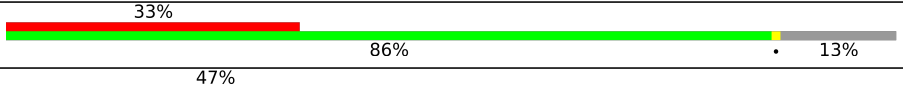
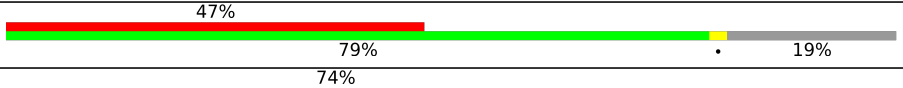
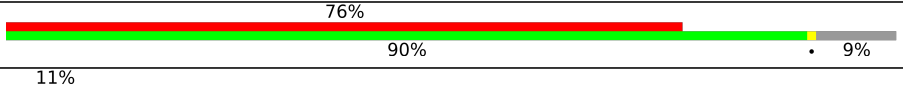
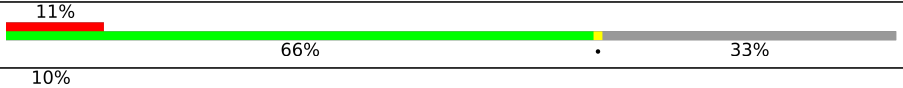
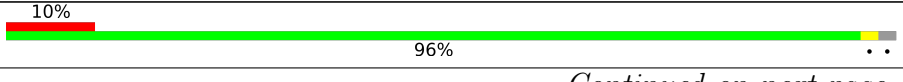
Mol	Chain	Length	Quality of chain
32	B1	923	
33	B2	943	
34	B3	817	
35	B8	594	
36	BE	939	
37	B6	440	
38	5B	214	
39	5C	554	
40	5D	250	
41	5E	593	
42	5F	183	
43	5G	290	
44	5H	610	
45	5I	489	
46	5J	217	
47	5K	189	
48	RA	707	
49	RB	357	
50	RD	1729	
51	RE	1237	
52	RF	297	
53	RG	252	
53	RH	252	
54	RJ	1183	
55	RK	367	

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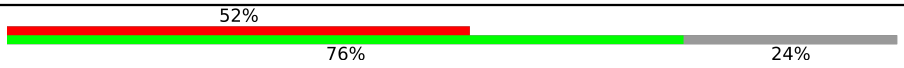
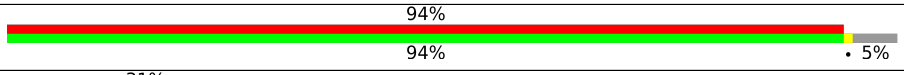
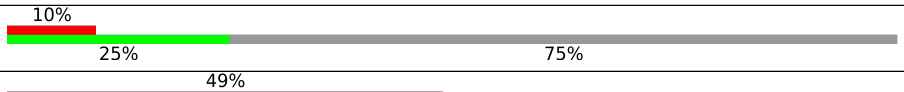
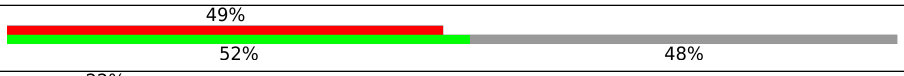
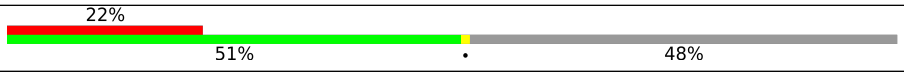
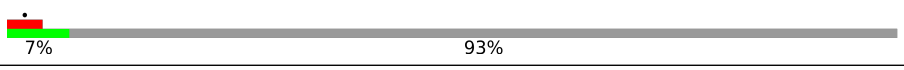
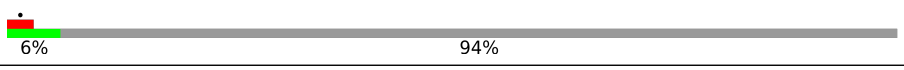
Mol	Chain	Length	Quality of chain
56	RL	1056	
56	RM	1056	
57	RN	810	
58	RO	552	
59	RP	2493	
60	RQ	899	
61	RS	483	
62	RT	326	
63	RY	534	
64	X1	347	

2 Entry composition

There are 67 unique types of molecules in this entry. The entry contains 215267 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a RNA chain called U3 snoRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	3A	175	3711	1661	648	1227	175	0	0

- Molecule 2 is a RNA chain called 5' ETS.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	5A	192	4117	1838	746	1341	192	0	0

- Molecule 3 is a RNA chain called 18S pre-rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
3	SA	1283	27362	12228	4872	8979	1283	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	SC	230	1830	1156	335	335	4	0	0

- Molecule 5 is a protein called 40S ribosomal protein S4-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	SF	229	1815	1161	331	320	3	0	0

- Molecule 6 is a protein called 40S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	SG	213	1669	1045	307	314	3	0	0

- Molecule 7 is a protein called 40S ribosomal protein S6-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	SH	167	Total	C	N	O	S	0	0
			1327	834	256	235	2		

- Molecule 8 is a protein called 40S ribosomal protein S7-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
8	SI	165	Total	C	N	O	0	0
			1321	853	226	242		

- Molecule 9 is a protein called 40S ribosomal protein S8-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	SJ	166	Total	C	N	O	S	0	0
			1324	824	262	236	2		

- Molecule 10 is a protein called 40S ribosomal protein S9-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	SK	171	Total	C	N	O	S	0	0
			1388	879	268	240	1		

- Molecule 11 is a protein called 40S ribosomal protein S11-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	SM	123	Total	C	N	O	S	0	0
			997	641	189	164	3		

- Molecule 12 is a protein called 40S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	SO	134	Total	C	N	O	S	0	0
			1087	698	202	186	1		

- Molecule 13 is a protein called 40S ribosomal protein S14-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	SP	118	Total	C	N	O	S	0	0
			868	536	164	165	3		

- Molecule 14 is a protein called 40S ribosomal protein S16-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
14	SR	125	Total 973	C 625	N 174	O 174	0	0

- Molecule 15 is a protein called 40S ribosomal protein S22-B.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	SX	127	Total 1003	C 640	N 183	O 177	S 3	0	0

- Molecule 16 is a protein called 40S ribosomal protein S23-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	SY	103	Total 786	C 503	N 144	O 137	S 2	0	0

- Molecule 17 is a protein called 40S ribosomal protein S24-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
17	SZ	102	Total 809	C 517	N 148	O 144	0	0

- Molecule 18 is a protein called 40S ribosomal protein S27-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	Sc	80	Total 603	C 377	N 109	O 112	S 5	0	0

- Molecule 19 is a protein called 40S ribosomal protein S28-A.

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

- Molecule 20 is a protein called rRNA 2'-O-methyltransferase fibrillarin.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	3B	240	Total 1865	C 1184	N 333	O 338	S 10	0	0
20	3C	225	Total 1763	C 1120	N 316	O 317	S 10	0	0

- Molecule 21 is a protein called Nucleolar protein 56.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	3D	369	Total	C	N	O	S	0	0
			2848	1811	489	540	8		

- Molecule 22 is a protein called Nucleolar protein 58.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	3E	431	Total	C	N	O	S	0	0
			3028	1888	543	588	9		

- Molecule 23 is a protein called Ribosomal RNA-processing protein 9.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	3F	454	Total	C	N	O	S	0	0
			3643	2315	638	680	10		

- Molecule 24 is a protein called 13 kDa ribonucleoprotein-associated protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	3G	121	Total	C	N	O	S	0	0
			916	583	158	171	4		
24	3H	121	Total	C	N	O	S	0	0
			916	583	158	171	4		

- Molecule 25 is a protein called U3 small nucleolar RNA-associated protein 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	A4	662	Total	C	N	O	S	0	0
			5226	3309	910	986	21		

- Molecule 26 is a protein called U3 small nucleolar RNA-associated protein 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	A5	514	Total	C	N	O	S	0	0
			3976	2520	688	755	13		

- Molecule 27 is a protein called U3 small nucleolar RNA-associated protein 8.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	A8	532	Total	C	N	O	S	0	0
			3229	2008	592	626	3		

- Molecule 28 is a protein called U3 small nucleolar RNA-associated protein 9.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	A9	128	Total	C	N	O	S	0	0
			939	594	173	170	2		

- Molecule 29 is a protein called U3 small nucleolar RNA-associated protein 10.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	AE	1534	Total	C	N	O	S	0	0
			9955	6242	1771	1923	19		

- Molecule 30 is a protein called U3 small nucleolar RNA-associated protein 15.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	AF	493	Total	C	N	O	S	0	0
			3911	2462	702	735	12		

- Molecule 31 is a protein called NET1-associated nuclear protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	AG	826	Total	C	N	O	S	0	0
			6570	4181	1111	1259	19		

- Molecule 32 is a protein called Periodic tryptophan protein 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	B1	793	Total	C	N	O	S	0	0
			6331	4046	1085	1182	18		

- Molecule 33 is a protein called U3 small nucleolar RNA-associated protein 12.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	B2	825	Total	C	N	O	S	0	0
			6502	4156	1096	1223	27		

- Molecule 34 is a protein called U3 small nucleolar RNA-associated protein 13.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	B3	757	Total	C	N	O	S	0	0
			5919	3769	993	1130	27		

- Molecule 35 is a protein called U3 small nucleolar RNA-associated protein 18.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	B8	477	Total	C	N	O	S	0	0
			3764	2387	662	705	10		

- Molecule 36 is a protein called U3 small nucleolar RNA-associated protein 21.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	BE	820	Total	C	N	O	S	0	0
			6450	4090	1114	1225	21		

- Molecule 37 is a protein called U3 small nucleolar RNA-associated protein 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	B6	374	Total	C	N	O	S	0	0
			2800	1782	501	505	12		

- Molecule 38 is a protein called Bud site selection protein 21.

Mol	Chain	Residues	Atoms				AltConf	Trace
38	5B	60	Total	C	N	O	0	0
			495	310	101	84		

- Molecule 39 is a protein called U3 small nucleolar RNA-associated protein 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	5C	458	Total	C	N	O	S	0	0
			3612	2276	636	689	11		

- Molecule 40 is a protein called U3 small nucleolar RNA-associated protein 11.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	5D	167	Total	C	N	O	S	0	0
			1396	862	266	263	5		

- Molecule 41 is a protein called U3 small nucleolar RNA-associated protein MPP10.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	5E	193	Total	C	N	O	S	0	0
			1564	970	280	310	4		

- Molecule 42 is a protein called U3 small nucleolar ribonucleoprotein protein IMP3.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	5F	182	Total	C	N	O	S	0	0
			1530	967	287	269	7		

- Molecule 43 is a protein called U3 small nucleolar ribonucleoprotein protein IMP4.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	5G	219	Total	C	N	O	S	0	0
			1756	1107	325	318	6		

- Molecule 44 is a protein called Something about silencing protein 10.

Mol	Chain	Residues	Atoms				AltConf	Trace
44	5H	74	Total	C	N	O	0	0
			596	373	122	101		

- Molecule 45 is a protein called Protein SOF1.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	5I	461	Total	C	N	O	S	0	0
			3765	2354	686	709	16		

- Molecule 46 is a protein called rRNA-processing protein FCF2.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	5J	151	Total	C	N	O	S	0	0
			1280	807	240	228	5		

- Molecule 47 is a protein called rRNA-processing protein FCF1.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	5K	175	Total	C	N	O	S	0	0
			1403	896	256	241	10		

- Molecule 48 is a protein called Ribosome biogenesis protein ENP2.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	RA	338	Total	C	N	O	S	0	0
			2709	1713	463	524	9		

- Molecule 49 is a protein called U3 small nucleolar ribonucleoprotein protein LCP5.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	RB	134	Total	C	N	O	S	0	0
			1108	664	227	214	3		

- Molecule 50 is a protein called rRNA biogenesis protein RRP5.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	RD	316	Total	C	N	O	S	0	0
			2412	1541	414	452	5		

- Molecule 51 is a protein called U3 small nucleolar RNA-associated protein 22.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	RE	1079	Total	C	N	O	S	0	0
			8716	5666	1437	1589	24		

- Molecule 52 is a protein called Ribosomal RNA-processing protein 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	RF	241	Total	C	N	O	S	0	0
			1963	1253	335	367	8		

- Molecule 53 is a protein called Ribosomal RNA small subunit methyltransferase NEP1.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	RG	216	Total	C	N	O	S	0	0
			1701	1079	296	315	11		
53	RH	230	Total	C	N	O	S	0	0
			1799	1142	313	333	11		

- Molecule 54 is a protein called Ribosome biogenesis protein BMS1.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	RJ	796	Total	C	N	O	S	0	0
			6379	4086	1136	1128	29		

- Molecule 55 is a protein called RNA 3'-terminal phosphate cyclase-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	RK	360	Total	C	N	O	S	0	0
			2781	1781	473	516	11		

- Molecule 56 is a protein called RNA cytidine acetyltransferase.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	RL	805	Total	C	N	O	S	0	0
			4539	2760	885	887	7		
56	RM	766	Total	C	N	O		0	0
			3779	2247	766	766			

- Molecule 57 is a protein called Nucleolar complex protein 14.

Mol	Chain	Residues	Atoms					AltConf	Trace
57	RN	607	Total	C	N	O	S	0	0
			4529	2861	820	837	11		

- Molecule 58 is a protein called Nucleolar complex protein 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
58	RO	525	Total	C	N	O	S	0	0
			3766	2412	646	696	12		

- Molecule 59 is a protein called U3 small nucleolar RNA-associated protein 20.

Mol	Chain	Residues	Atoms					AltConf	Trace
59	RP	2108	Total	C	N	O	S	0	0
			12171	7483	2291	2381	16		

- Molecule 60 is a protein called U3 small nucleolar RNA-associated protein 14.

Mol	Chain	Residues	Atoms					AltConf	Trace
60	RQ	226	Total	C	N	O	S	0	0
			1651	1023	313	313	2		

- Molecule 61 is a protein called Essential nuclear protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
61	RS	251	Total	C	N	O	S	0	0
			2051	1340	349	359	3		

- Molecule 62 is a protein called Pno1.

Mol	Chain	Residues	Atoms					AltConf	Trace
62	RT	169	Total	C	N	O	S	0	0
			1334	849	244	237	4		

- Molecule 63 is a protein called Protein BFR2.

Mol	Chain	Residues	Atoms				AltConf	Trace
63	RY	37	Total	C	N	O	0	0
			299	191	48	60		

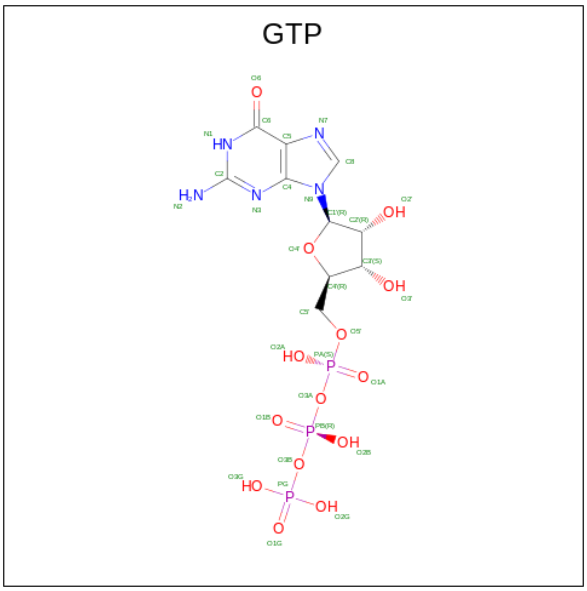
- Molecule 64 is a protein called Unassigned helices.

Mol	Chain	Residues	Atoms				AltConf	Trace
64	X1	22	Total	C	N	O	0	0
			110	66	22	22		

- Molecule 65 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
65	Sc	1	Total	Zn	0
			1	1	
65	5K	1	Total	Zn	0
			1	1	

- Molecule 66 is GUANOSINE-5'-TRIPHOSPHATE (three-letter code: GTP) (formula: $C_{10}H_{16}N_5O_{14}P_3$).



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

- Molecule 67 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

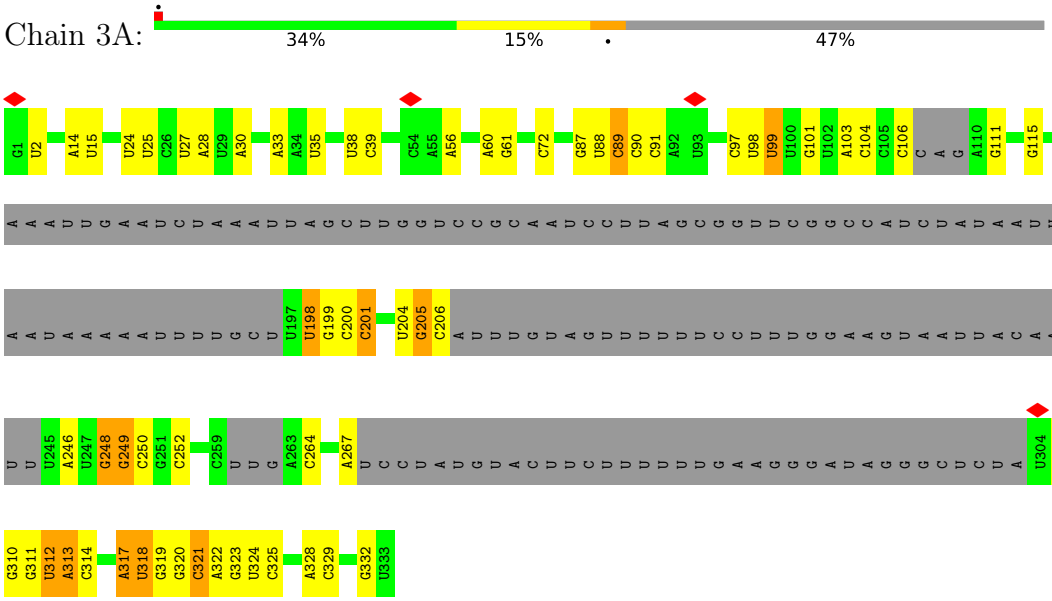
Mol	Chain	Residues	Atoms		AltConf
			Total	Mg	
67	RJ	1	1	1	0

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.

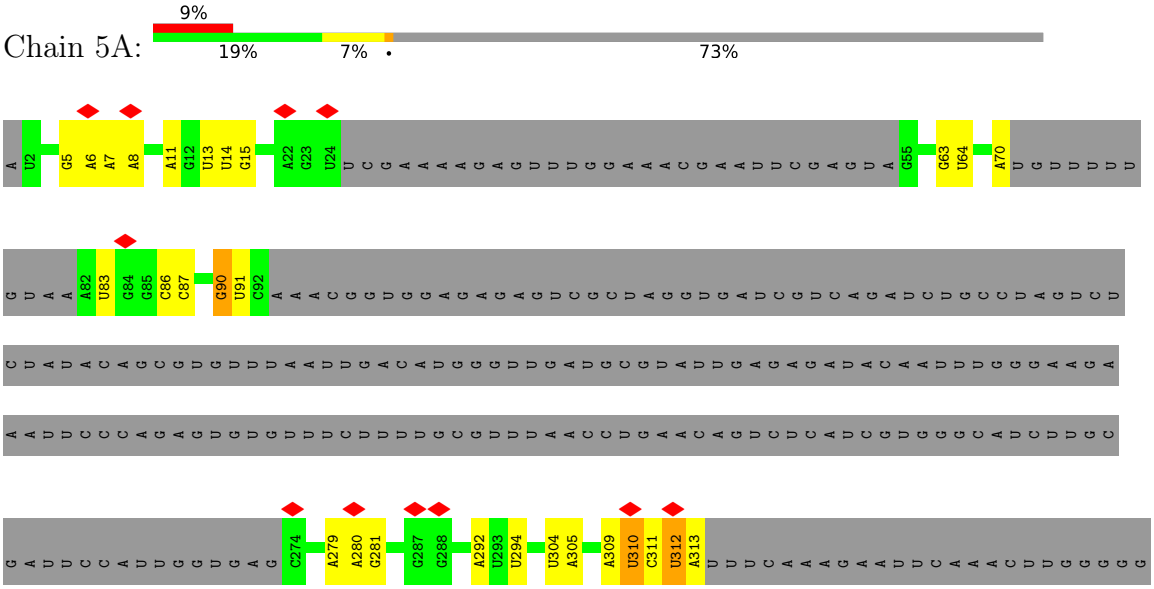
• Molecule 1: U3 snoRNA

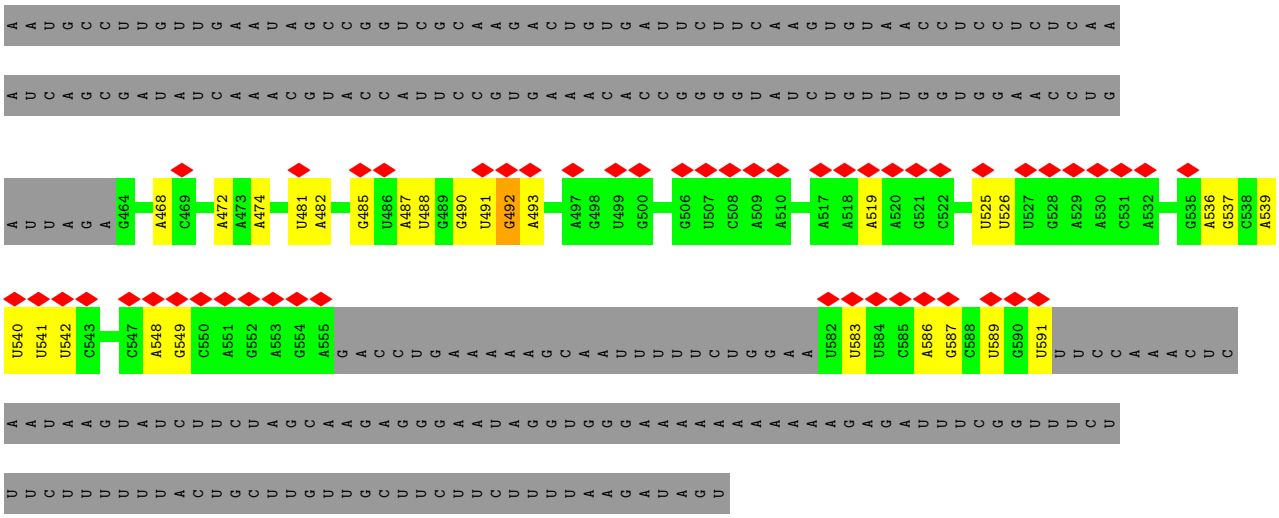
Chain 3A:



• Molecule 2: 5' ETS

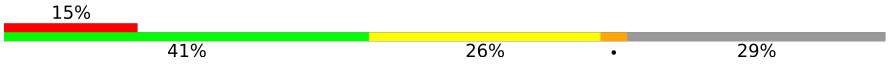
Chain 5A:

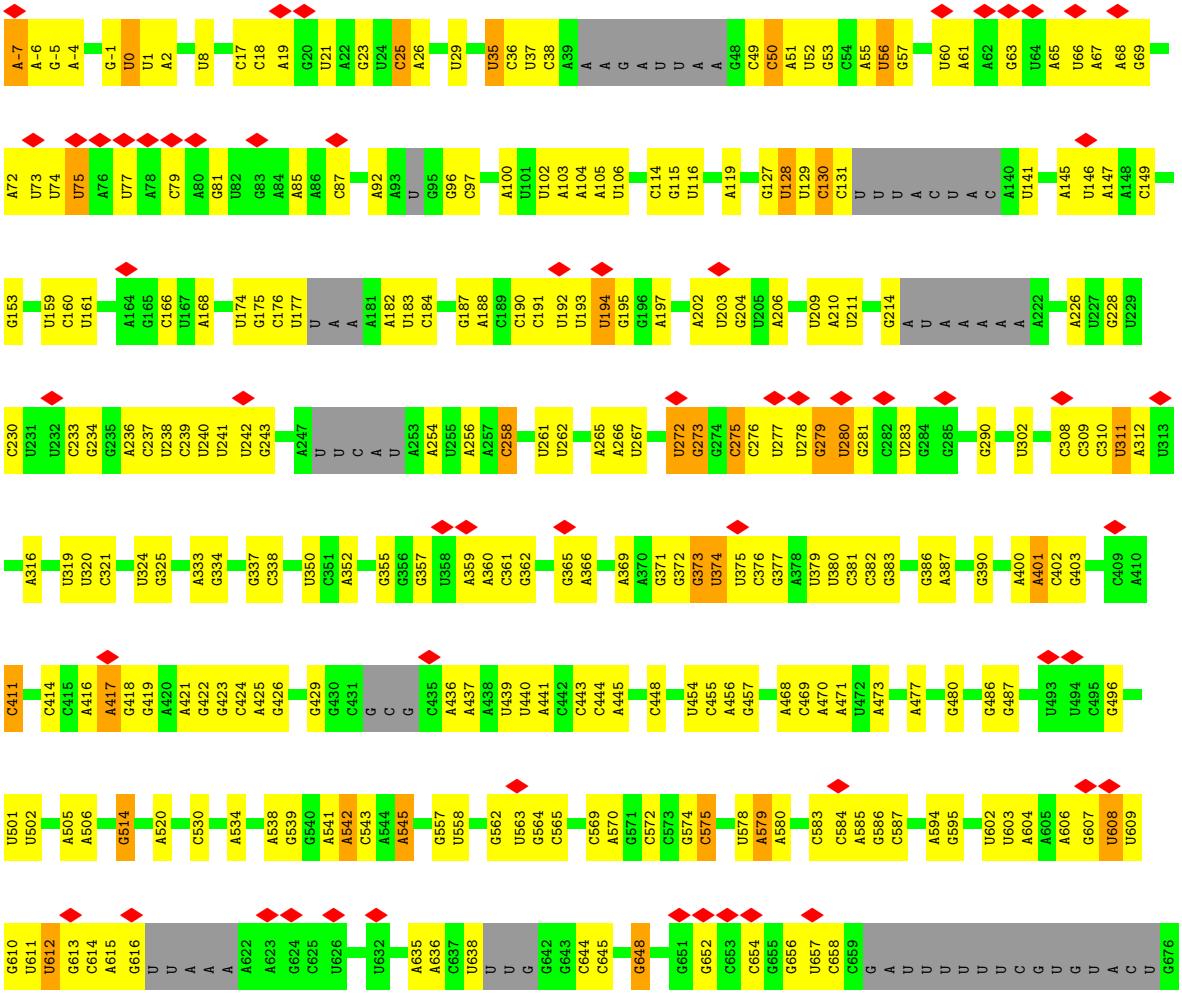


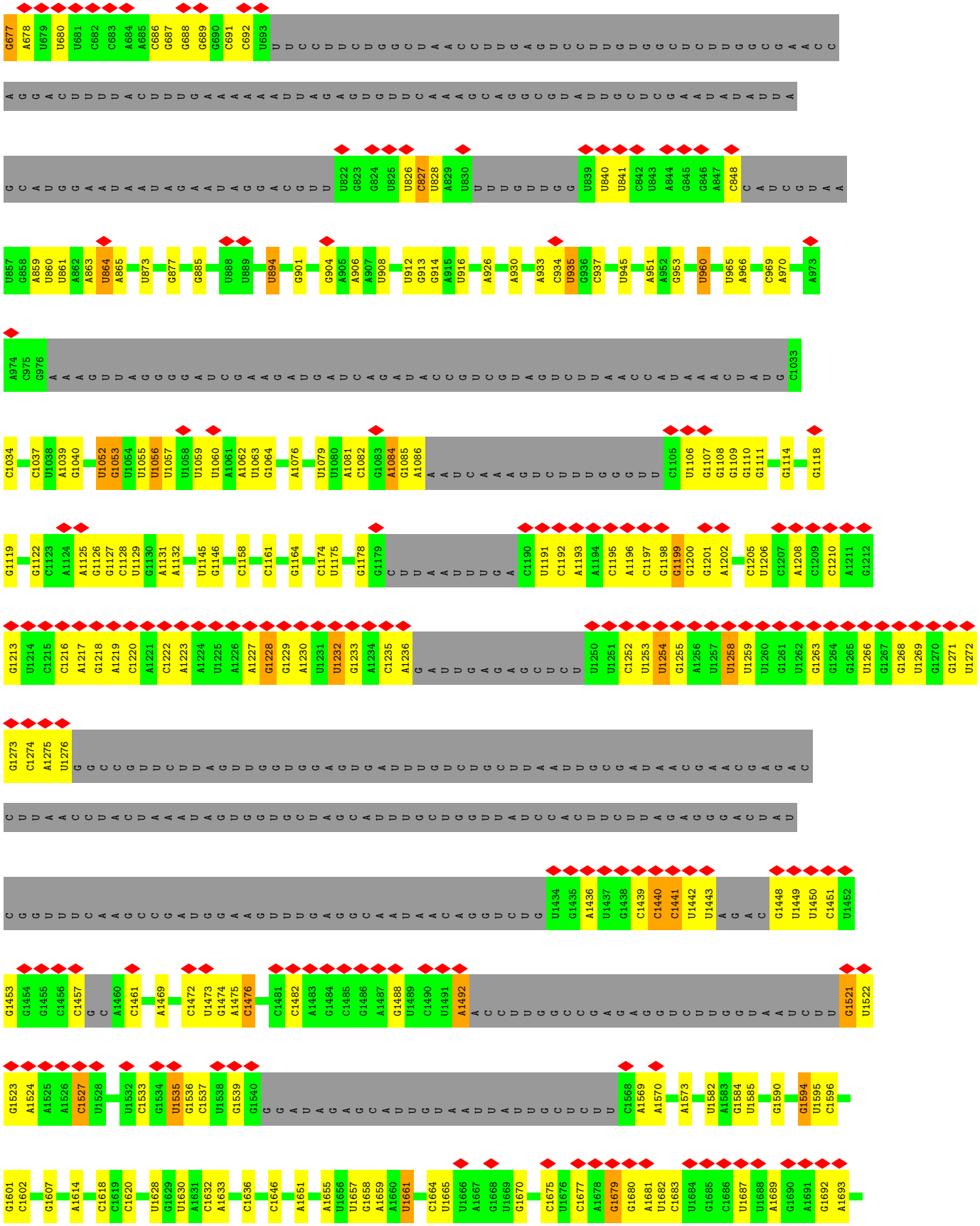


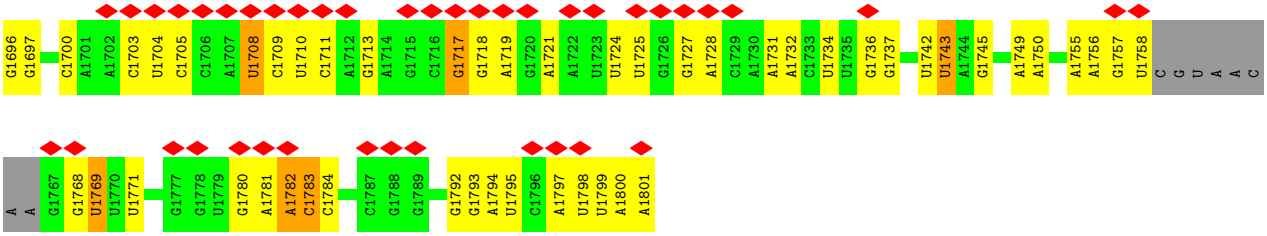
• Molecule 3: 18S pre-rRNA

Chain SA:

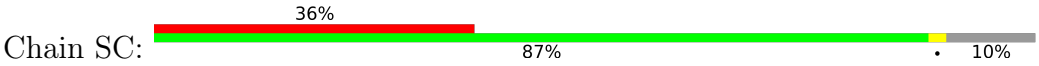


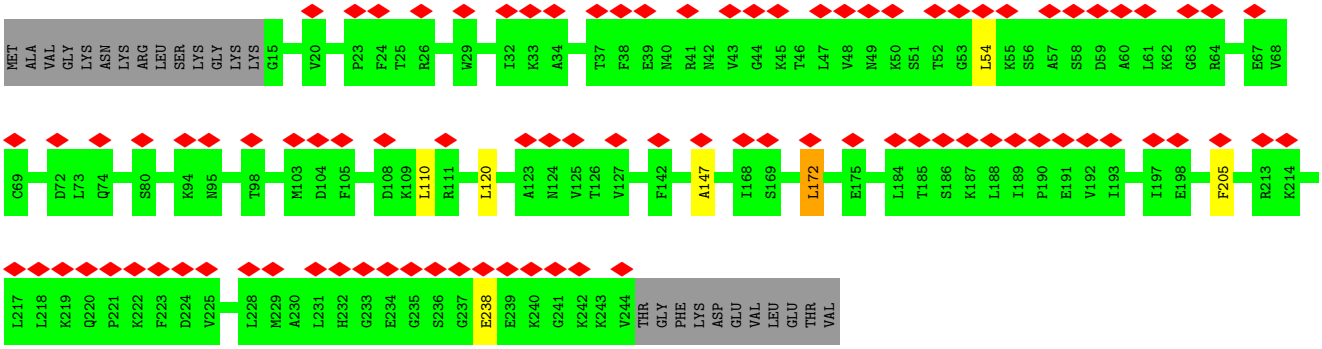




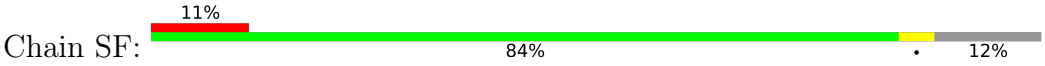


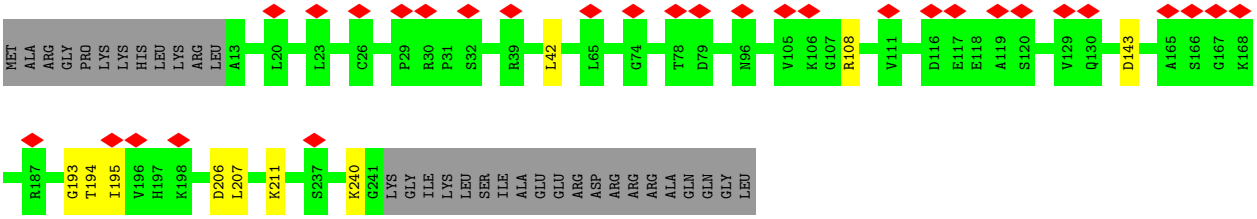
• Molecule 4: 40S ribosomal protein S1-A



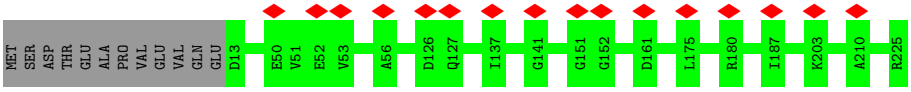


• Molecule 5: 40S ribosomal protein S4-A

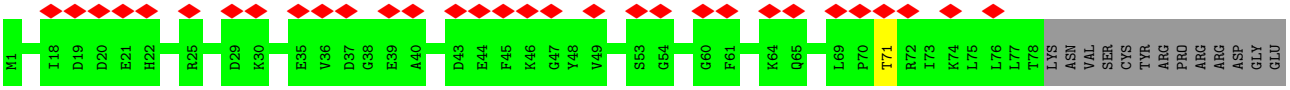


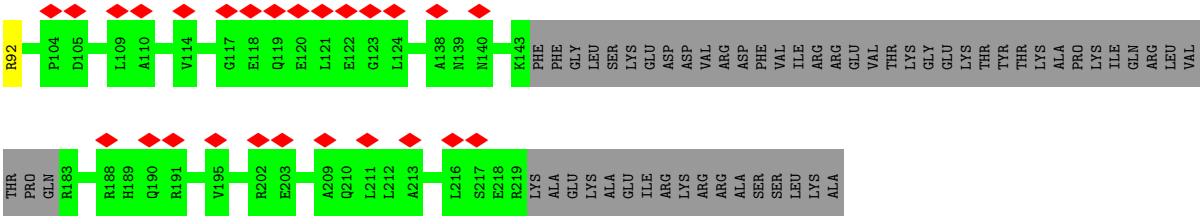


• Molecule 6: 40S ribosomal protein S5

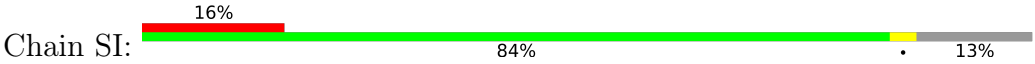


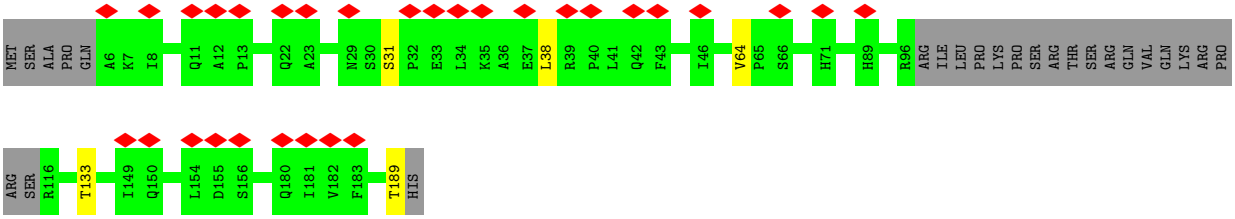
• Molecule 7: 40S ribosomal protein S6-A



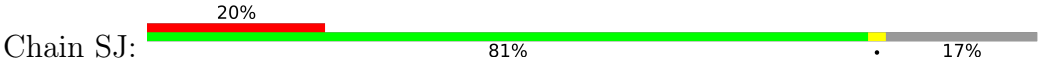


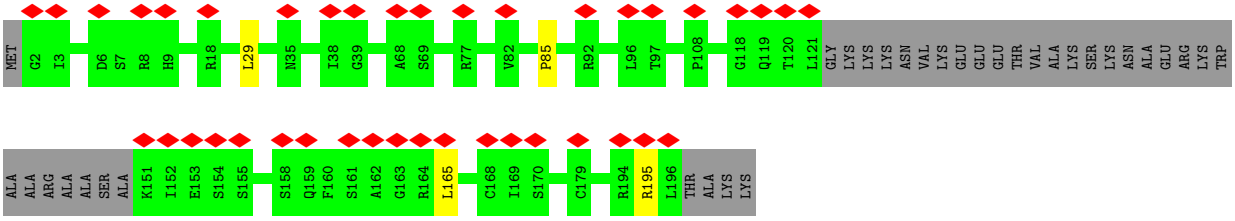
• Molecule 8: 40S ribosomal protein S7-A



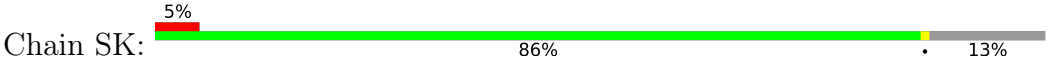


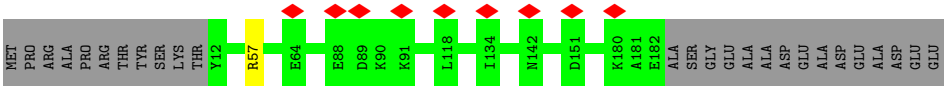
• Molecule 9: 40S ribosomal protein S8-A



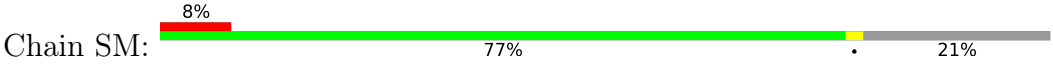


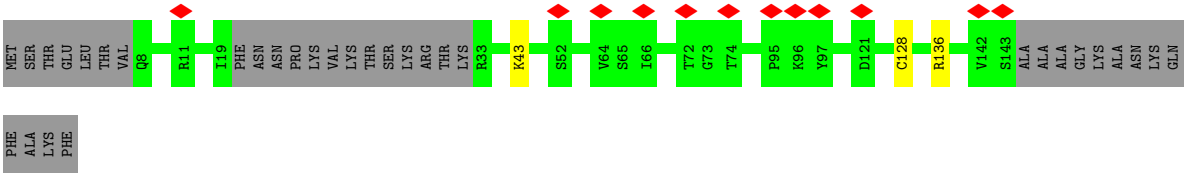
• Molecule 10: 40S ribosomal protein S9-A



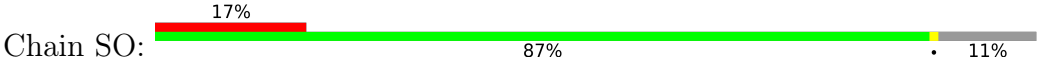


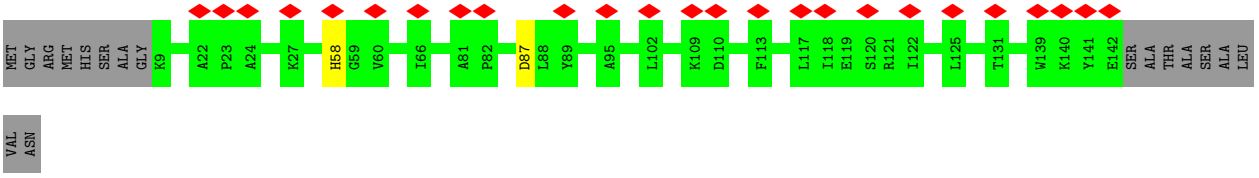
• Molecule 11: 40S ribosomal protein S11-A





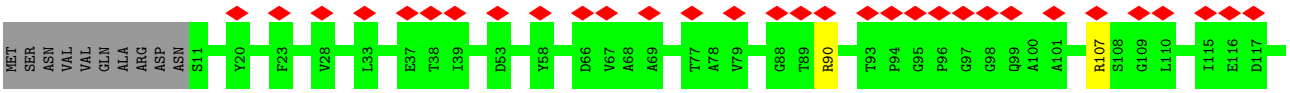
• Molecule 12: 40S ribosomal protein S13

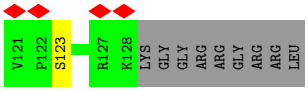




• Molecule 13: 40S ribosomal protein S14-A

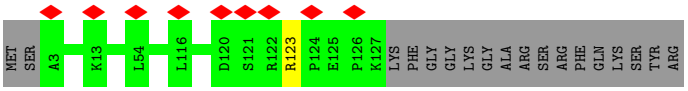
Chain SP:





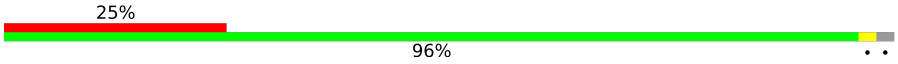
• Molecule 14: 40S ribosomal protein S16-A

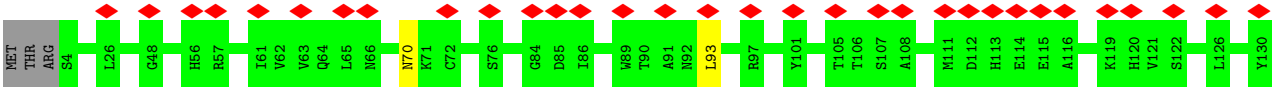
Chain SR:



• Molecule 15: 40S ribosomal protein S22-B

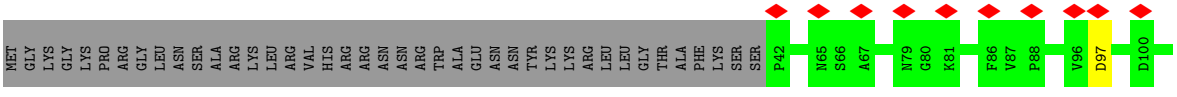
Chain SX:

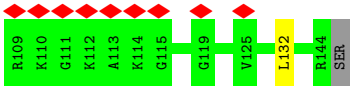




• Molecule 16: 40S ribosomal protein S23-A

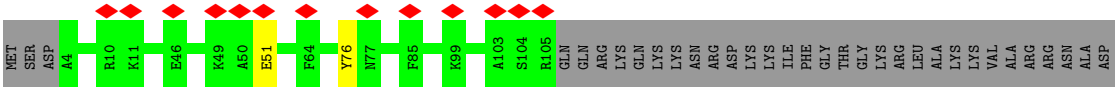
Chain SY:





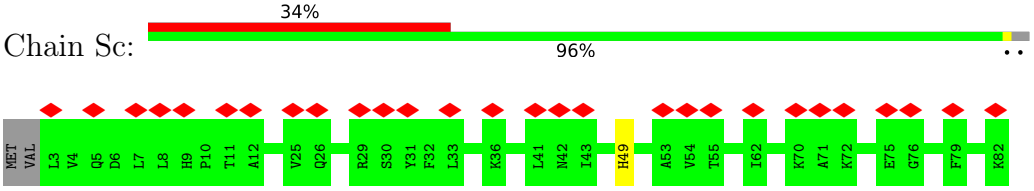
• Molecule 17: 40S ribosomal protein S24-A

Chain SZ:



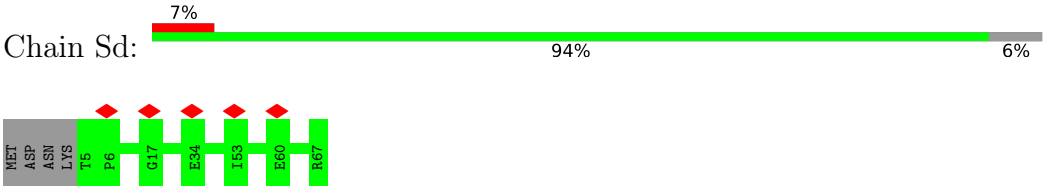
• Molecule 18: 40S ribosomal protein S27-A

Chain Sc:



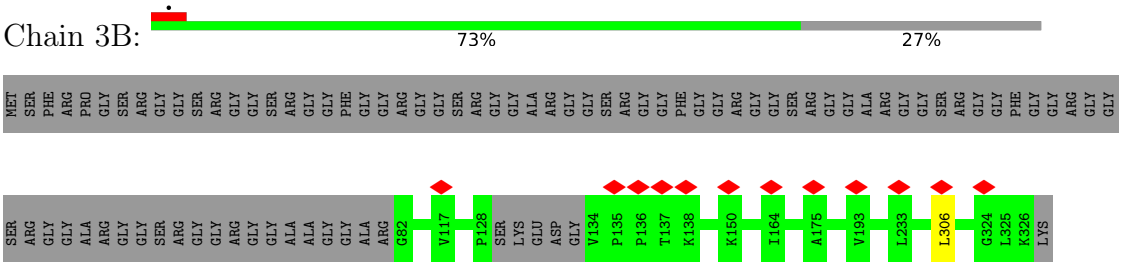
• Molecule 19: 40S ribosomal protein S28-A

Chain Sd:



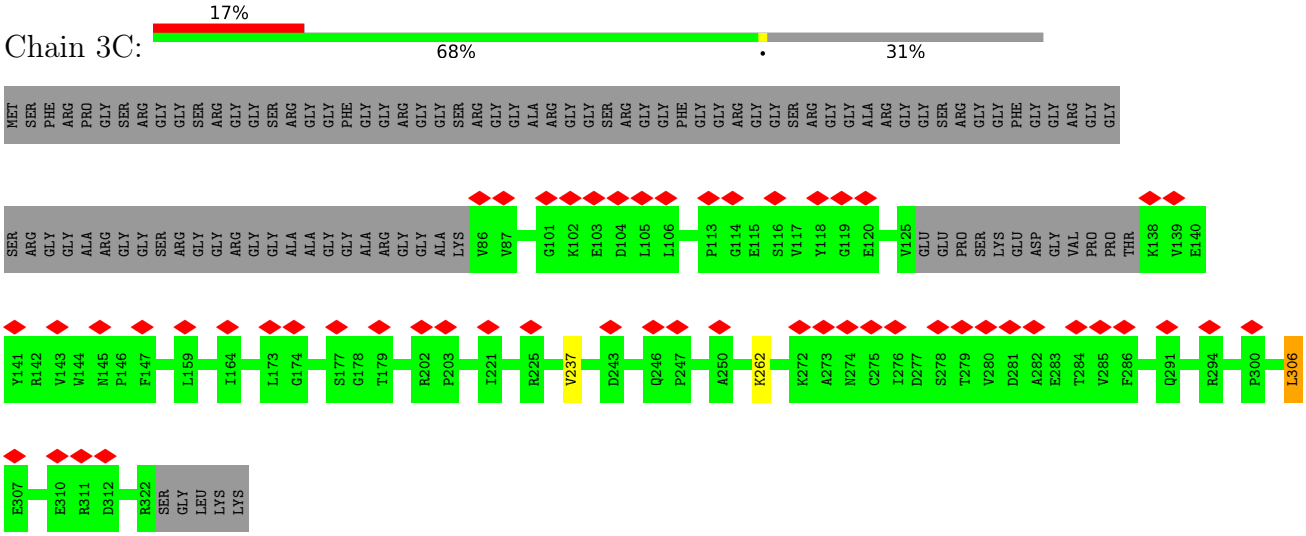
• Molecule 20: rRNA 2'-O-methyltransferase fibrillarin

Chain 3B:



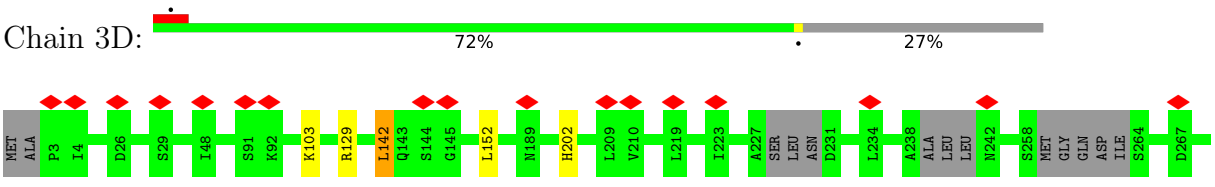
• Molecule 20: rRNA 2'-O-methyltransferase fibrillarin

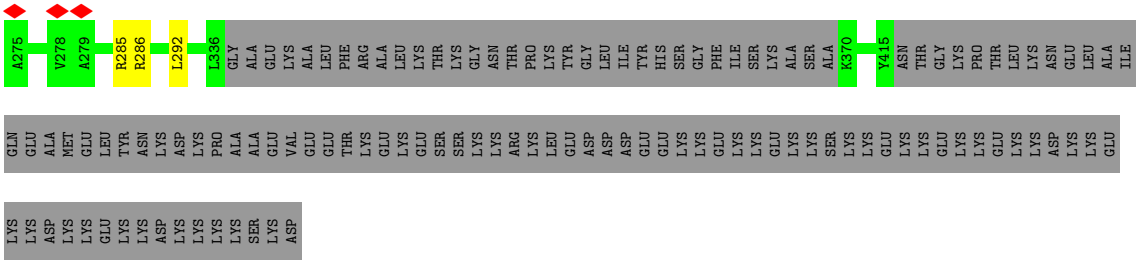
Chain 3C:



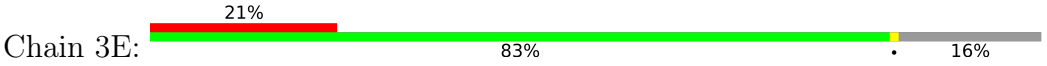
• Molecule 21: Nucleolar protein 56

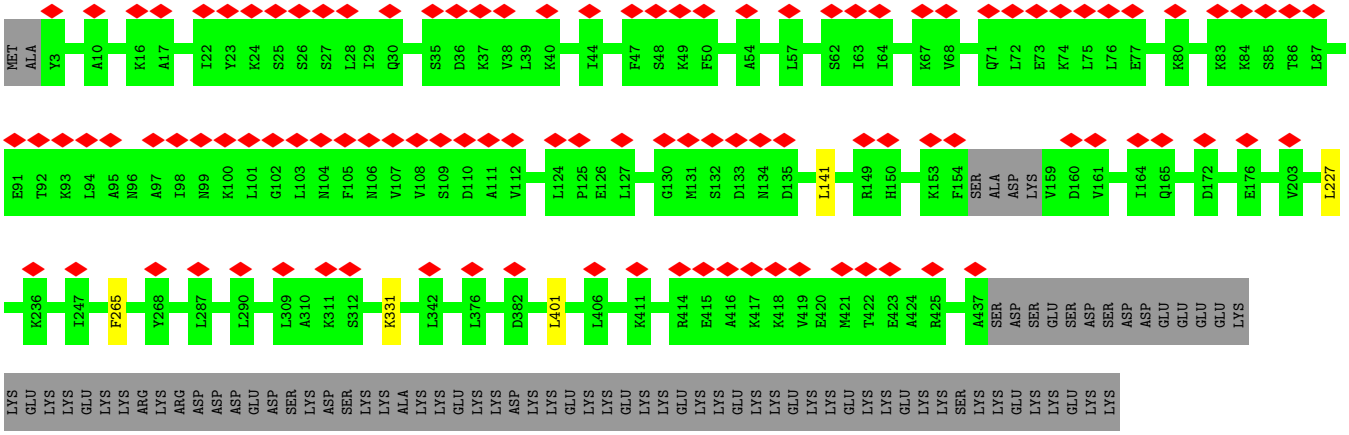
Chain 3D:



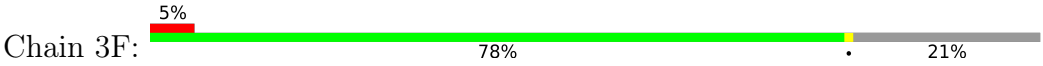


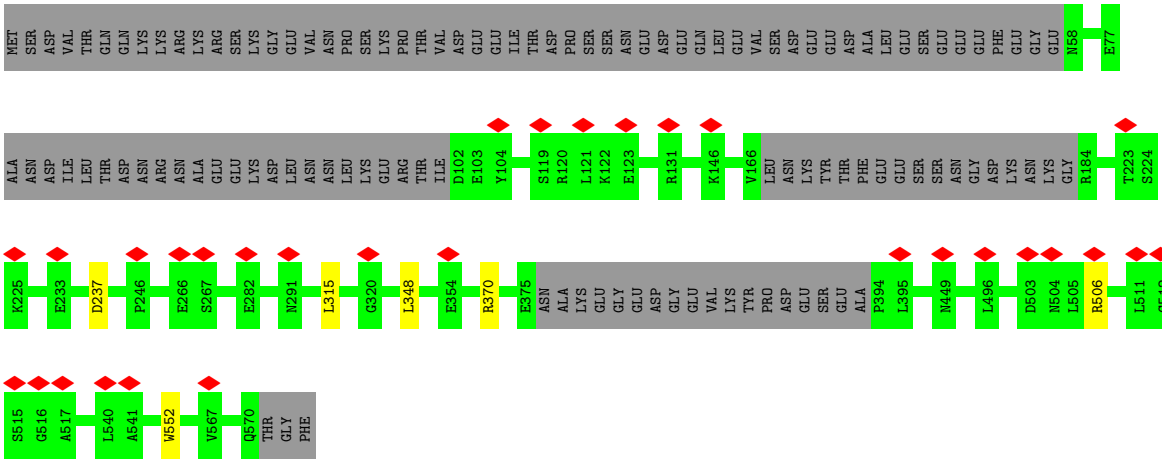
• Molecule 22: Nucleolar protein 58



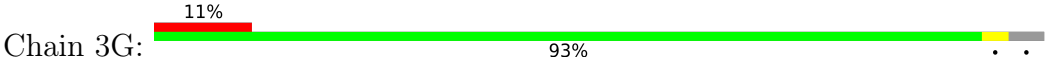


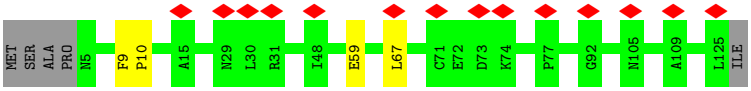
• Molecule 23: Ribosomal RNA-processing protein 9



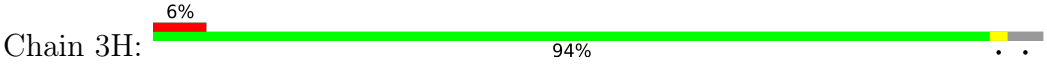


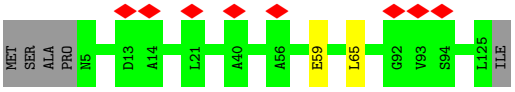
• Molecule 24: 13 kDa ribonucleoprotein-associated protein



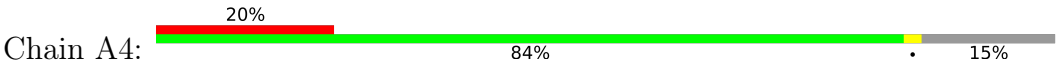


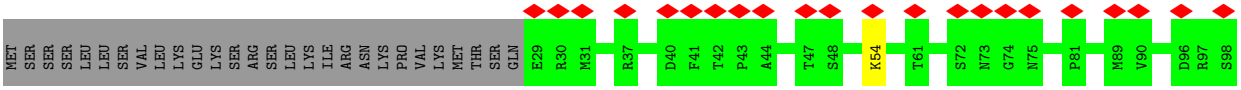
• Molecule 24: 13 kDa ribonucleoprotein-associated protein

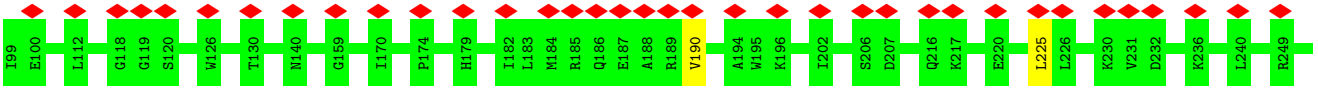


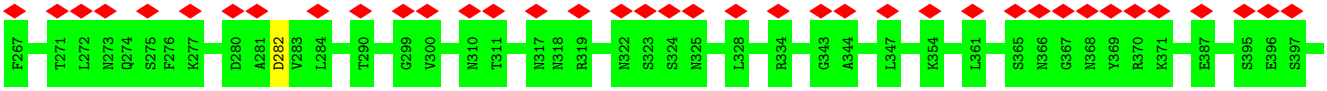


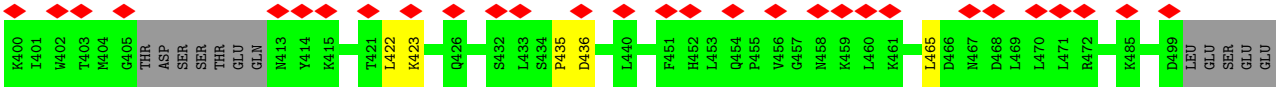
• Molecule 25: U3 small nucleolar RNA-associated protein 4

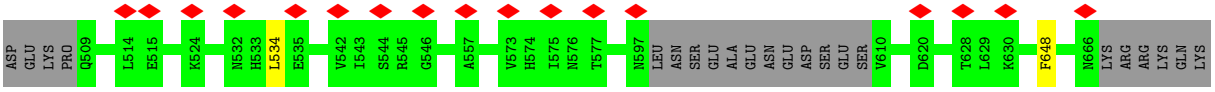


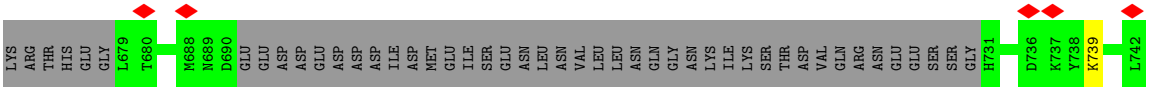


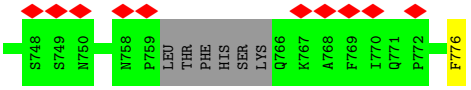




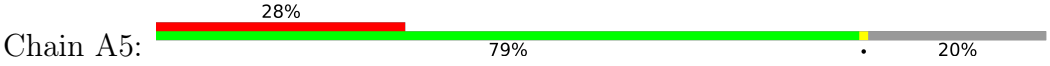


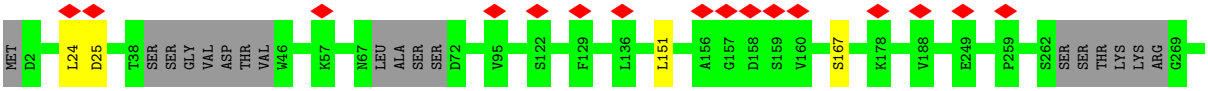


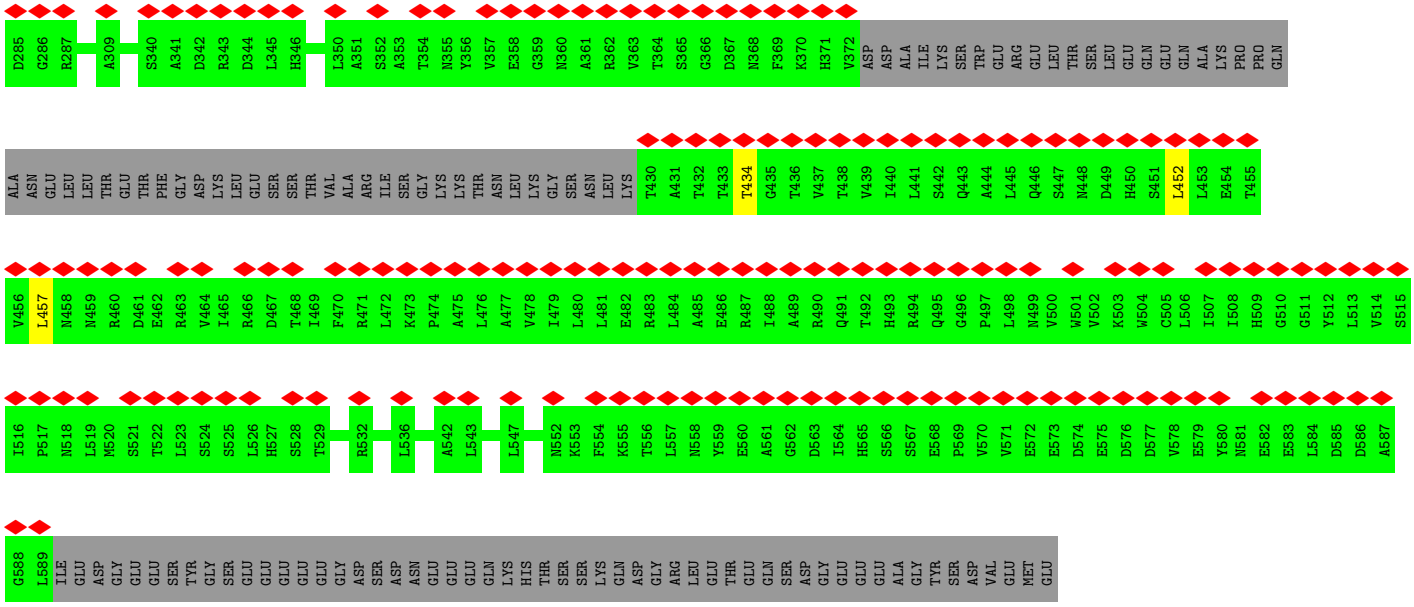




• Molecule 26: U3 small nucleolar RNA-associated protein 5

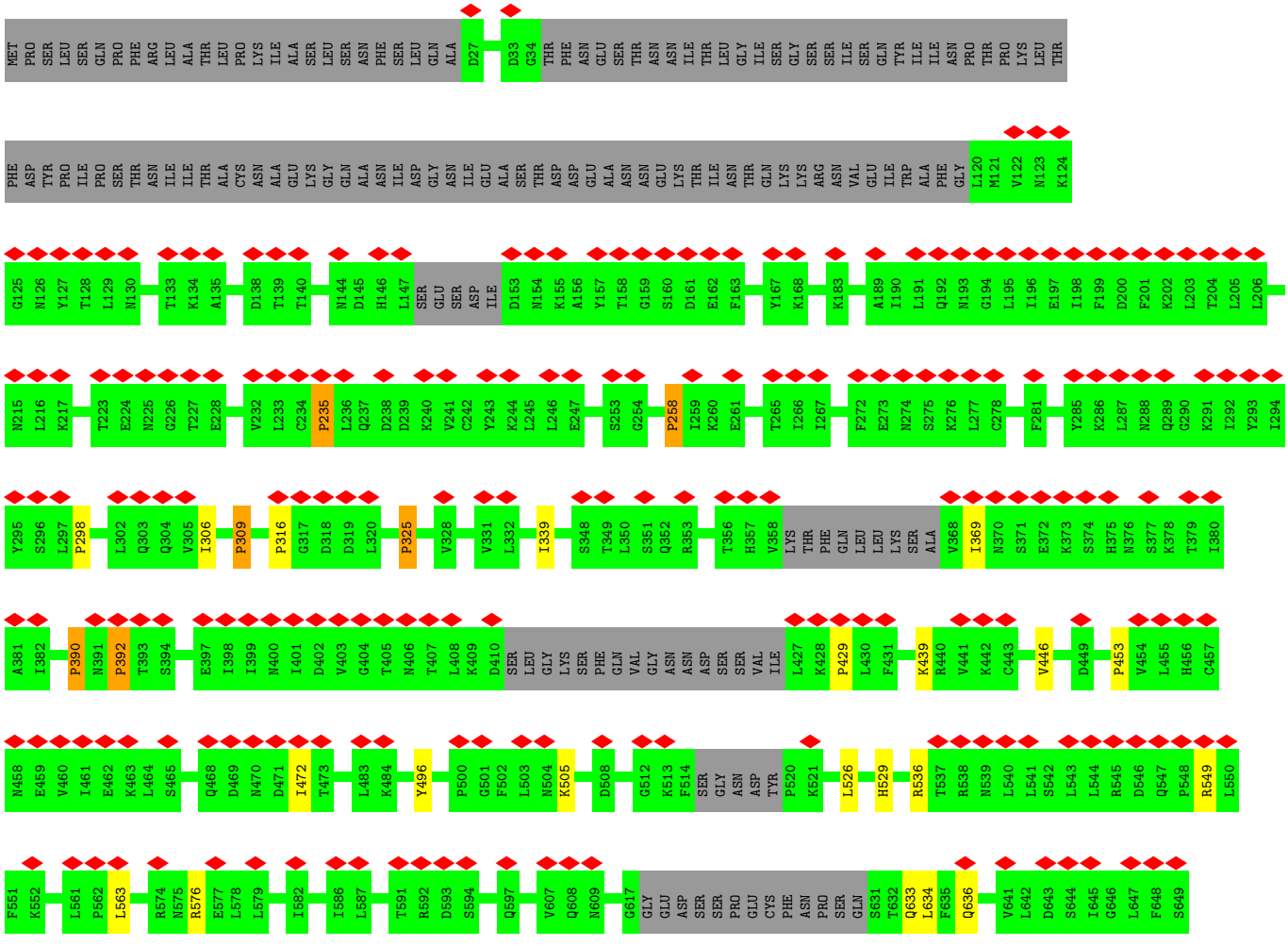


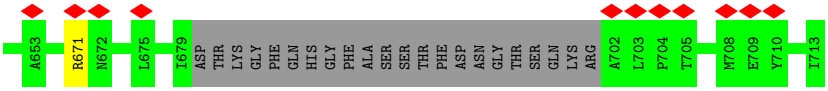




• Molecule 27: U3 small nucleolar RNA-associated protein 8

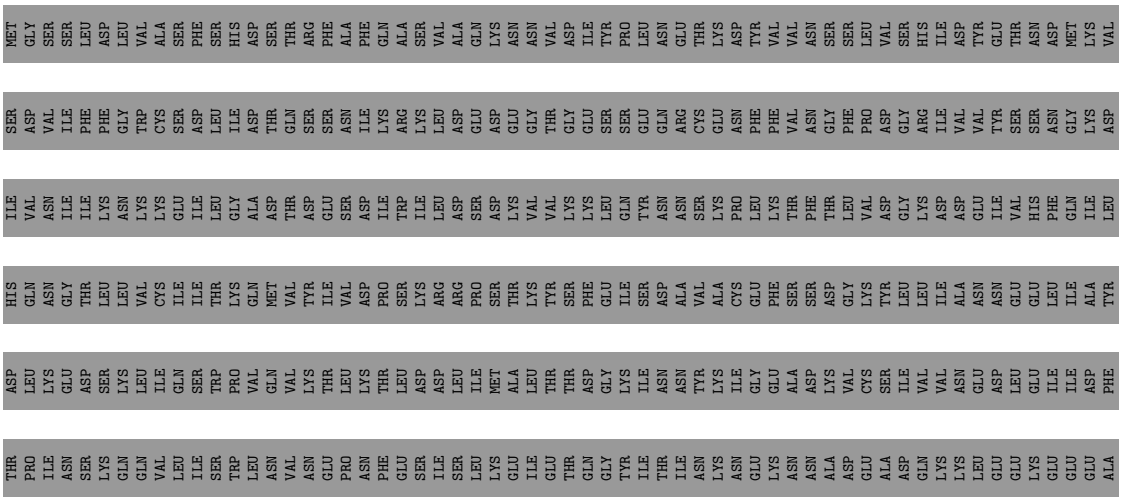
Chain A8:

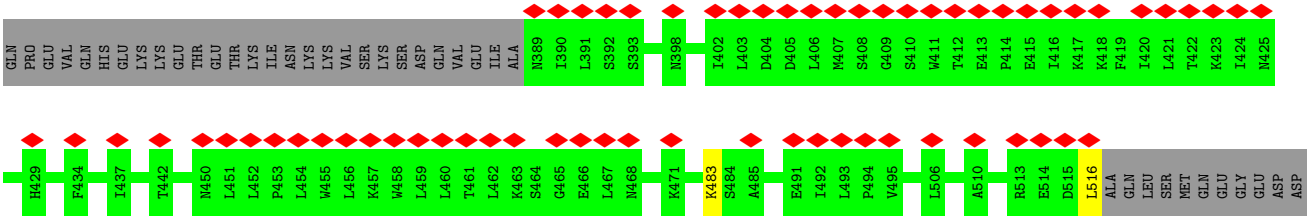




• Molecule 28: U3 small nucleolar RNA-associated protein 9

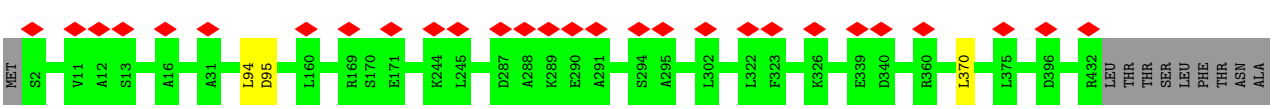
Chain A9:

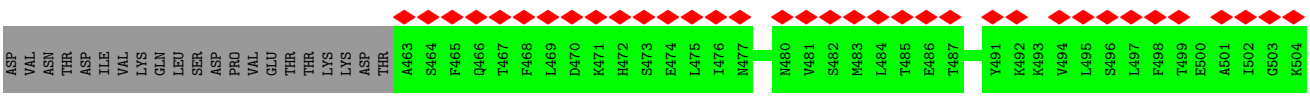


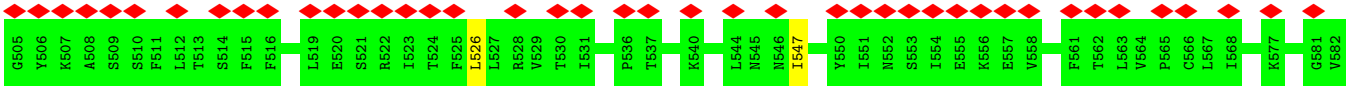


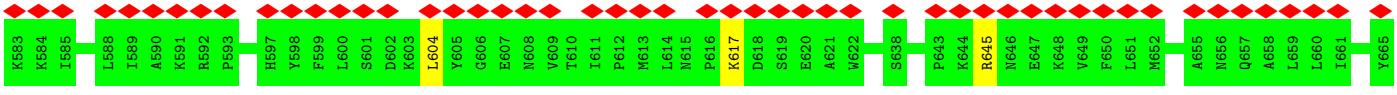
• Molecule 29: U3 small nucleolar RNA-associated protein 10

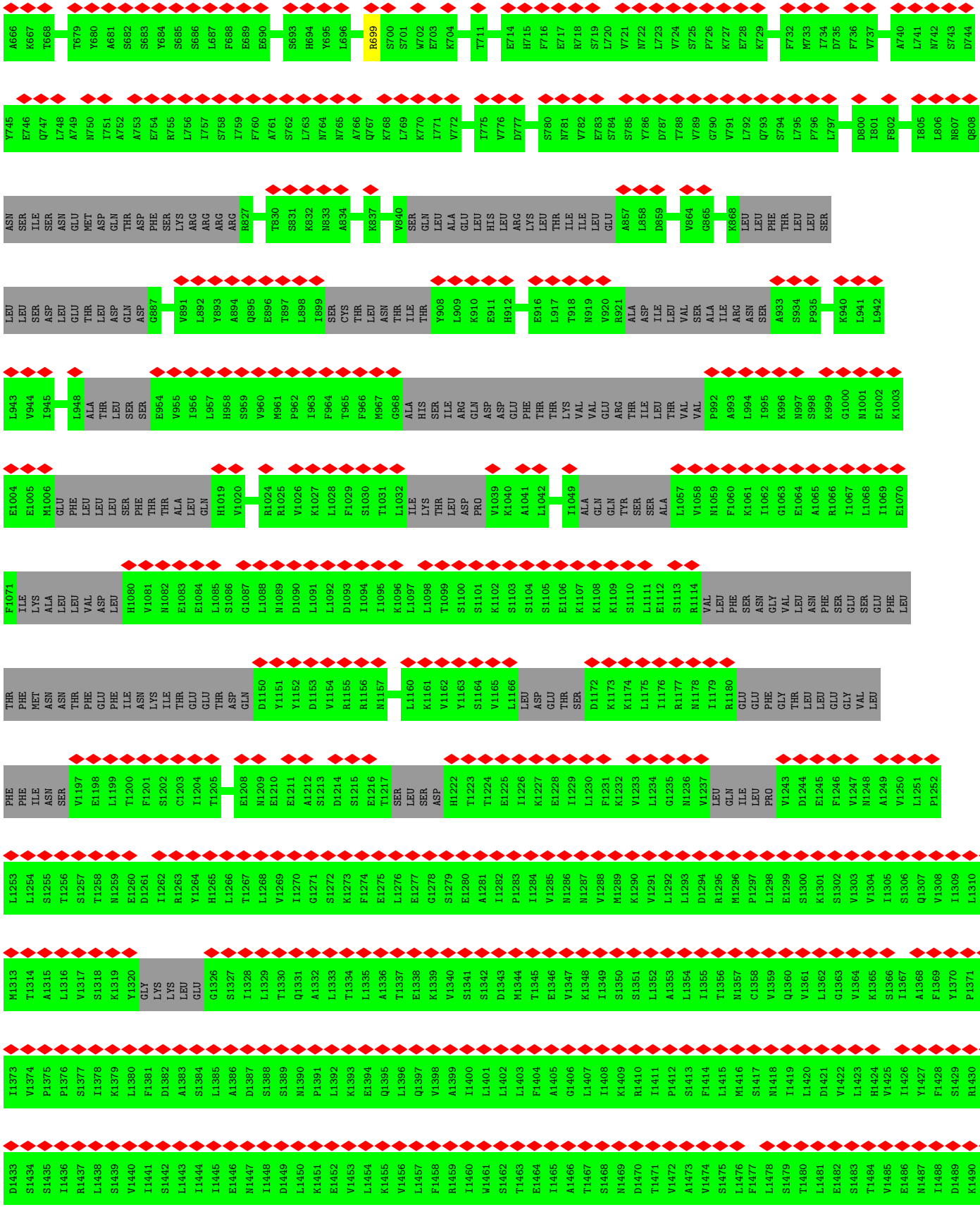
Chain AE:







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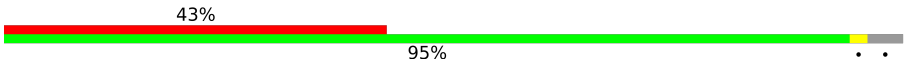
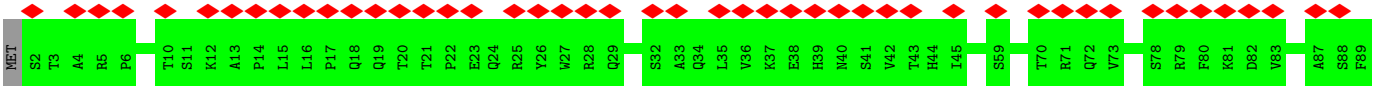
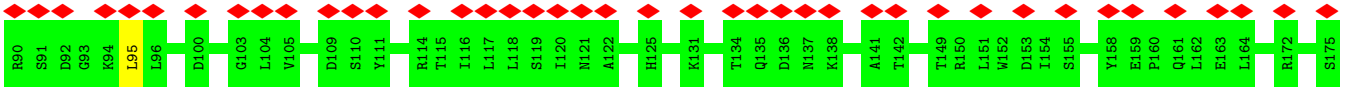
Y745 E746 Q747 L748 A749 N750 I751 A752 A753 E754 R755 L756 I757 S758 I759 F760 A761 S762 L763 N764 N765 A766 Q767 K768 L769 K770 I771 V772 I775 V776 D777 S780 N781 V782 E783 S784 S785 Y786 D787 T788 V789 G790 V791 L792 Q793 S794 L795 P796 L797 D800 I801 F802 I805 L806 N807 Q808
ASN SER ILE SER ASN GLU MET ASP GLN THR ASP PHE SER LYS ARG ARG ARG ARG R827 T830 S831 K832 N833 A834 K837 V840 SER GLN LEU ALA GLU LEU HIS LEU ARG LYS LEU THR ILE ILE LEU GLU A857 L858 D859 V864 G865 K868 LEU LEU PHE THR LEU LEU SER
LEU LEU SER ASP LEU GLU THR LEU ASP GLN ASP G887 V891 L892 Y893 A894 Q895 E896 T897 L898 I899 SER CYS THR LEU ASN THR ILE THR Y908 L909 K910 E911 H912 E916 L917 T918 N919 V920 R921 ALA ASP ILE LEU VAL SER ALA ILE ARG ASN SER A933 S934 P935 K940 L941 L942
L943 V944 I945 L948 ALA THR LEU SER SER E954 V955 I956 L957 H958 S959 V960 M961 P962 I963 F964 T965 F966 M967 G968 ALA HIS SER ILE ARG GLN ASP ASP GLU PHE THR THR LYS VAL VAL GLU ARG THR ILE LEU THR VAL VAL P992 A993 L994 I995 K996 N997 S998 K999 G1000 N1001 E1002 K1003
E1004 E1005 M1006 GLU PHE LEU LEU LEU SER PHE THR THR ALA LEU GLN H1019 V1020 R1024 R1025 V1026 K1027 L1028 F1029 S1030 T1031 I1032 ILE LYS THR LEU ASP PRO V1039 K1040 A1041 L1042 I1049 ALA GLN GLN TYR SER SER ALA L1057 V1058 N1059 F1060 K1061 I1062 G1063 E1064 A1065 R1066 I1067 L1068 I1069 E1070
F1071 ILE LYS ALA LEU LEU VAL ASP LEU H1080 V1081 N1082 E1083 E1084 L1085 S1086 G1087 L1088 N1089 D1090 L1091 L1092 D1093 I1094 I1095 K1096 L1097 L1098 T1099 S1100 S1101 K1102 S1103 S1104 S1105 E1106 K1107 K1108 K1109 S1110 L1111 E1112 S1113 R1114 VAL LEU PHE SER ASN GLY VAL LEU ASN PHE SER GLU SER GLU PHE LEU
THR PHE MET ASN ASN THR PHE GLU PHE ILE ASN LYS ILE THR GLU GLU THR ASP GLN D1150 Y1151 Y1152 D1153 V1154 R1155 R1156 N1157 L1160 K1161 V1162 Y1163 S1164 V1165 L1166 LEU ASP GLU THR SER D1172 K1173 K1174 L1175 I1176 R1177 N1178 I1179 R1180 GLU GLU PHE GLY THR LEU LEU GLU GLY VAL LEU
PHE PHE ILE ASN SER V1197 E1198 L1199 T1200 F1201 S1202 C1203 I1204 T1205 E1208 N1209 E1210 E1211 A1212 S1213 D1214 S1215 E1216 T1217 SER LEU SER ASP H1222 T1223 T1224 E1225 I1226 K1227 E1228 I1229 L1230 F1231 K1232 V1233 L1234 G1235 N1236 V1237 LEU GLN ILE LEU PRO V1243 D1244 E1245 F1246 V1247 N1248 A1249 V1250 L1251 P1252
L1253 L1254 S1255 T1256 S1257 T1258 N1259 E1260 D1261 I1262 R1263 Y1264 H1265 L1266 T1267 L1268 V1269 I1270 G1271 S1272 K1273 F1274 E1275 L1276 E1277 G1278 S1279 E1280 A1281 I1282 P1283 I1284 V1285 N1286 N1287 V1288 M1289 K1290 V1291 L1292 L1293 D1294 R1295 M1296 P1297 L1298 E1299 S1300 K1301 S1302 V1303 V1304 I1305 S1306 Q1307 V1308 I1309 L1310 N1311 T1312
M1313 T1314 A1315 L1316 V1317 S1318 K1319 Y1320 GLY LYS LYS LEU GLU G1326 S1327 I1328 L1329 T1330 Q1331 A1332 L1333 T1334 L1335 A1336 T1337 E1338 K1339 V1340 S1341 S1342 D1343 M1344 T1345 E1346 V1347 K1348 I1349 S1350 S1351 L1352 A1353 L1354 L1355 T1356 N1357 C1358 V1359 Q1360 V1361 L1362 G1363 V1364 K1365 S1366 I1367 A1368 F1369 Y1370 P1371 K1372
I1373 V1374 P1375 P1376 S1377 I1378 K1379 L1380 F1381 D1382 A1383 S1384 L1385 A1386 D1387 S1388 S1389 N1390 P1391 L1392 K1393 E1394 Q1395 L1396 Q1397 V1398 A1399 I1400 L1401 L1402 L1403 F1404 A1405 G1406 L1407 I1408 K1409 R1410 I1411 P1412 S1413 F1414 L1415 M1416 S1417 N1418 I1419 L1420 D1421 V1422 L1423 H1424 V1425 I1426 Y1427 F1428 S1429 R1430 E1431 V1432
D1433 S1434 S1435 I1436 R1437 L1438 S1439 V1440 I1441 S1442 L1443 I1444 I1445 E1446 N1447 I1448 D1449 L1450 K1451 E1452 V1453 L1454 K1455 V1456 L1457 F1458 R1459 I1460 W1461 S1462 T1463 E1464 I1465 A1466 T1467 S1468 N1469 D1470 T1471 V1472 A1473 V1474 S1475 L1476 F1477 L1478 S1479 T1480 L1481 E1482 S1483 T1484 V1485 E1486 N1487 I1488 D1489 K1490 K1491 S1492

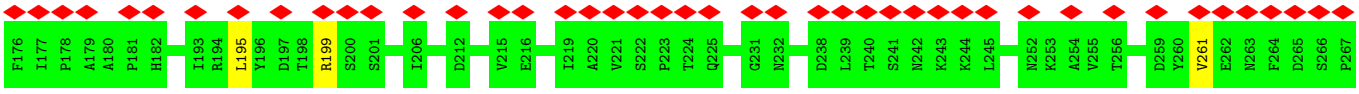
• Molecule 30: U3 small nucleolar RNA-associated protein 15

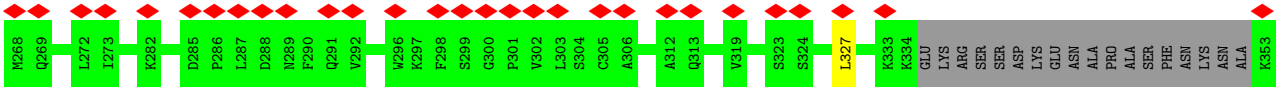
Chain AF:

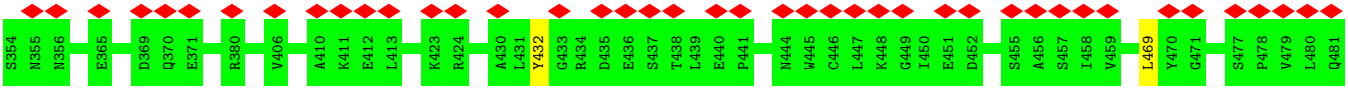


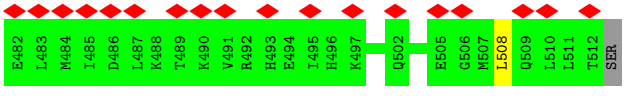






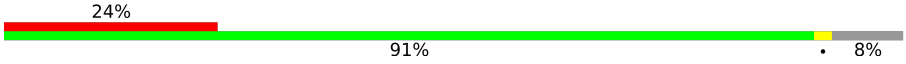


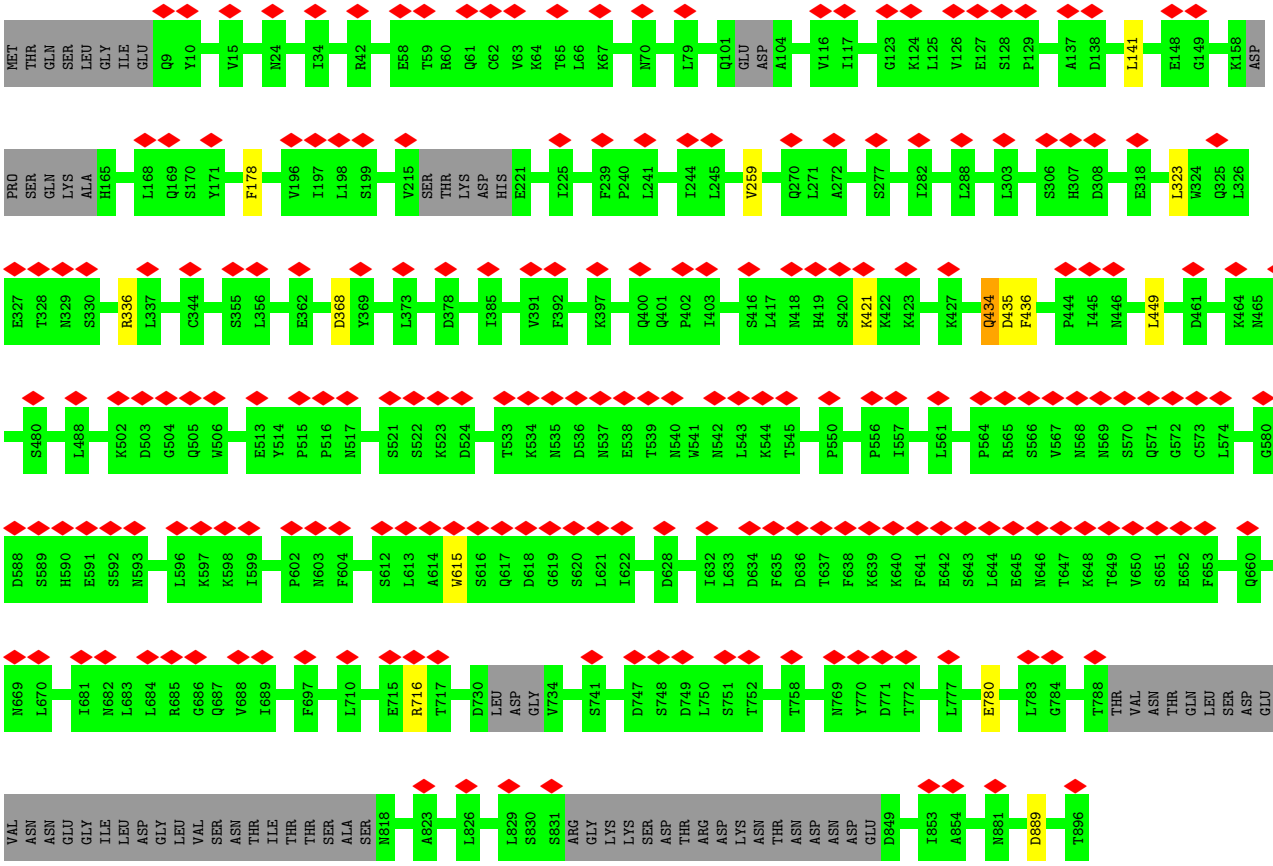




• Molecule 31: NET1-associated nuclear protein 1

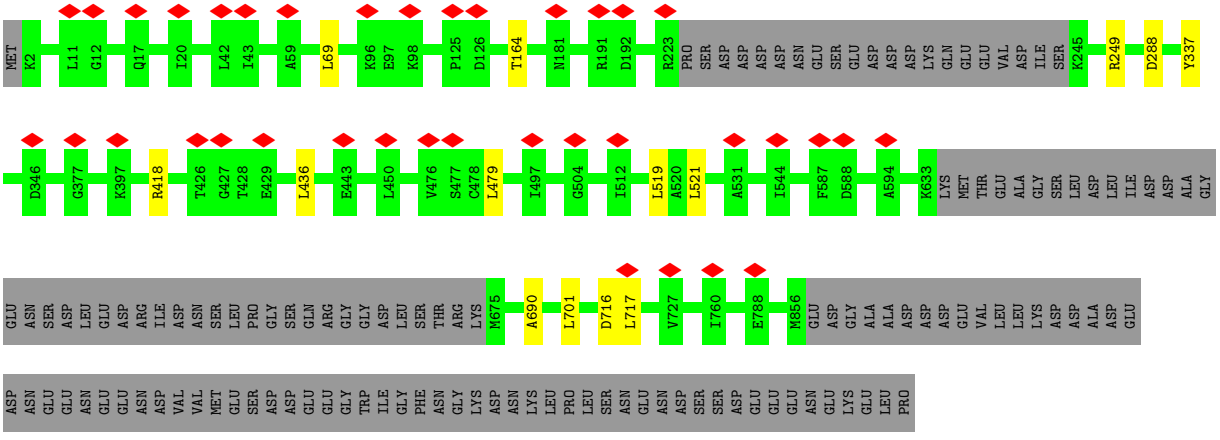
Chain AG:





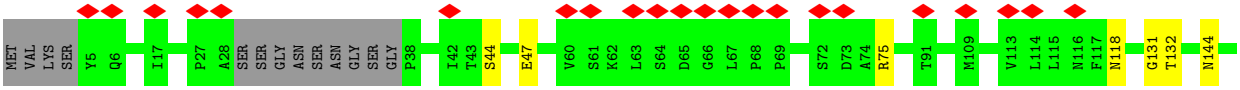
• Molecule 32: Periodic tryptophan protein 2

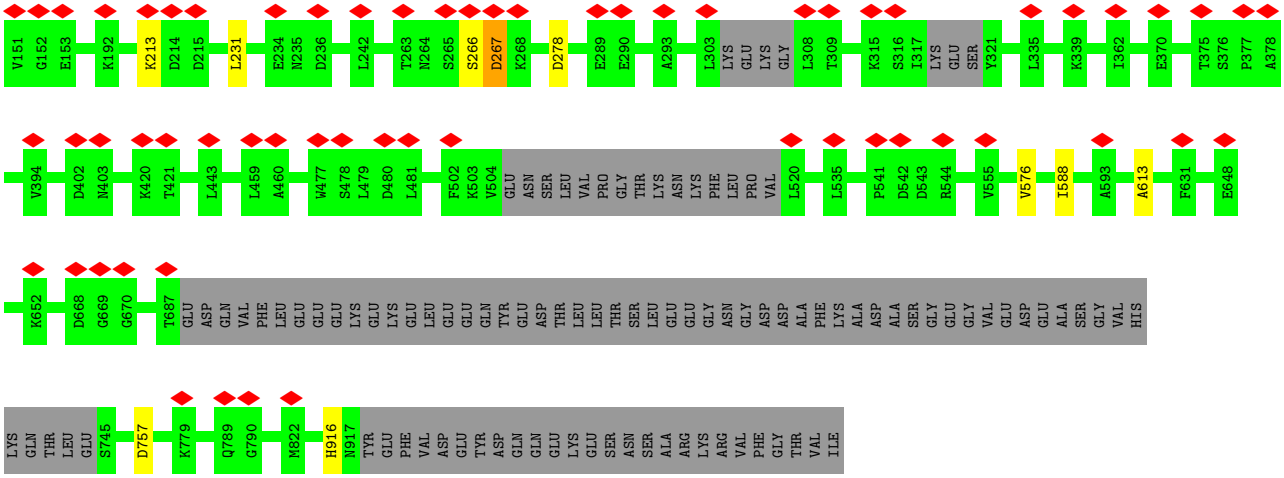
Chain B1:



• Molecule 33: U3 small nucleolar RNA-associated protein 12

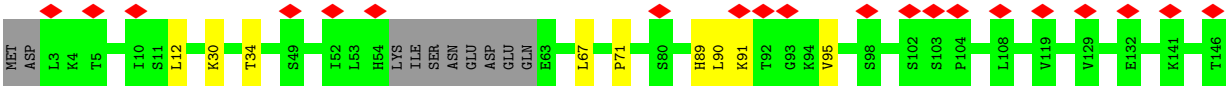
Chain B2:

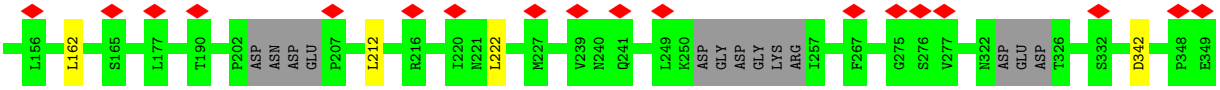


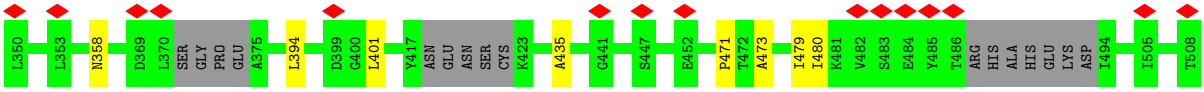


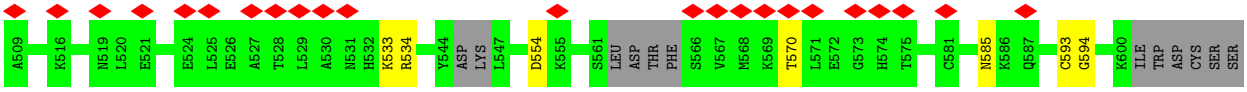
• Molecule 34: U3 small nucleolar RNA-associated protein 13

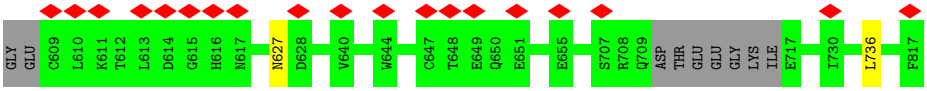
Chain B3:





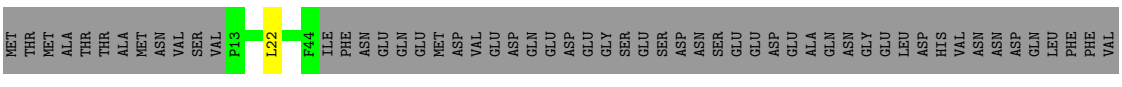


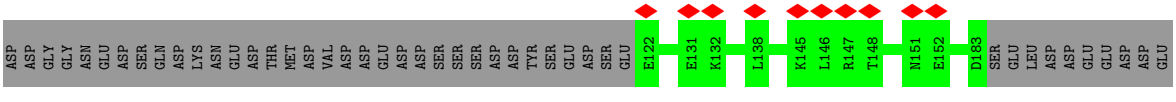


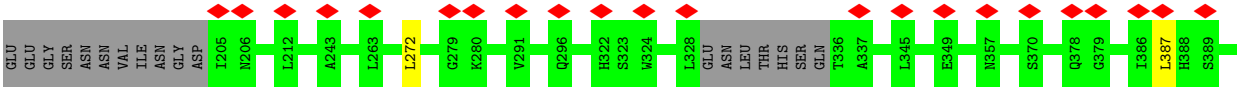


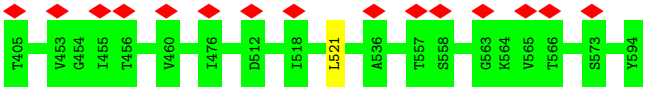
• Molecule 35: U3 small nucleolar RNA-associated protein 18

Chain B8:



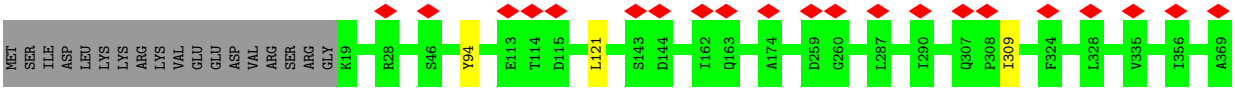


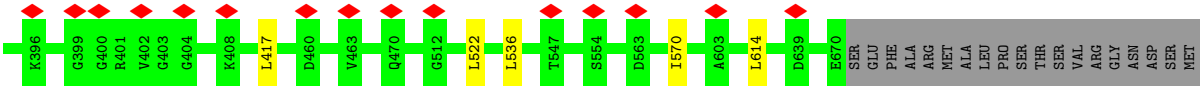


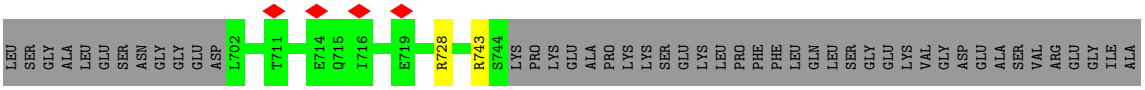


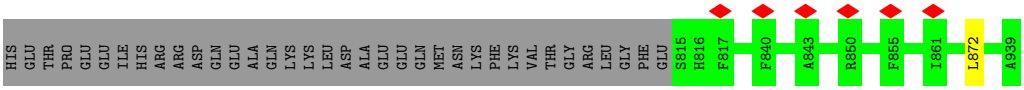
• Molecule 36: U3 small nucleolar RNA-associated protein 21

Chain BE:



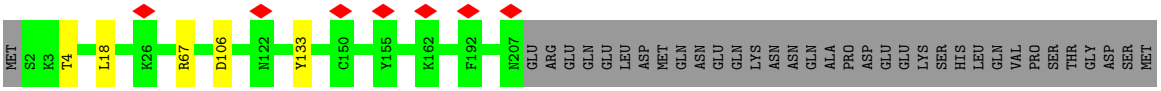


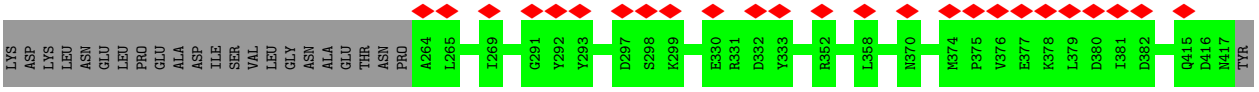


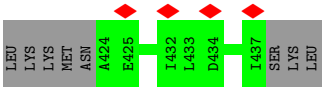


• Molecule 37: U3 small nucleolar RNA-associated protein 6

Chain B6:

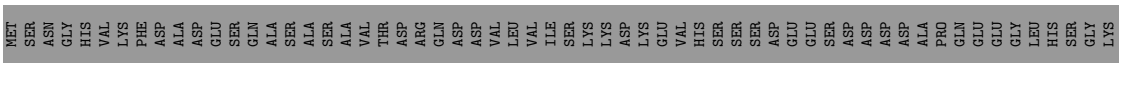


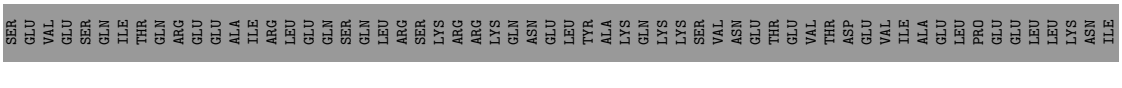


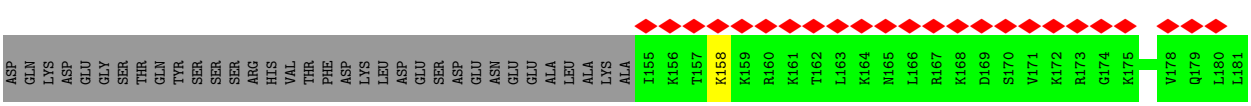


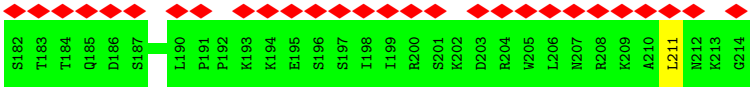
• Molecule 38: Bud site selection protein 21

Chain 5B:

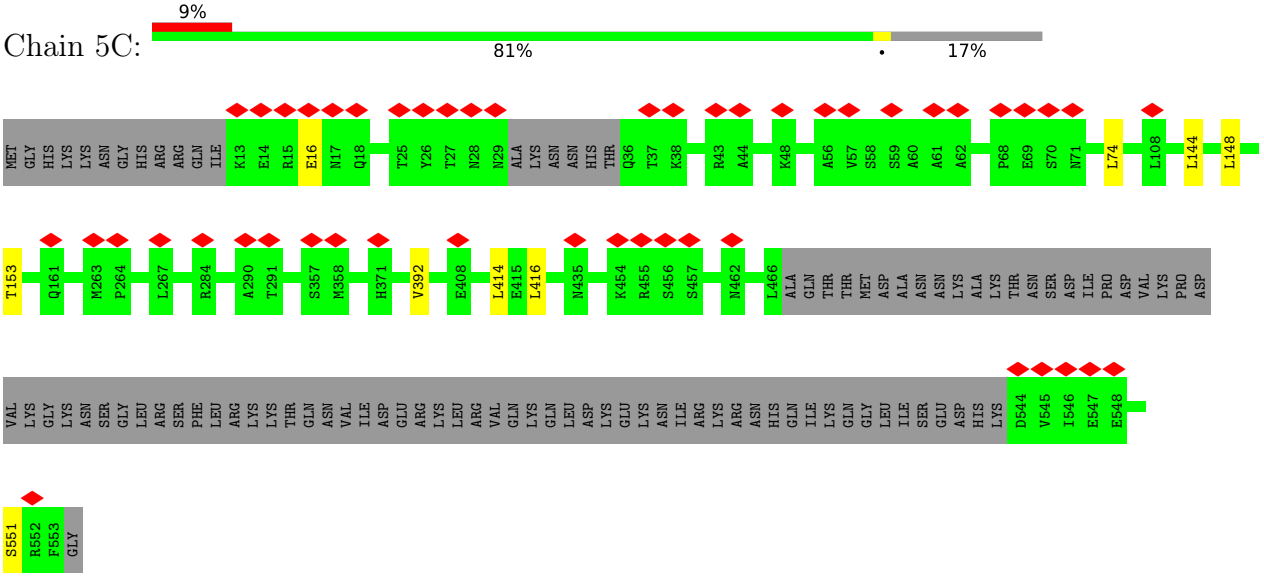




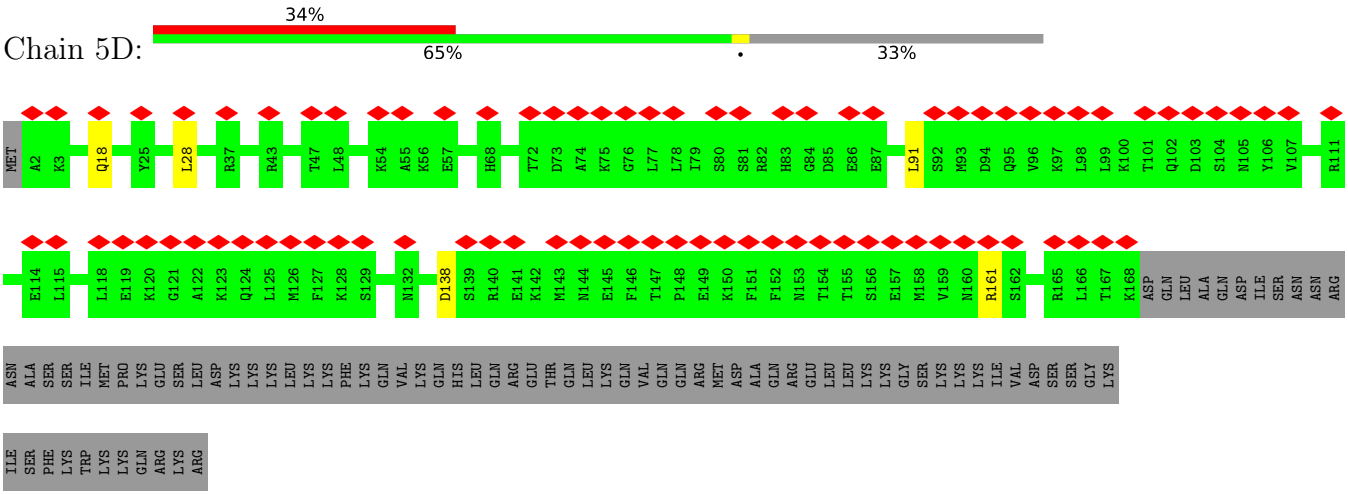




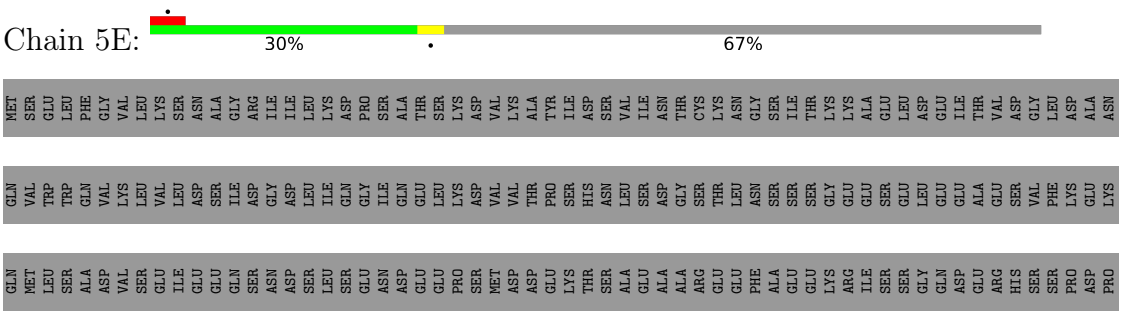
• Molecule 39: U3 small nucleolar RNA-associated protein 7

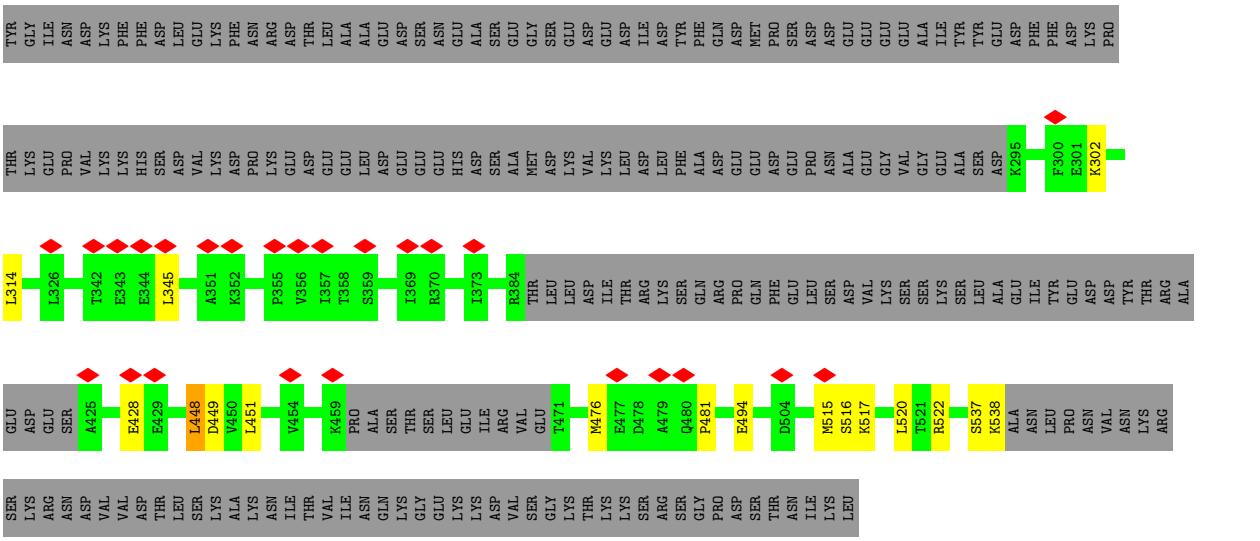


• Molecule 40: U3 small nucleolar RNA-associated protein 11



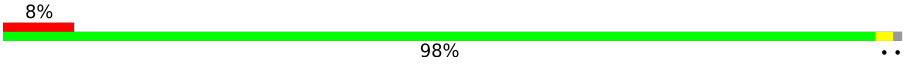
• Molecule 41: U3 small nucleolar RNA-associated protein MPP10

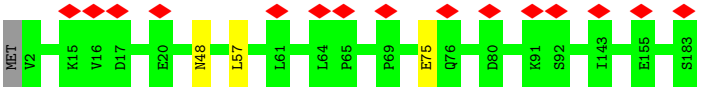




• Molecule 42: U3 small nucleolar ribonucleoprotein protein IMP3

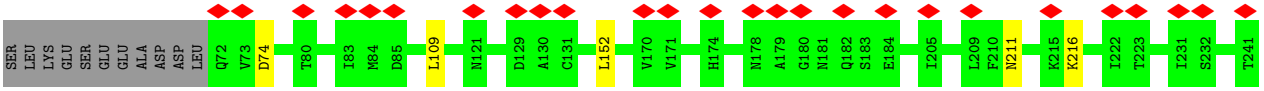
Chain 5F:

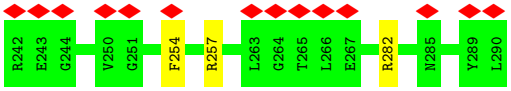




• Molecule 43: U3 small nucleolar ribonucleoprotein protein IMP4

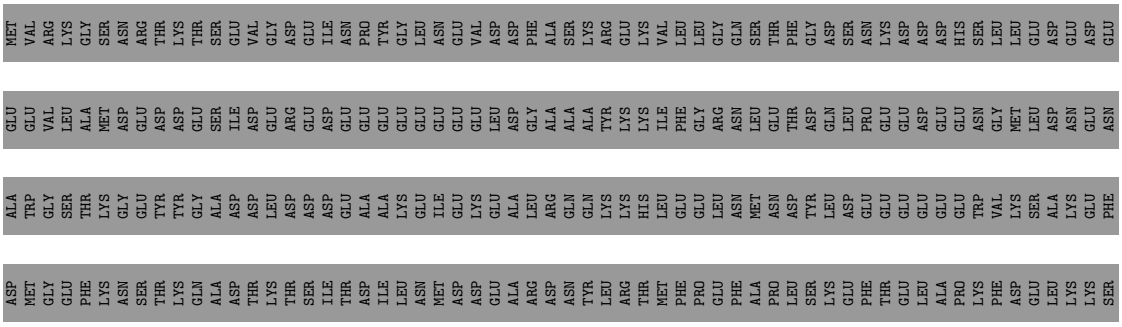
Chain 5G:

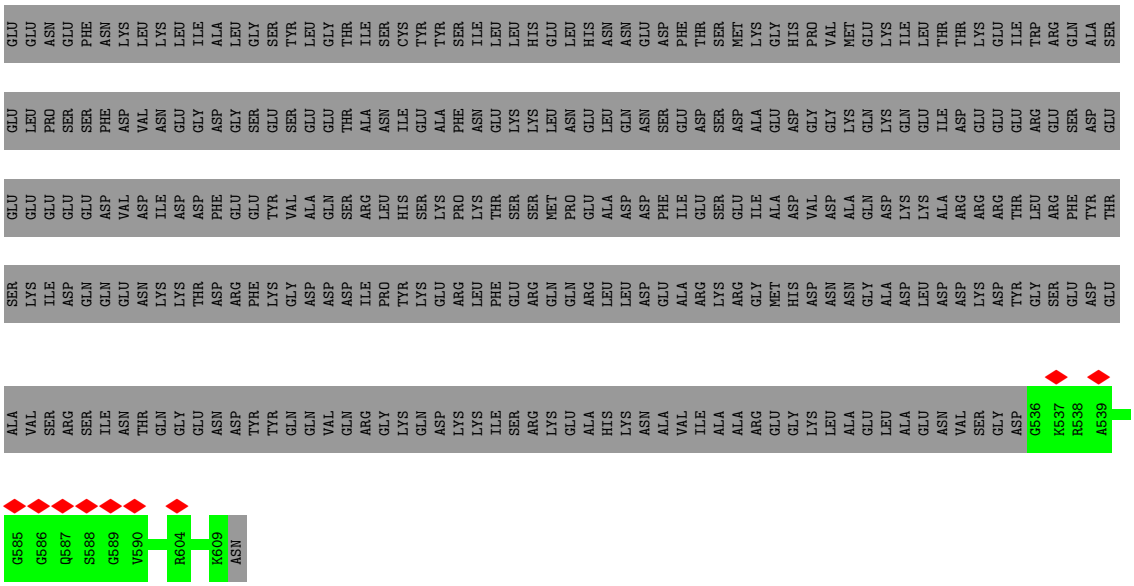




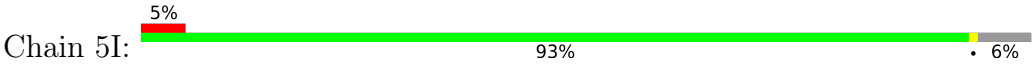
• Molecule 44: Something about silencing protein 10

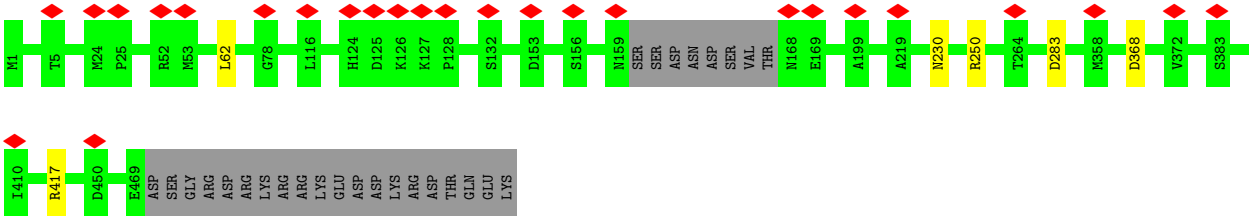
Chain 5H:



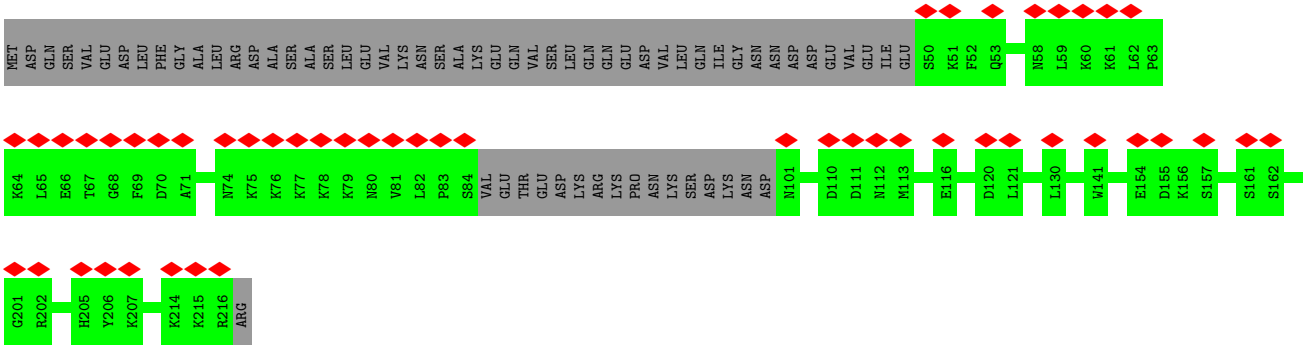


• Molecule 45: Protein SOF1

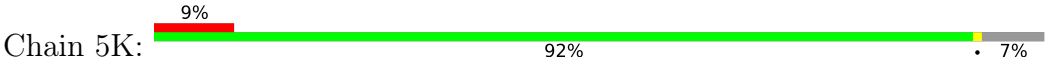


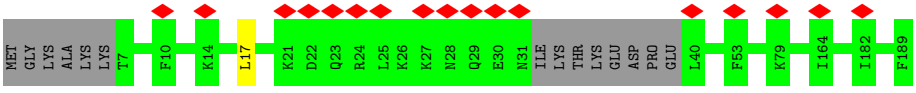


• Molecule 46: rRNA-processing protein FCF2



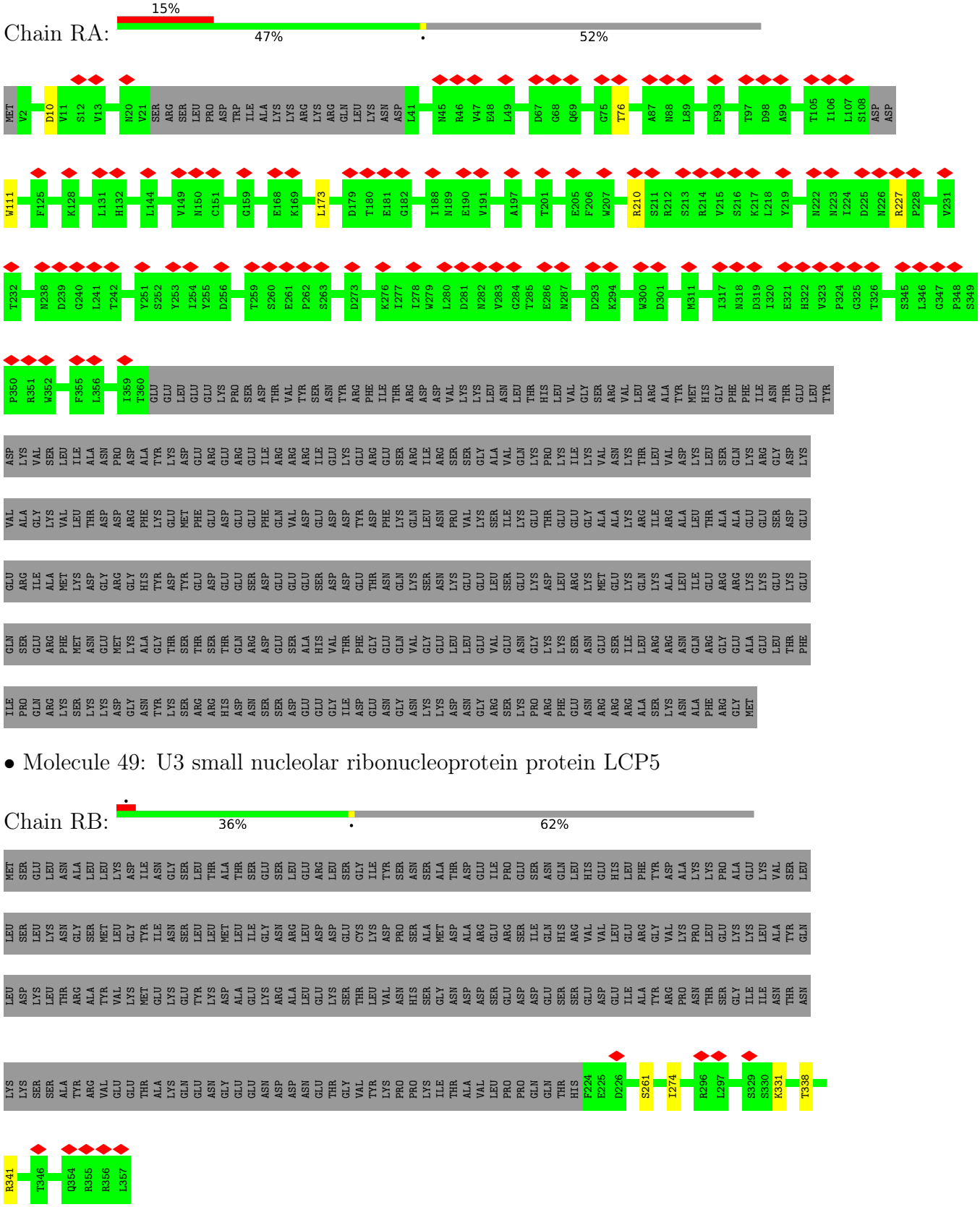
• Molecule 47: rRNA-processing protein FCF1





• Molecule 48: Ribosome biogenesis protein ENP2

Chain RA:



• Molecule 49: U3 small nucleolar ribonucleoprotein protein LCP5

Chain RB:

• Molecule 50: rRNA biogenesis protein RRP5

Chain RD:

MET VAL ALA SER THR LYS ARG LYS ARG ASP GLU ASP PHE PRO LEU SER ARG GLU ASP SER THR LYS GLN PRO SER THR SER SER LEU VAL ARG ASN THR GLU GLU VAL SER PHE PRO ARG GLY GLY ALA SER ALA LEU THR PRO LEU GLU LEU LYS GLN VAL ALA ASN GLU ALA ALA SER

ASP VAL LEU PHE GLY ASN GLU SER VAL LYS ALA SER GLU PRO ALA SER ARG PRO LEU LYS LYS LYS LYS THR THR LYS LYS SER THR SER LYS ASP SER GLU ALA SER SER ALA ASN SER ASP GLU ALA ARG ALA GLY LEU ILE GLU HIS VAL ASN PHE LYS THR LEU LYS ASN GLY SER

SER LEU LEU GLY GLN ILE SER ALA ILE THR LYS GLN ASP LEU CYS ILE THR PHE THR ASP GLY ILE SER GLY TYR VAL ASN LEU THR HIS ILE SER GLU GLU PHE THR SER ILE LEU GLU ASP LEU ASP GLU ASP MET ASP SER ASP THR ASP ALA ALA ASP GLU LYS LYS SER LYS VAL

GLU ASP ALA GLU TYR GLU SER SER ASP ASP GLU ASP GLU LYS LEU ASP LYS SER ASN GLU LEU PRO ASN LEU ARG ARG TYR PHE HIS ILE GLY GLN TRP LEU ARG CYS SER VAL ILE LYS ASN THR SER LEU GLU PRO SER THR LYS LYS SER LYS LYS LYS ARG ILE GLU LEU THR ILE

GLU PRO SER SER VAL ASN ILE TYR ALA ASP GLU ASP LEU VAL LYS SER THR SER ILE GLN CYS ALA VAL LYS SER ILE GLU ASP HIS GLY ALA THR LEU ASP VAL GLY LEU PRO GLY PHE THR GLY PHE ILE ALA LYS LYS ASP PHE GLY ASN PHE GLU LYS LEU LEU PRO GLY ALA VAL

PHE LEU GLY ASN ILE THR LYS LYS SER ASP ARG SER ILE VAL VAL ASN THR ASP PHE SER ASP LYS LYS ASN LYS ILE THR GLN ILE SER SER ILE ASP ALA ILE ILE PRO GLY GLN ILE VAL ASP LEU LEU CYS GLU SER ILE THR LYS ASN GLY ILE ALA GLY LYS VAL PHE GLY LEU

VAL SER GLY VAL VAL ASN VAL SER HIS LEU ARG THR PHE SER GLU GLU ASP LEU LYS HIS LYS PHE VAL ILE GLY SER SER ILE ARG CYS ARG ILE ILE ALA CYS LEU GLU ASN LYS SER GLY ASP LYS VAL LEU ILE LEU SER ASN LEU PRO HIS ILE LEU LYS LEU GLU ASP ALA LEU

ARG SER THR GLU GLY LEU ASP ALA PHE PRO ILE GLY TYR THR PHE GLU SER CYS SER ILE LYS GLY ARG ASP SER GLU TYR LEU TYR LEU ALA LEU ASP ASP ASP ARG LEU GLY LYS VAL HIS SER SER ARG VAL GLY GLU ILE GLU ASN SER GLU ASN LEU SER SER ARG VAL LEU GLY

TYR SER PRO VAL ASP ASP ILE TYR GLN LEU SER THR ASP PRO LYS TYR LEU LYS LEU LYS TYR LEU ARG THR ASN ASP ILE PRO ILE GLY GLU LEU LEU PRO SER CYS GLU ILE THR SER VAL SER SER GLY ILE GLU LEU LYS ILE PHE ASN GLY GLN PHE LYS ALA SER VAL PRO

PRO LEU HIS ILE SER ASP THR ARG LEU VAL TYR PRO GLU ARG LYS PHE LYS ILE GLY SER LYS VAL LYS GLY ARG VAL ILE SER VAL ASN SER ARG GLY ASN VAL HIS VAL THR LEU LYS LYS SER LEU VAL ASN ILE GLU ASP ASN GLU LEU PRO LEU VAL SER THR TYR GLU ASN ALA

LYS ASN ILE LYS GLU LYS ASN GLU LYS THR LEU ALA THR ILE GLN VAL PHE LYS PRO ASN GLY CYS ILE ILE SER PHE PHE GLY GLY LEU SER GLY PHE LEU PRO ASN SER GLU ILE SER GLU VAL PHE VAL LYS ARG PRO GLU GLU HIS LEU ARG LEU GLY GLN THR VAL ILE VAL LYS

LEU LEU ASP VAL ASP ALA ASP ARG ARG ARG ILE ILE ALA THR CYS LYS VAL SER ASN GLU GLN ALA ALA GLN GLN LYS ASP THR ILE GLU ASN ILE VAL PRO GLY ARG THR ILE ILE THR VAL HIS VAL ILE GLU LYS THR LYS ASP SER VAL ILE VAL GLU ILE PRO ASP VAL GLY LEU

ARG GLY VAL ILE TYR VAL GLY HIS LEU SER ASP SER ARG ILE GLU GLN ASN ARG ALA GLN LEU LYS LYS LEU ARG ILE GLY THR GLU LEU THR GLY LEU VAL ILE ASP LYS ASP THR ARG THR ARG VAL PHE ASN MET SER LEU LYS SER SER LEU ILE LYS ASP ALA LYS LYS GLU THR

LEU PRO LEU THR TYR ASP ASP VAL LYS ASP LEU ASN LYS ASP VAL PRO MET HIS ALA TYR ILE LYS SER ILE SER ASP LYS GLY LEU PHE VAL ALA PHE ASN GLY LYS PHE ILE GLY LEU VAL LEU PRO SER TYR ALA VAL ASP SER ARG ASP ILE ASP ILE SER LYS ALA PHE TYR ILE

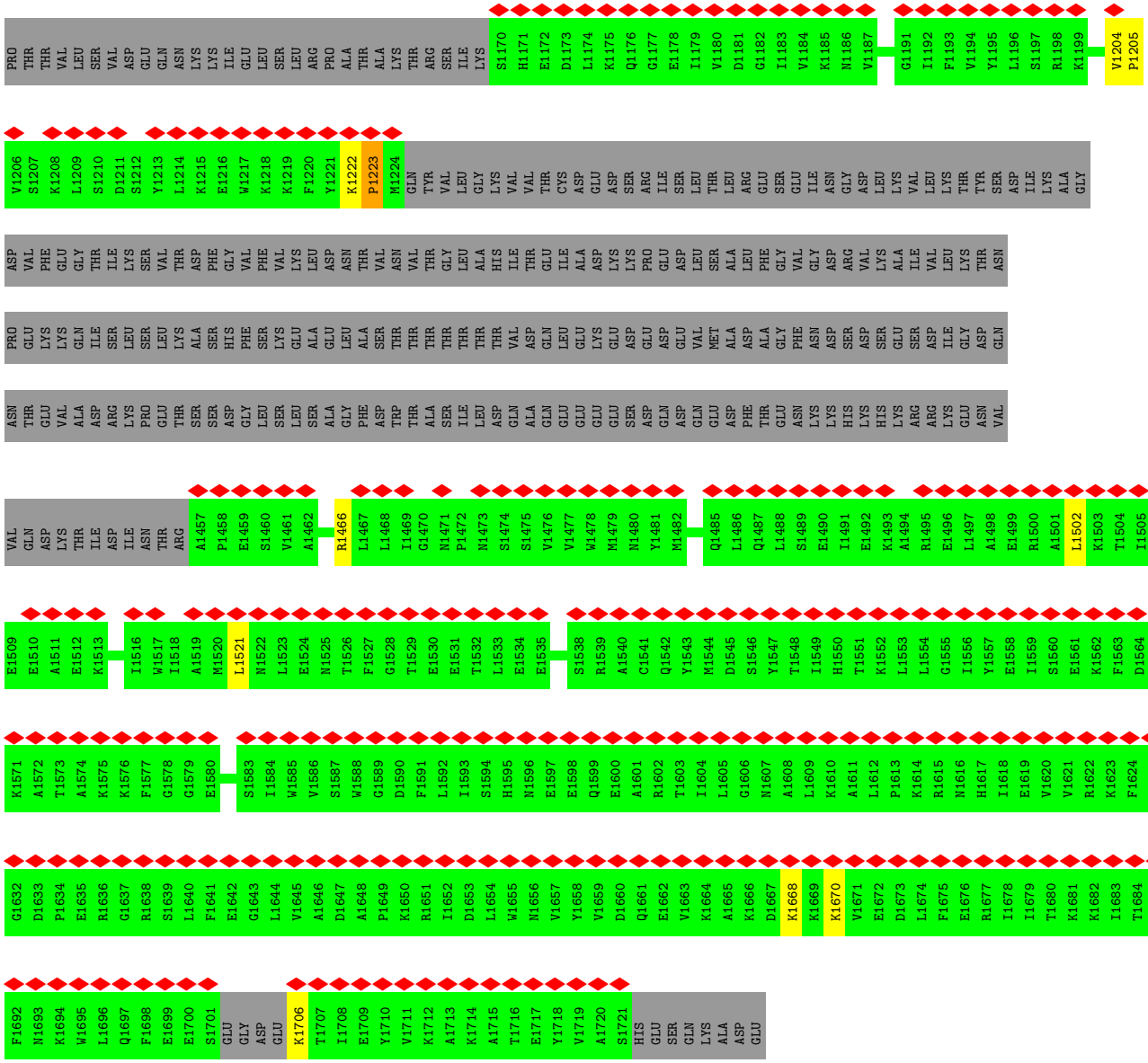
ASN GLN SER VAL THR VAL TYR LEU LEU ARG THR ASP ASP LYS ASN GLN LYS PHE LEU LEU SER LEU LYS ALA PRO LYS VAL LYS GLU GLU LYS LYS LYS VAL GLU SER ASN ILE GLU ASP PRO VAL ASP SER SER ILE LYS SER TRP ASP ASP LEU SER ILE GLY SER ILE VAL LYS ALA

LYS ILE LYS SER VAL LYS LYS ASN GLN LEU ASN VAL ILE LEU ALA ALA ASN LEU HIS GLY ARG VAL ASP ILE ALA GLU VAL PHE ASP THR TYR GLU ILE THR ASP LYS LYS GLN PRO LEU SER ASN TYR LYS LYS ASP ASP VAL ILE LYS VAL LYS ILE ILE GLY ASN HIS ASP VAL

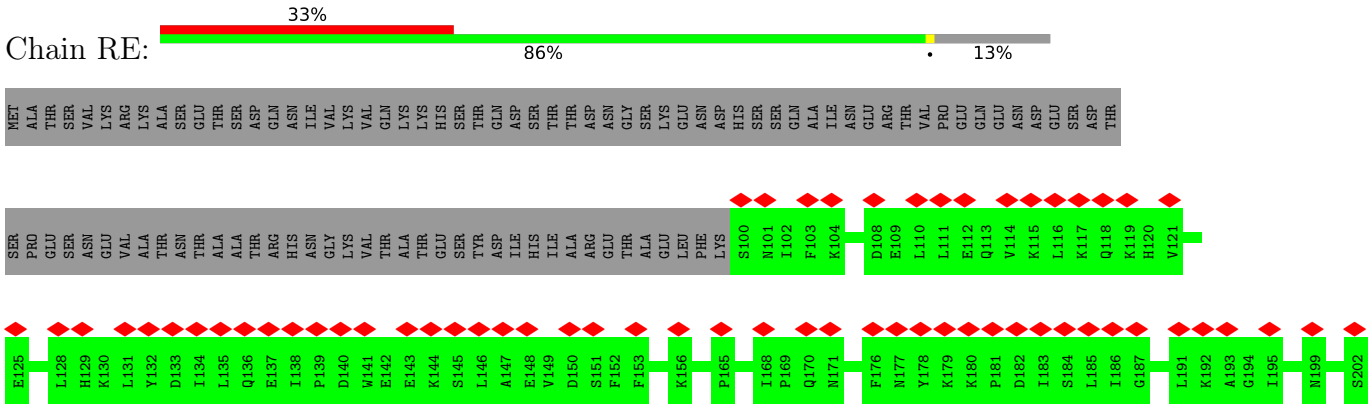
LYS SER HIS LYS PHE LEU PRO ILE THR HIS LYS ILE SER LYS ALA SER VAL LEU GLU LEU SER MET LYS PRO SER GLU LEU LYS SER LYS GLU VAL HIS THR LYS SER LEU GLU GLU ILE ASN ILE GLY GLN GLU LEU THR GLY PHE VAL ASN ASN SER SER GLY ASN HIS LEU TRP LEU

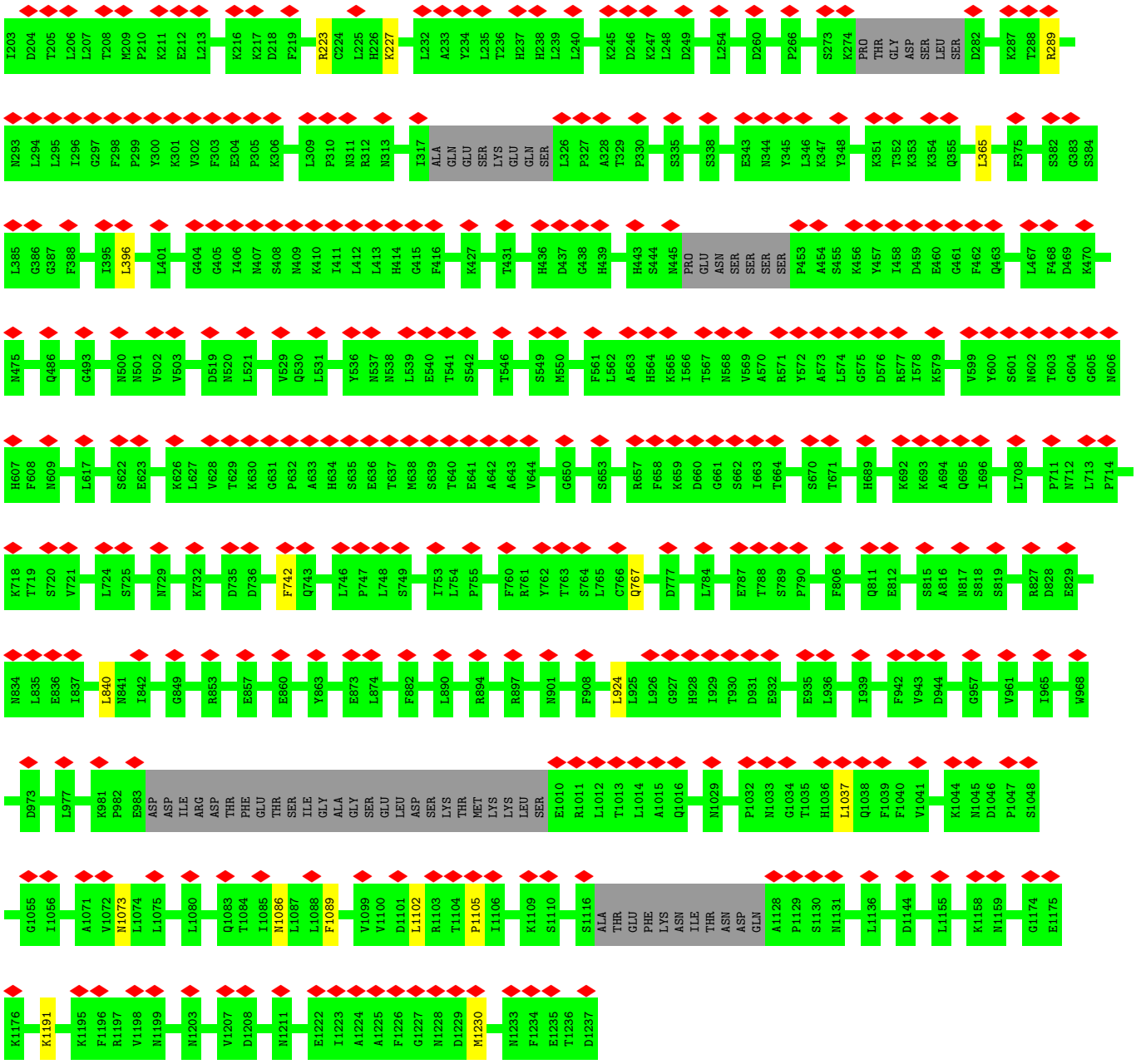
THR ILE SER PRO VAL LEU LYS ALA ARG ILE SER LEU LEU ASP LEU ALA ASP ASN ASP SER ASN PHE SER GLU ASN ILE GLU SER VAL PHE PRO LEU GLY SER ALA LEU GLN VAL LYS VAL ALA SER ILE ASP ARG GLU HIS GLY PHE VAL ASN ALA ILE GLY LYS SER HIS VAL ASP ILE

ASN MET SER THR ILE LYS VAL GLY ASP GLU LEU PRO GLY ARG VAL LEU LYS ILE ALA GLU LYS TYR VAL LEU LEU ASP LEU GLY ASN LYS VAL THR GLY ILE SER PHE ILE THR ASP ALA LEU ASN ASP PHE SER LEU THR LEU LYS GLU ALA PHE GLU ASP LYS ILE ASN ASN VAL ILE



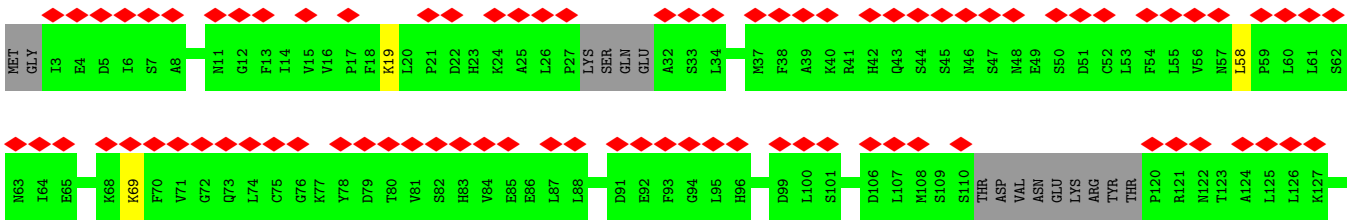
• Molecule 51: U3 small nucleolar RNA-associated protein 22

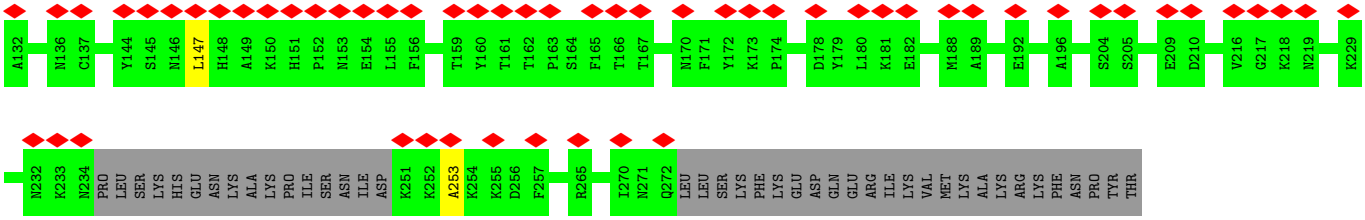




• Molecule 52: Ribosomal RNA-processing protein 7

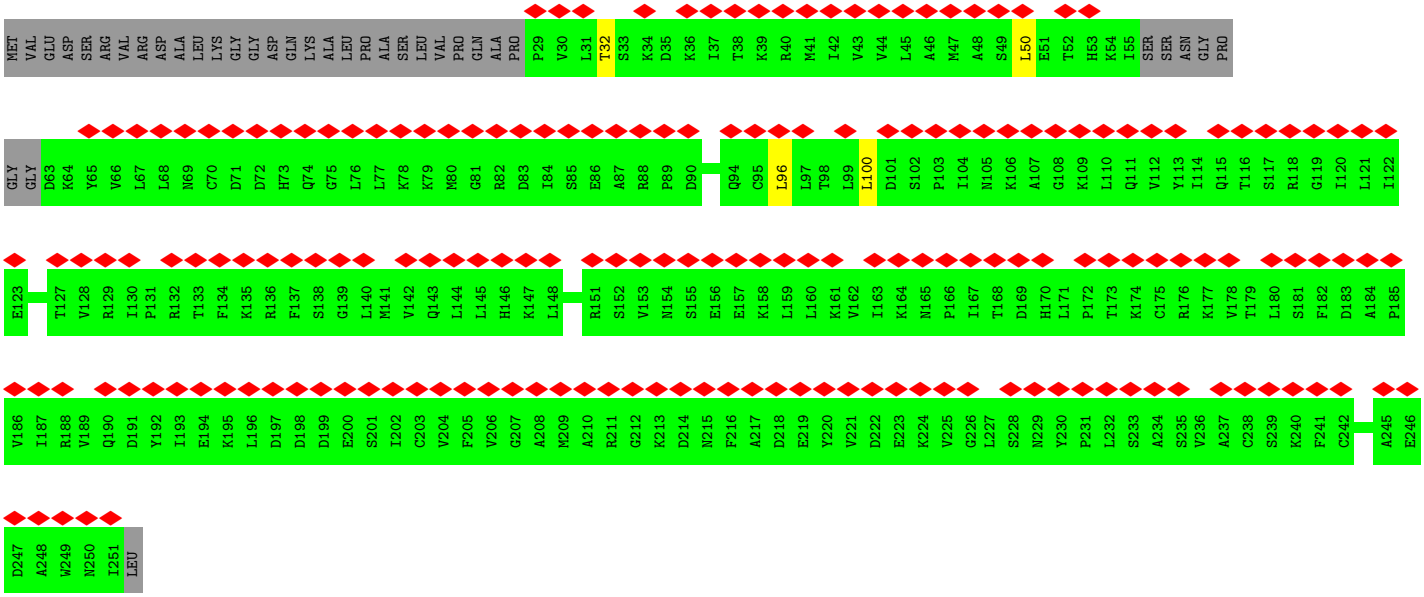
Chain RF:





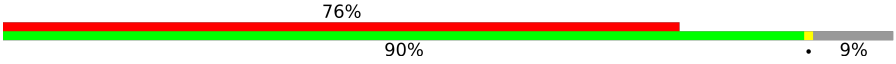
• Molecule 53: Ribosomal RNA small subunit methyltransferase NEP1

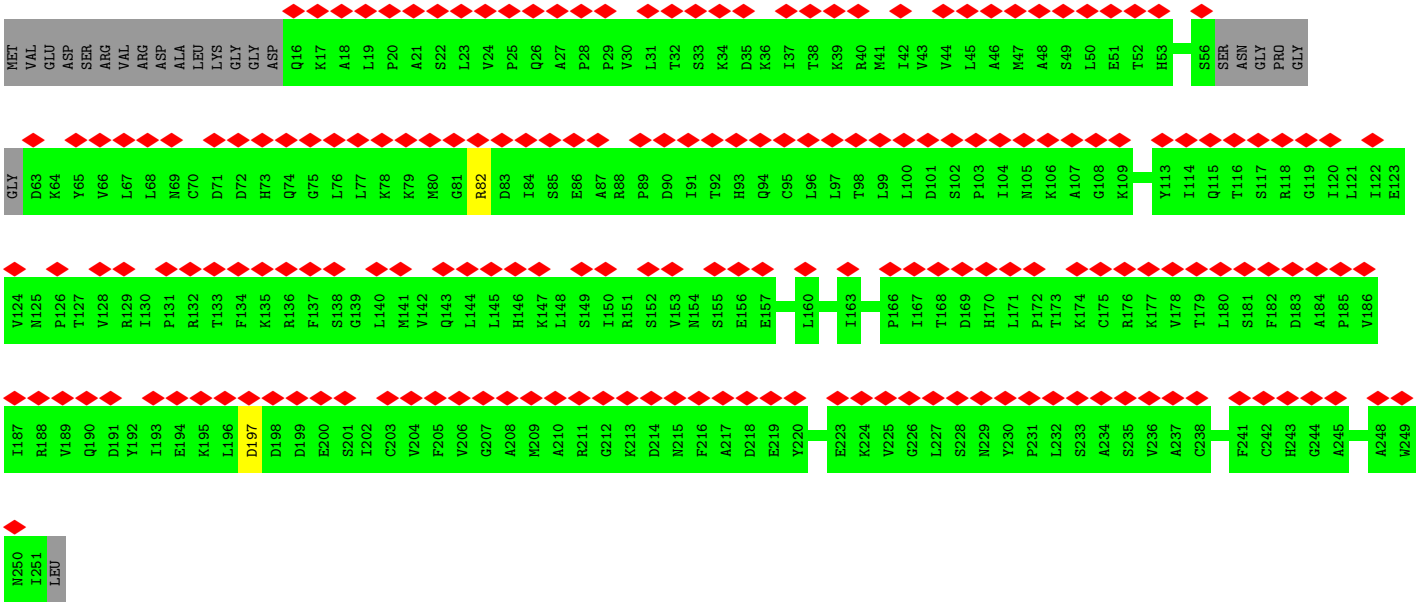
Chain RG:



• Molecule 53: Ribosomal RNA small subunit methyltransferase NEP1

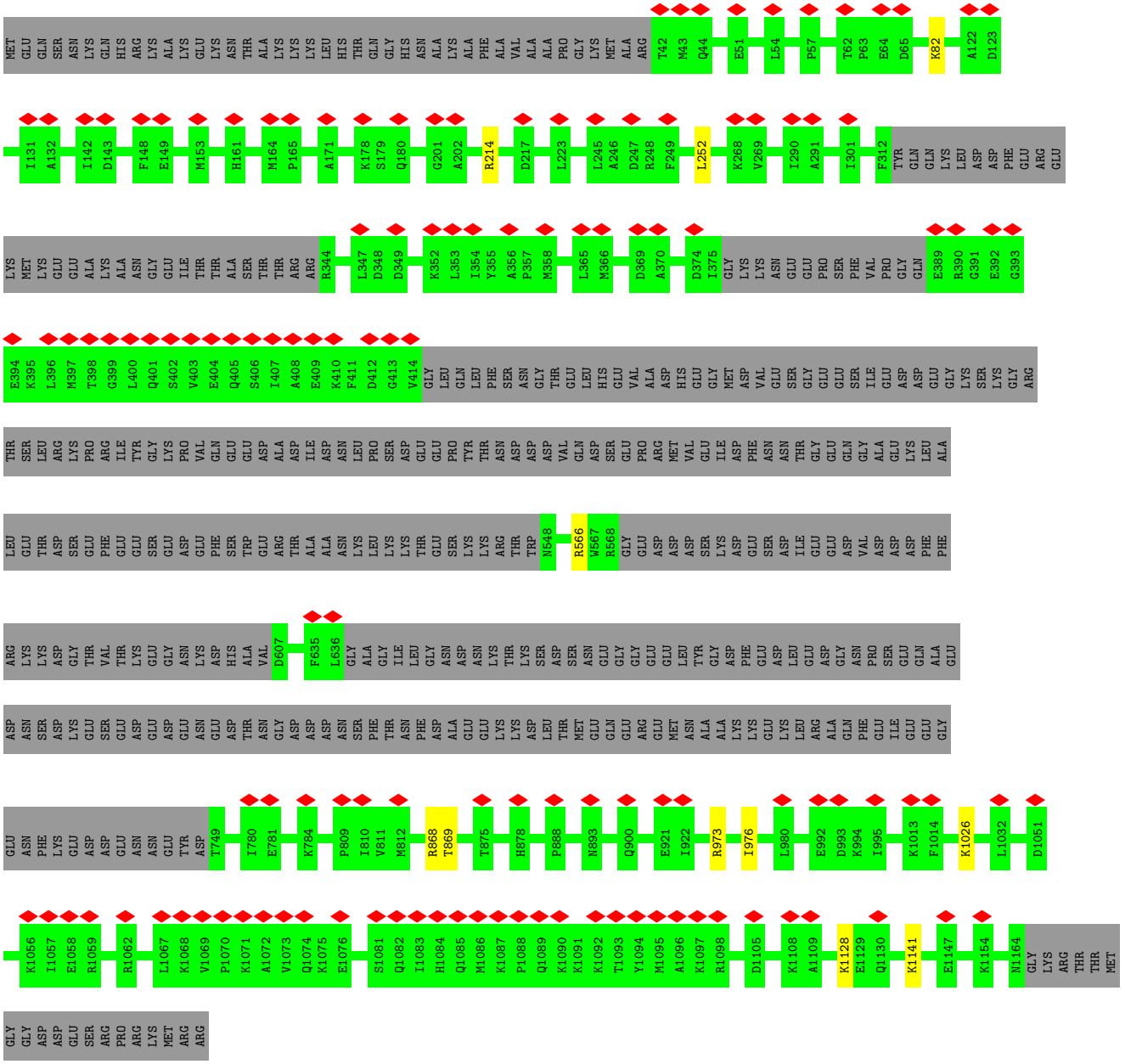
Chain RH:





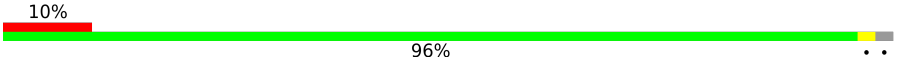
• Molecule 54: Ribosome biogenesis protein BMS1

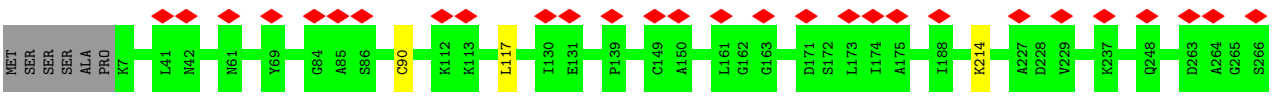
Chain RJ:

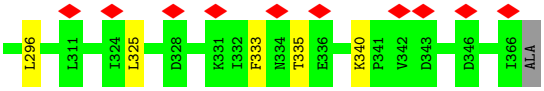


• Molecule 55: RNA 3'-terminal phosphate cyclase-like protein

Chain RK:

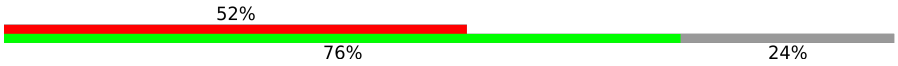


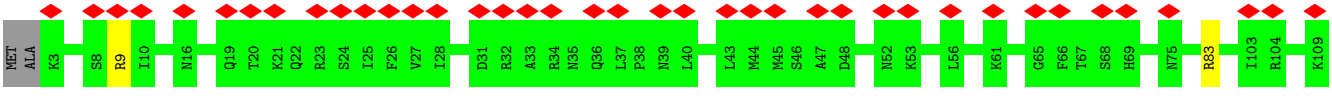


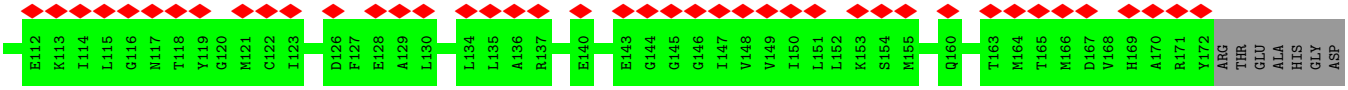


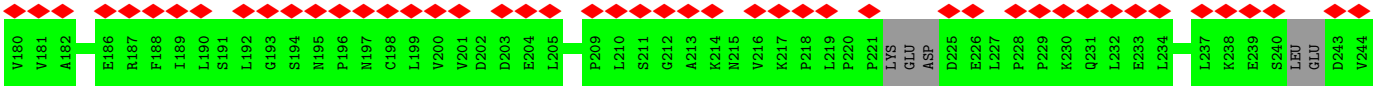
• Molecule 56: RNA cytidine acetyltransferase

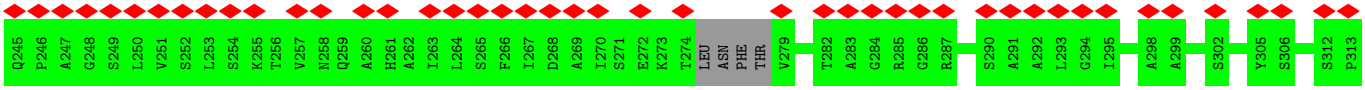
Chain RL:

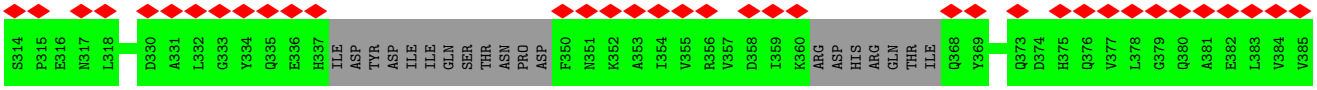


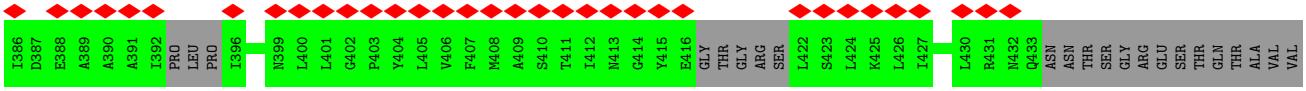


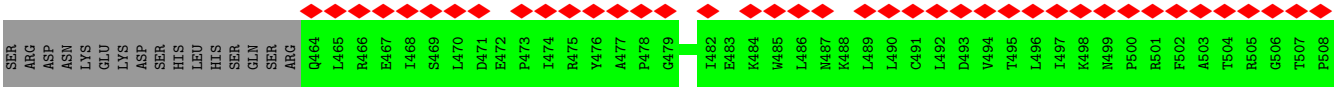


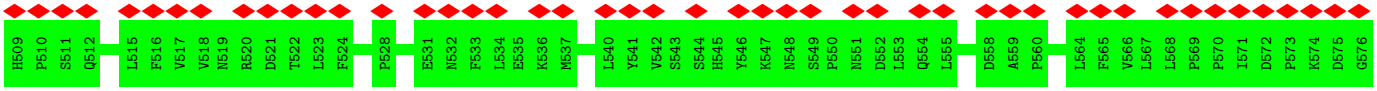


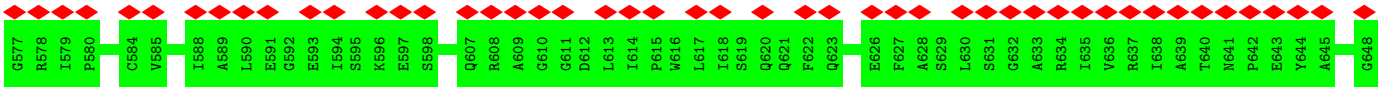


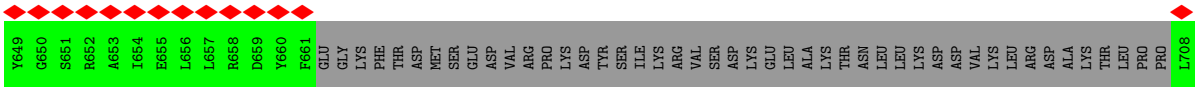


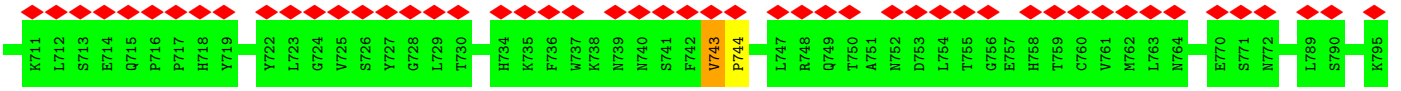


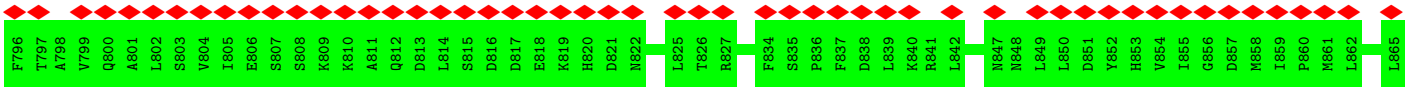


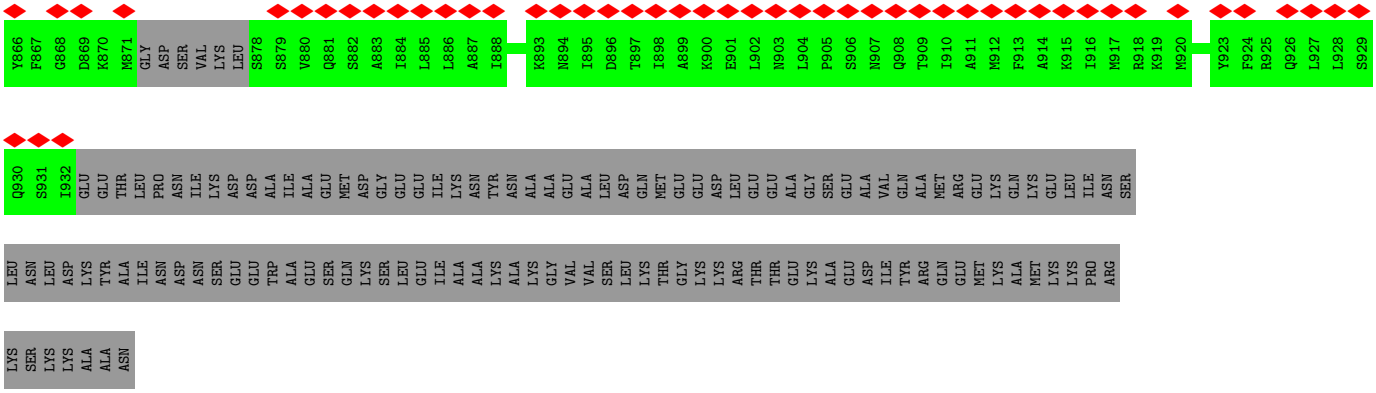






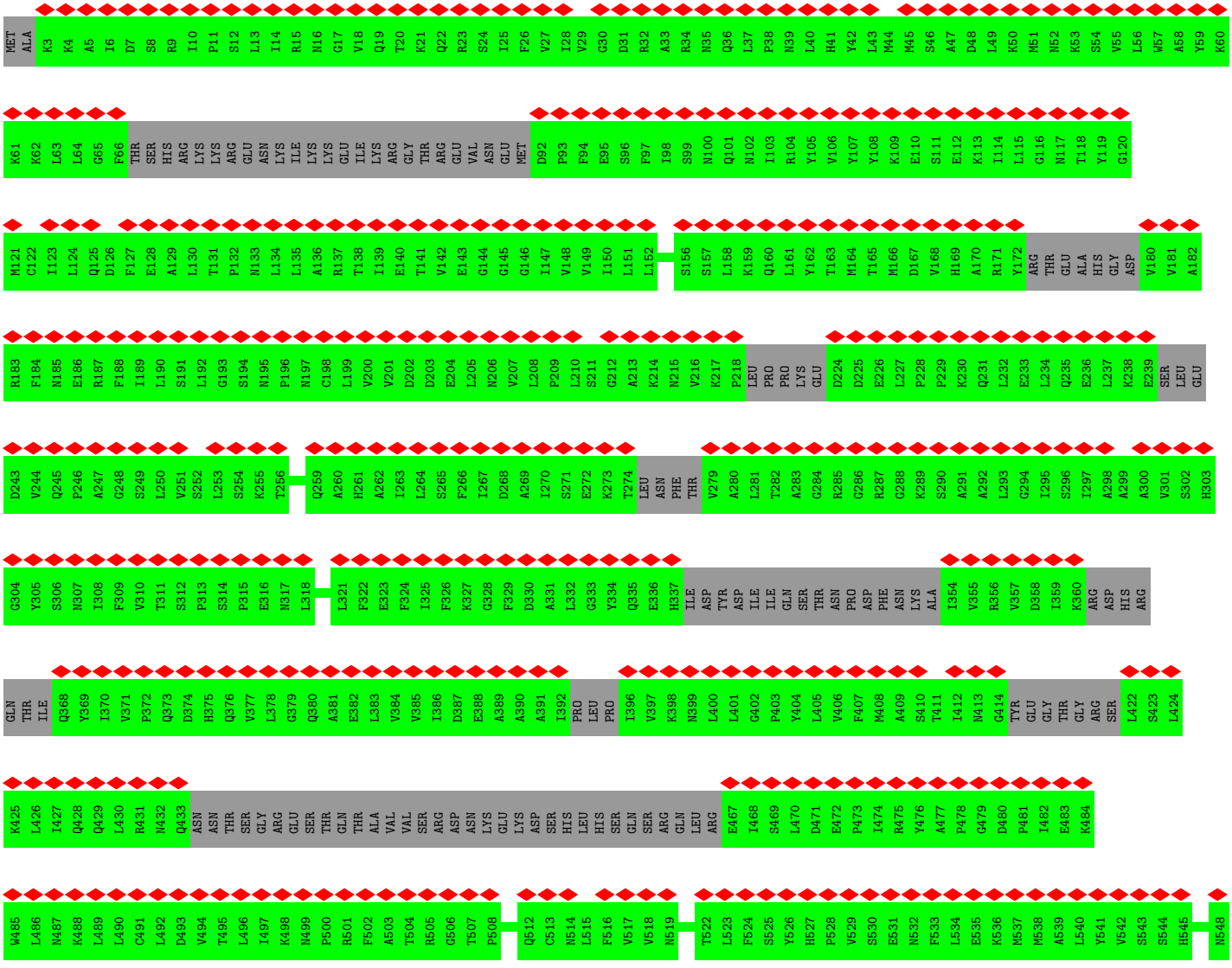


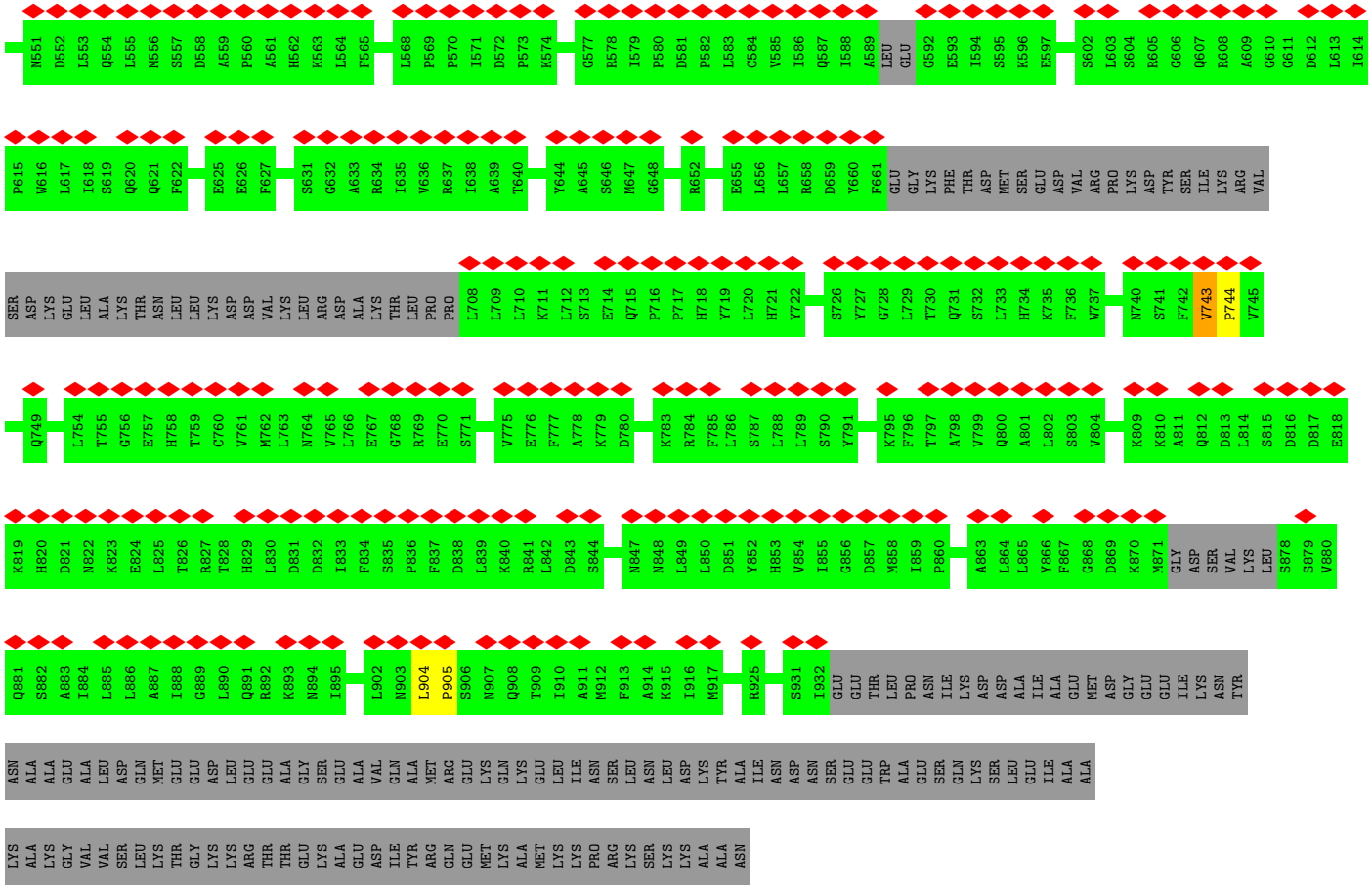




• Molecule 56: RNA cytidine acetyltransferase

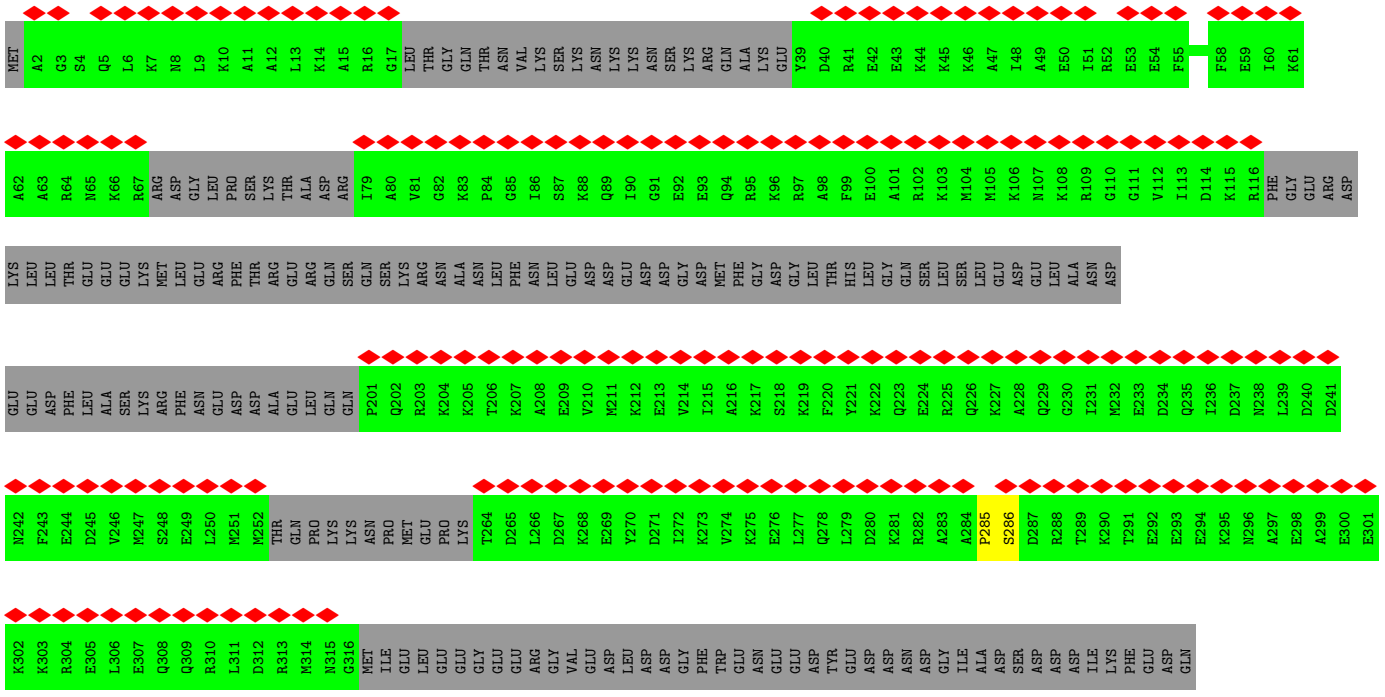
Chain RM:

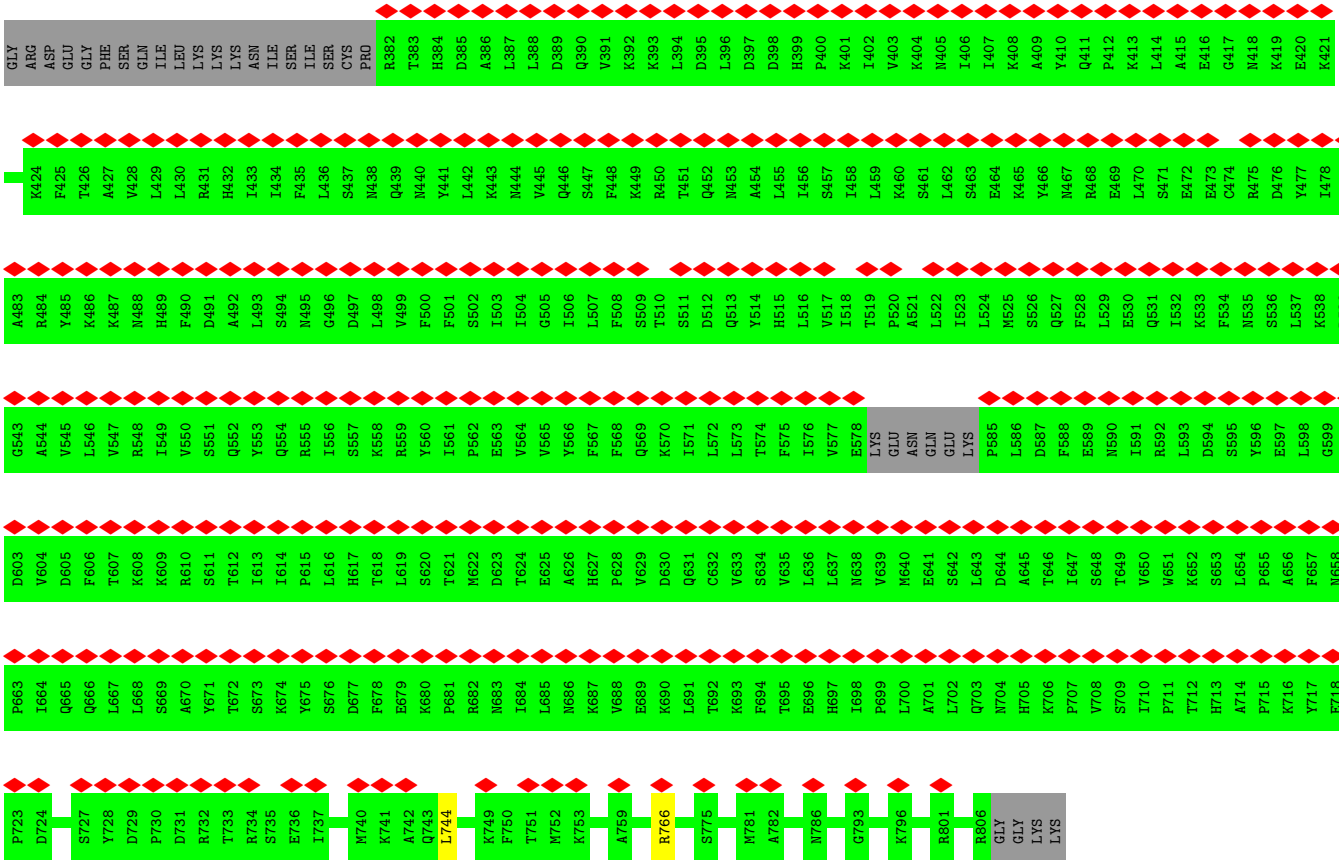




• Molecule 57: Nucleolar complex protein 14

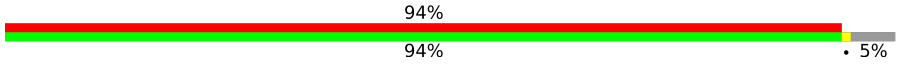
Chain RN:

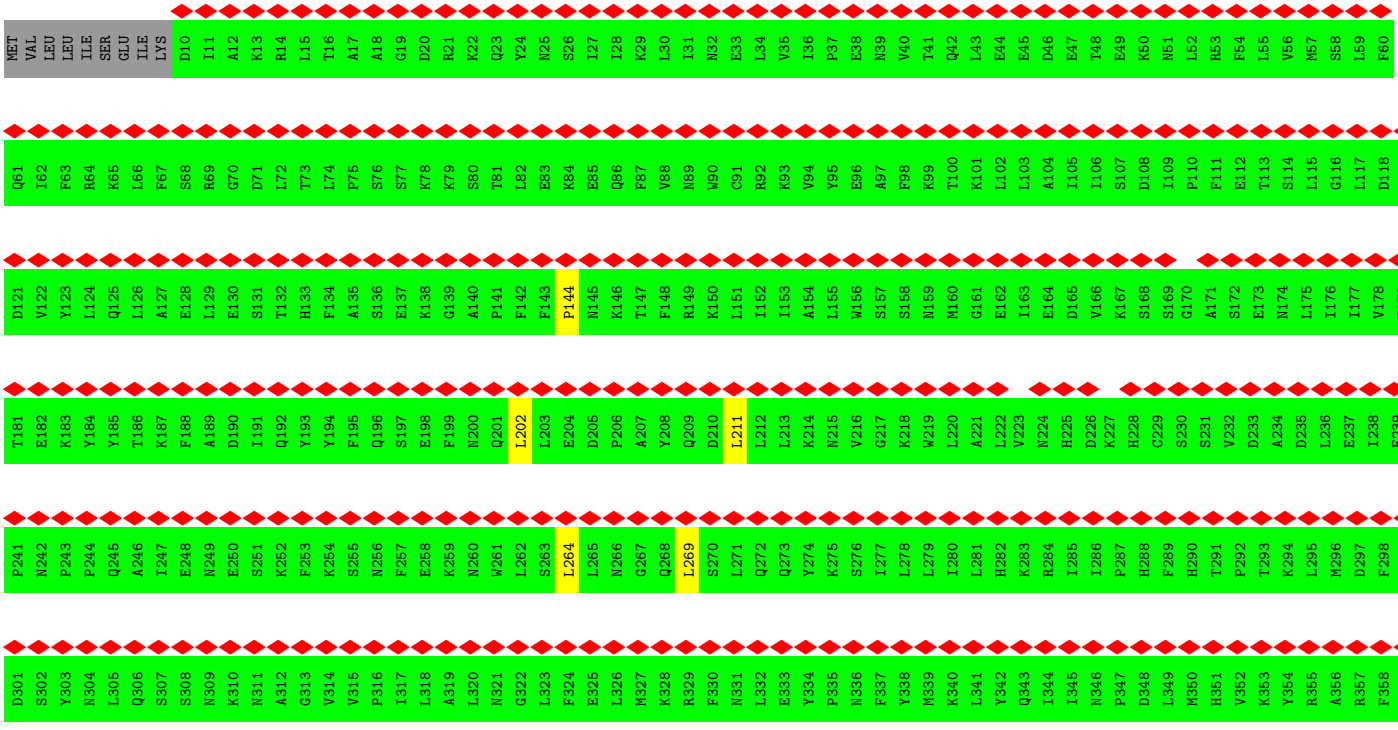


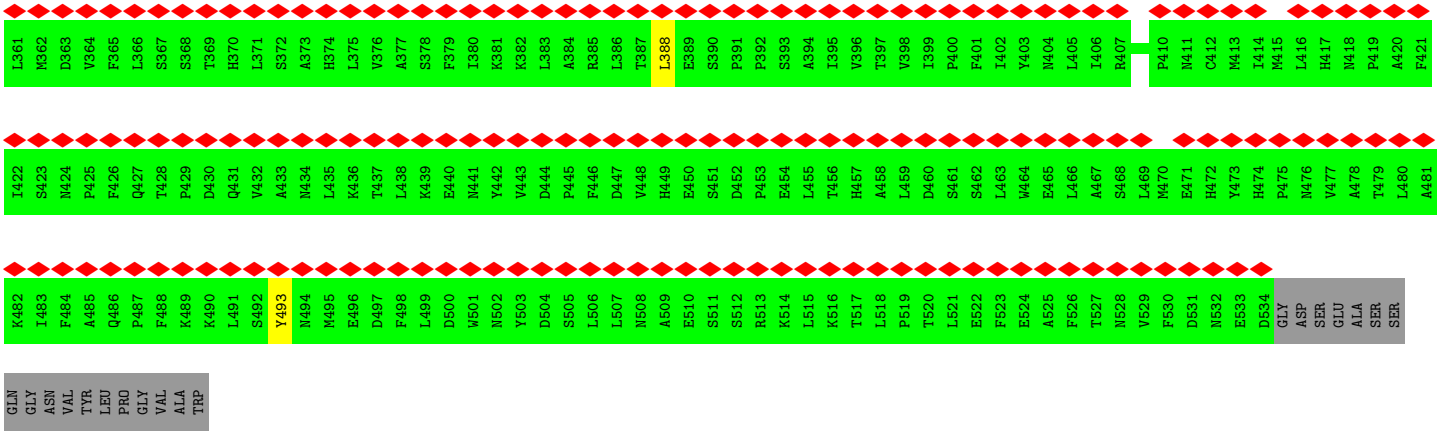


• Molecule 58: Nucleolar complex protein 4

Chain RO:

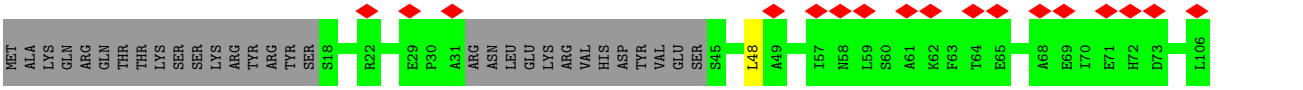


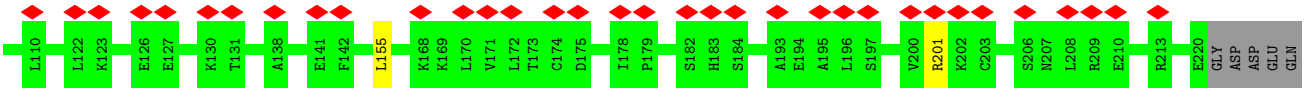


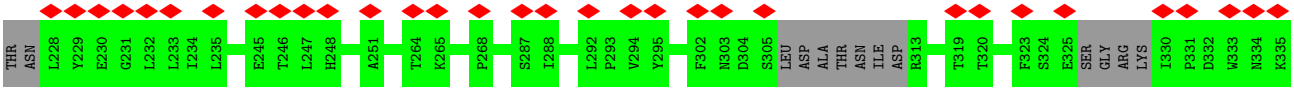


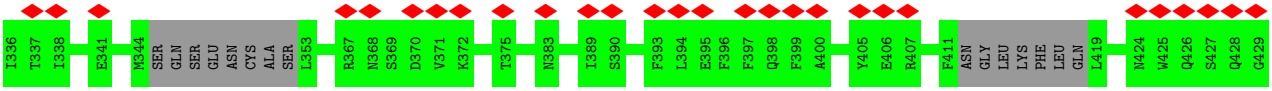
• Molecule 59: U3 small nucleolar RNA-associated protein 20

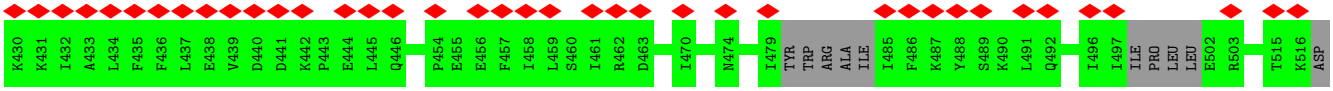
Chain RP:

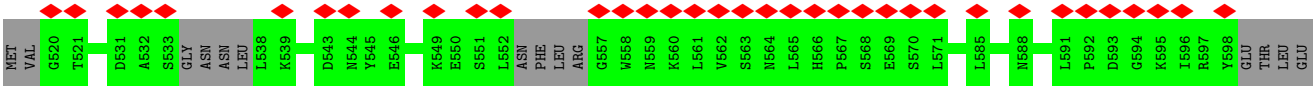


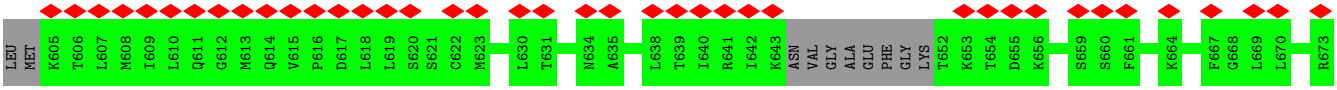


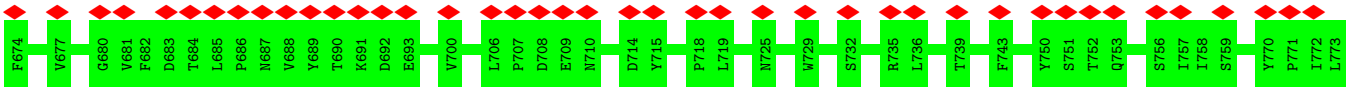


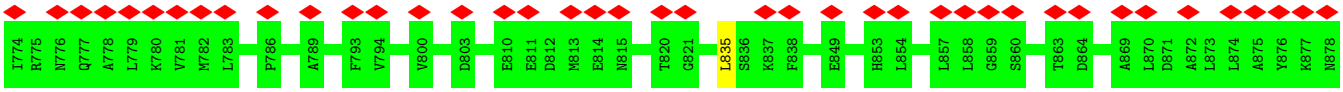


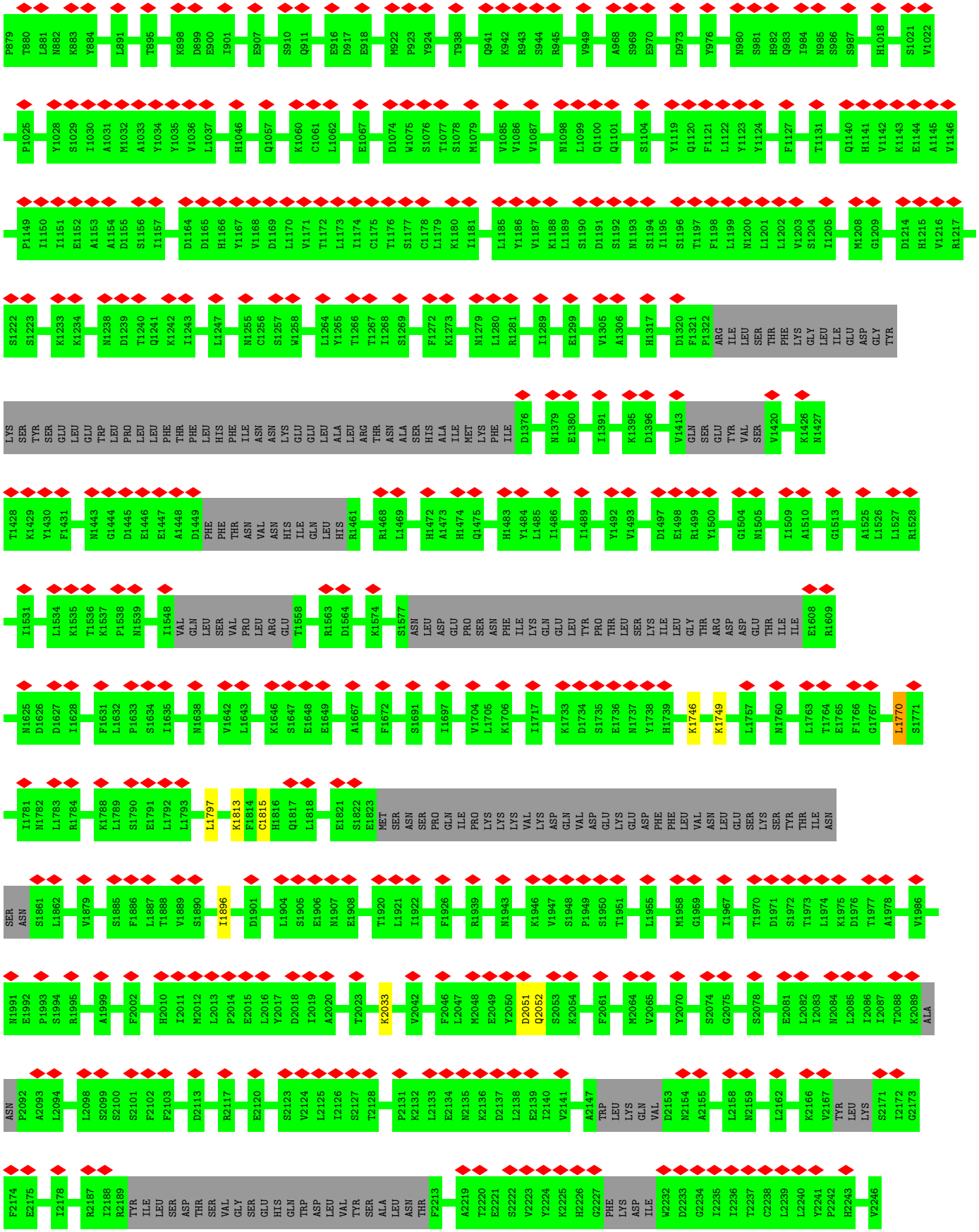








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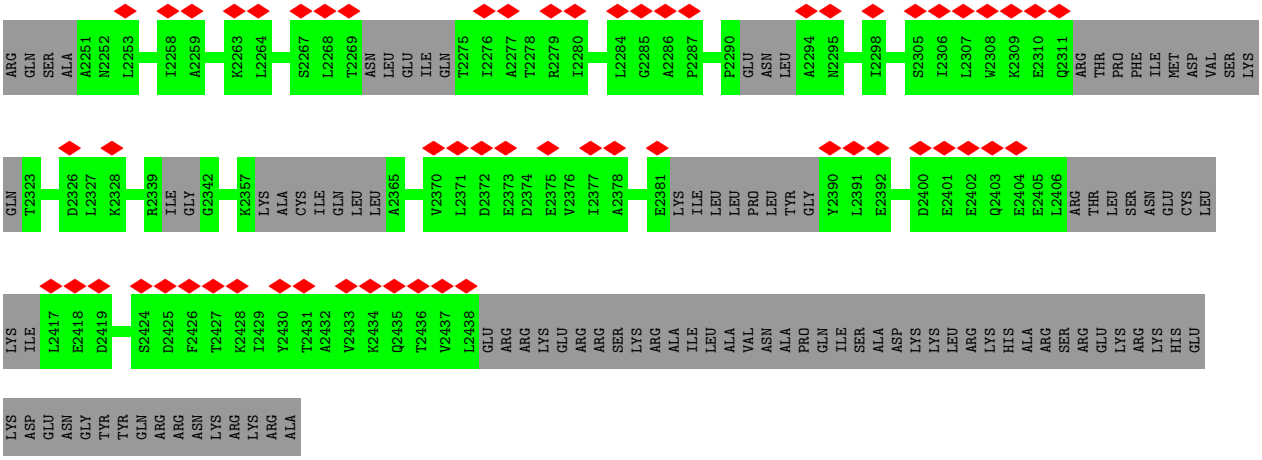
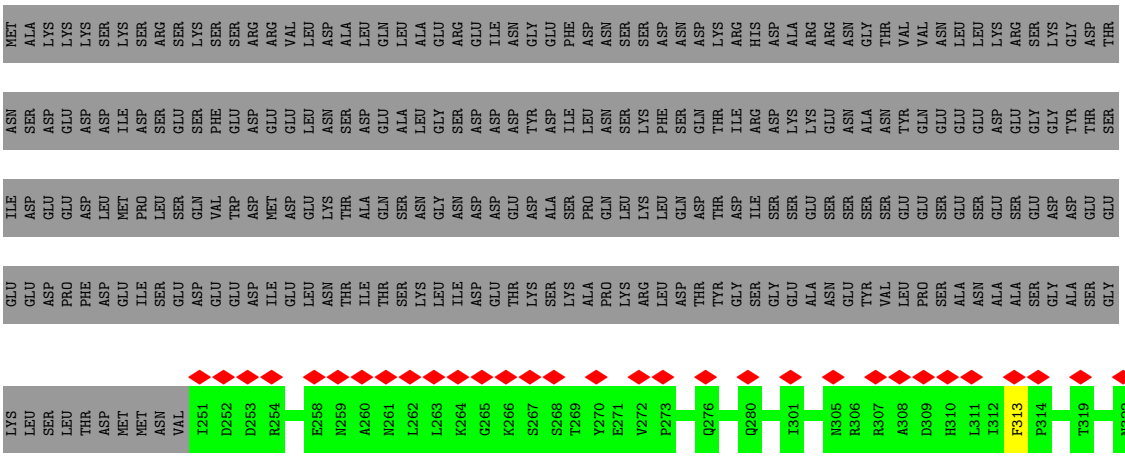
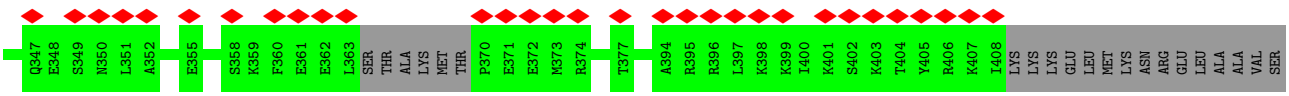
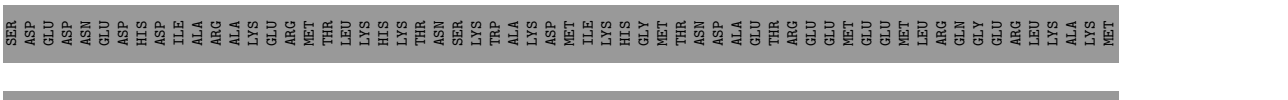
P1025 Y1028 S1029 I1030 A1031 M1032 A1033 Y1034 Y1035 V1036 L1037 H1046 Q1057 K1060 C1061 L1062 E1067 D1074 W1075 S1076 T1077 S1078 M1079 V1085 V1086 V1087 N1098 L1099 Q1100 Q1101 S1104 Y1119 Q1120 F1121 L1122 Y1123 Y1124 F1127 T1131 Q1140 H1141 V1142 K1143 E1144 A1145 V1146
P1149 I1150 I1151 E1152 A1153 A1154 D1155 S1156 I1157 D1164 D1165 H1166 Y1167 V1168 D1169 L1170 V1171 T1172 L1173 I1174 C1175 T1176 S1177 C1178 L1179 K1180 I1181 L1185 Y1186 V1187 K1188 L1189 S1190 D1191 S1192 N1193 S1194 I1195 S1196 T1197 F1198 L1199 N1200 L1201 L1202 V1203 S1204 I1205 M1208 G1209 D1214 H1215 V1216 R1217
S1222 S1223 K1233 K1234 N1238 D1239 T1240 Q1241 K1242 I1243 L1247 N1255 C1256 S1257 W1258 L1264 Y1265 T1266 T1267 I1268 S1269 F1272 K1273 N1279 L1280 R1281 I1289 E1299 V1305 A1306 H1317 D1320 F1321 P1322 ARG ILE LEU LEU SER THR THR PHE LYS GLY LEU ILE GLU ASP GLY TYR
LYS SER TYR SER GLU LEU GLU TRP LEU PRO LEU LEU LEU PHE THR PHE LEU HIS PHE ILE ASN ASN LYS GLU GLU LEU ALA LEU ARG THR ASN ALA SER HIS ALA ILE MET LYS PHE ILE D1376 N1379 E1380 I1391 K1395 D1396 V1413 GLN SER GLU TYR VAL SER V1420 K1426 N1427
T1428 K1429 Y1430 F1431 N1443 G1444 D1445 E1446 E1447 A1448 D1449 PHE PHE THR ASN VAL ASN HIS ILE GLN LEU HIS R1461 R1468 L1469 H1472 A1473 H1474 Q1475 H1483 Y1484 L1485 I1486 I1489 Y1492 V1493 D1497 E1498 R1499 Y1500 G1504 N1505 I1509 A1510 G1513 A1525 L1526 L1527 R1528
T1531 L1534 K1535 T1536 K1537 P1538 N1539 I1548 VAL GLN LEU SER VAL PRO LEU ARG GLU T1558 R1563 D1564 K1574 S1577 ASN LEU ASP GLU PRO SER ASN PHE ILE LYS GLN GLU LEU TYR PRO THR LEU SER LYS ILE LEU GLY THR ARG ASP GLU THR ILE ILE E1608 R1609
N1625 D1626 D1627 I1628 F1631 L1632 P1633 S1634 I1635 N1638 V1642 L1643 K1646 S1647 E1648 E1649 A1667 F1672 S1691 I1697 V1704 L1705 K1706 I1717 K1733 D1734 S1735 E1736 N1737 Y1738 H1739 K1746 K1749 L1757 N1760 L1763 T1764 E1765 F1766 G1767 L1770 S1771
T1781 N1782 L1783 R1784 K1788 L1789 S1790 E1791 L1792 L1793 L1797 K1813 F1814 C1815 H1816 Q1817 L1818 E1821 S1822 E1823 MET SER ASN SER PRO GLN ILE PRO LYS LYS LYS VAL LYS ASP GLN VAL ASP GLU LYS GLU ASP PHE PHE LEU VAL ASN LEU GLU SER LYS SER TYR THR ILE ASN
SER ASN S1861 L1862 V1879 S1885 F1886 L1887 T1888 V1889 S1890 I1896 D1901 L1904 S1905 E1906 N1907 E1908 T1920 L1921 I1922 F1926 R1939 N1943 K1946 V1947 S1948 P1949 S1950 T1951 L1955 M1958 G1959 I1967 T1970 D1971 S1972 T1973 L1974 K1975 D1976 T1977 A1978 V1986
N1991 E1992 P1993 S1994 R1995 A1999 F2002 H2010 I2011 M2012 L2013 P2014 E2015 L2016 Y2017 D2018 I2019 A2020 T2023 K2033 V2042 F2046 L2047 M2048 E2049 Y2050 D2051 Q2052 S2053 K2054 F2061 M2064 V2065 Y2070 S2074 G2075 S2078 E2081 L2082 I2083 N2084 L2085 I2086 I2087 T2088 K2089 ALA
ASN P2092 A2093 L2094 L2098 S2099 S2100 S2101 F2102 F2103 D2113 R2117 E2120 S2123 V2124 L2125 I2126 S2127 T2128 P2131 K2132 L2133 E2134 N2135 K2136 D2137 L2138 E2139 I2140 V2141 A2147 TRP LEU LYS GLN VAL D2153 N2154 A2155 L2158 N2159 L2162 K2166 V2167 TYR LEU LYS S2171 I2172 G2173
F2174 E2175 I2178 R2187 I2188 R2189 TYR ILE LEU SER ASP THR SER VAL GLY SER GLU HIS GLN TRP ASP LEU VAL TYR SER ALA LEU ASN THR F2213 A2219 T2220 E2221 S2222 V2223 Y2224 K2225 H2226 G2227 PHE LYS ASP ILE W2232 D2233 G2234 I2235 I2236 T2237 C2238 L2239 L2240 Y2241 P2242 H2243 Y2246

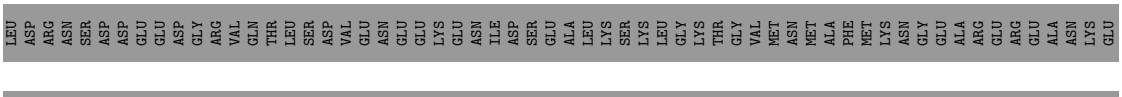


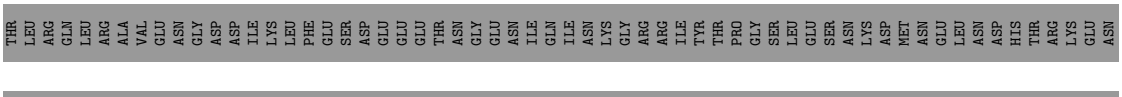
• Molecule 60: U3 small nucleolar RNA-associated protein 14

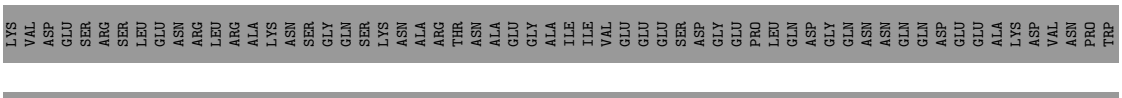


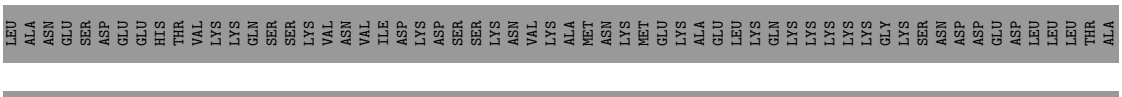


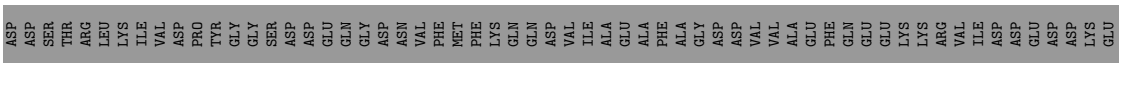


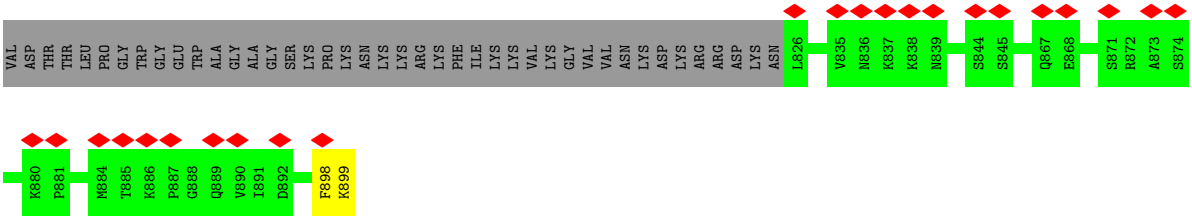






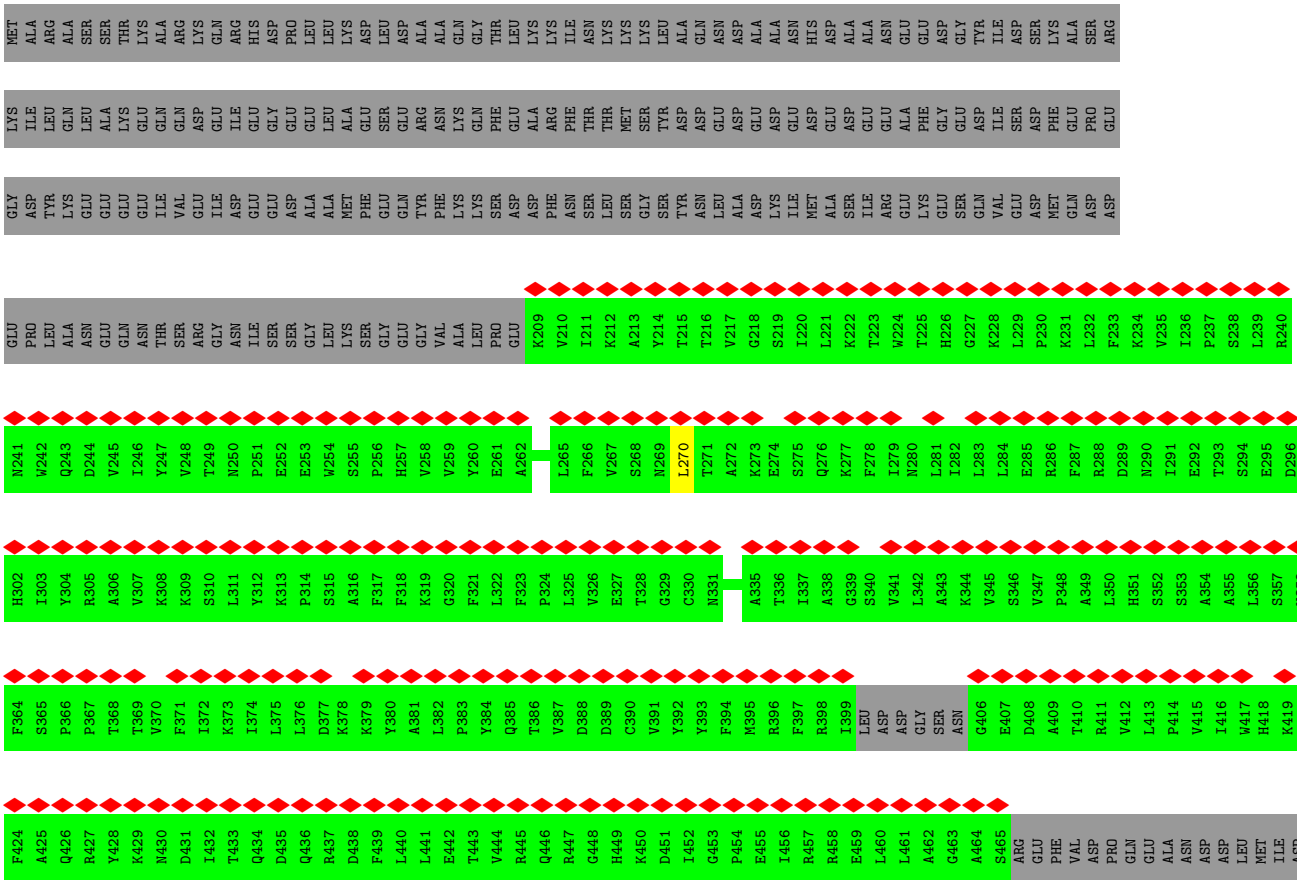






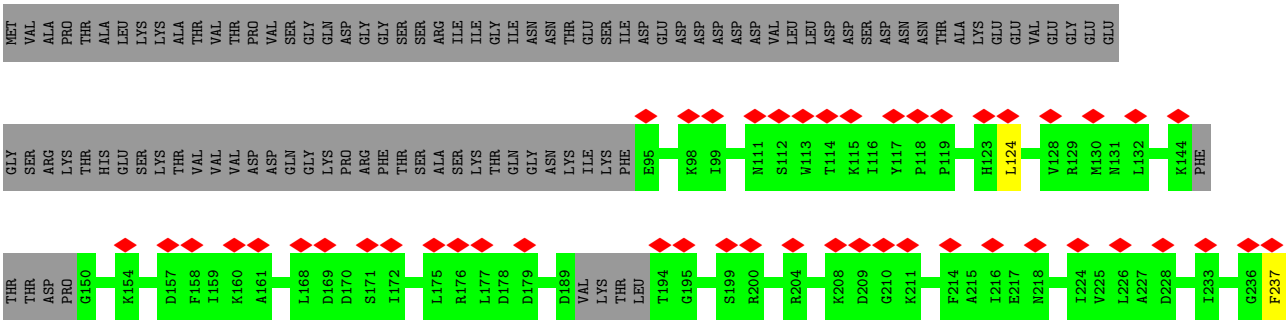
• Molecule 61: Essential nuclear protein 1

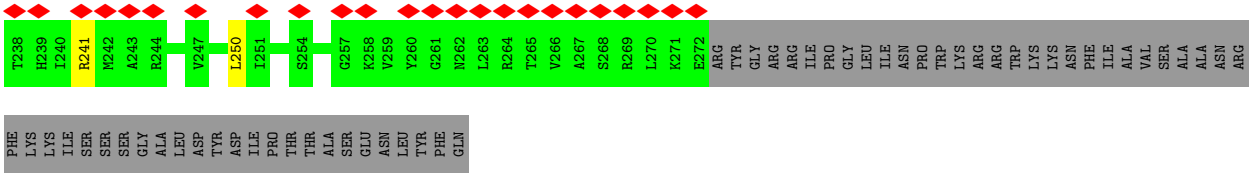
Chain RS:



• Molecule 62: Pno1

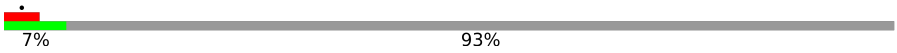
Chain RT:

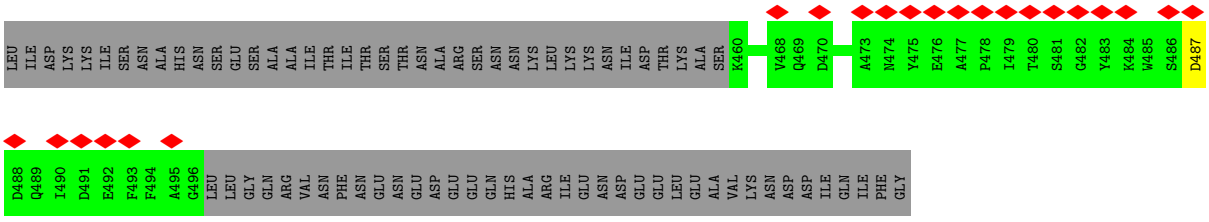




• Molecule 63: Protein BFR2

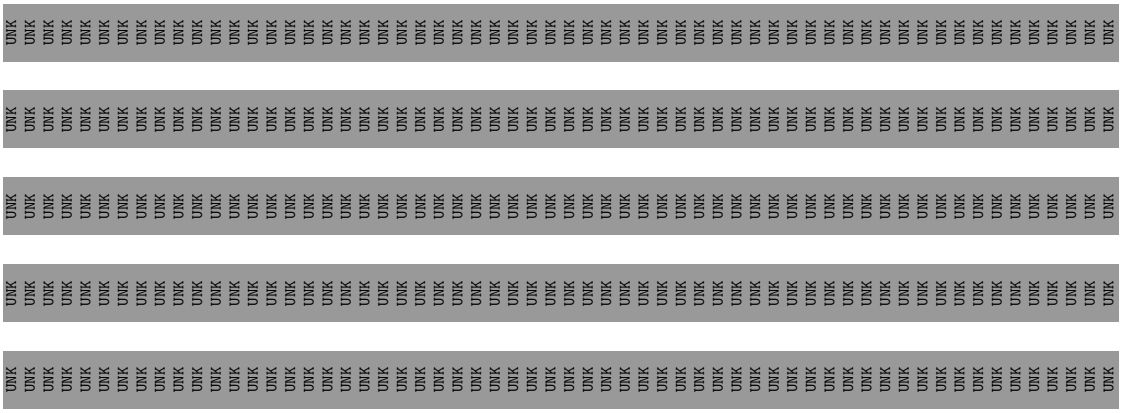
Chain RY:





• Molecule 64: Unassigned helices

Chain X1:




X301
X305
X306
X307
X310
X311
X312
X313
X314
UNK
UNK
UNK
UNK
UNK
UNK
UNK
UNK
UNK
UNK
UNK
UNK
UNK
UNK
UNK
UNK
UNK
UNK
UNK
UNK
UNK
UNK
UNK
X1500
X1503
X1506
X1507

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	3050	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	50	Depositor
Minimum defocus (nm)	1500	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.062	Depositor
Minimum map value	-0.023	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.003	Depositor
Recommended contour level	0.014	Depositor
Map size (Å)	597.632, 597.632, 597.632	wwPDB
Map dimensions	448, 448, 448	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.334, 1.334, 1.334	Depositor

5 Model quality

5.1 Standard geometry

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

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|>5$	RMSZ	#$\|Z\|>5$
1	3A	0.91	0/4141	1.25	38/6433 (0.6%)
2	5A	0.80	0/4605	1.08	13/7168 (0.2%)
3	SA	0.70	0/30585	1.16	235/47611 (0.5%)
4	SC	0.47	0/1856	0.73	5/2490 (0.2%)
5	SF	0.35	0/1854	0.66	1/2504 (0.0%)
6	SG	0.53	0/1690	0.64	0/2285
7	SH	0.31	0/1341	0.60	0/1789
8	SI	0.38	0/1341	0.67	1/1806 (0.1%)
9	SJ	0.31	0/1347	0.59	1/1801 (0.1%)
10	SK	0.47	0/1410	0.60	0/1888
11	SM	0.31	0/1020	0.58	0/1374
12	SO	0.45	0/1109	0.62	0/1495
13	SP	0.49	0/879	0.68	0/1186
14	SR	0.58	0/990	0.73	1/1335 (0.1%)
15	SX	0.51	0/1020	0.66	1/1371 (0.1%)
16	SY	0.54	0/798	0.67	1/1065 (0.1%)
17	SZ	0.43	0/822	0.64	0/1103
18	Sc	0.44	0/613	0.65	0/828
19	Sd	0.54	0/499	0.66	0/670
20	3B	0.59	0/1901	0.66	1/2567 (0.0%)
20	3C	0.44	0/1796	0.62	1/2424 (0.0%)
21	3D	0.44	0/2891	0.63	3/3895 (0.1%)
22	3E	0.41	0/3059	0.62	3/4153 (0.1%)
23	3F	0.42	0/3715	0.64	2/5001 (0.0%)
24	3G	0.52	0/928	0.76	1/1262 (0.1%)
24	3H	0.47	0/928	0.69	2/1262 (0.2%)
25	A4	0.47	0/5321	0.66	5/7207 (0.1%)
26	A5	0.48	0/4044	0.68	5/5493 (0.1%)
27	A8	0.34	0/3249	0.71	10/4454 (0.2%)
28	A9	0.31	0/951	0.58	1/1287 (0.1%)
29	AE	0.37	0/10049	0.56	6/13737 (0.0%)
30	AF	0.53	0/3993	0.67	4/5413 (0.1%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
31	AG	0.47	0/6699	0.65	3/9077 (0.0%)
32	B1	0.64	0/6474	0.68	7/8763 (0.1%)
33	B2	0.43	0/6628	0.67	3/8954 (0.0%)
34	B3	0.39	0/6014	0.69	7/8137 (0.1%)
35	B8	0.58	0/3848	0.66	4/5218 (0.1%)
36	BE	0.58	0/6580	0.66	7/8901 (0.1%)
37	B6	0.45	0/2849	0.58	1/3853 (0.0%)
38	5B	0.34	0/499	0.62	0/659
39	5C	0.61	0/3690	0.69	5/4991 (0.1%)
40	5D	0.51	0/1417	0.67	2/1885 (0.1%)
41	5E	0.39	0/1580	0.73	3/2115 (0.1%)
42	5F	0.38	0/1559	0.69	1/2097 (0.0%)
43	5G	0.39	0/1792	0.72	2/2425 (0.1%)
44	5H	0.52	0/601	0.57	0/789
45	5I	0.61	0/3844	0.66	2/5174 (0.0%)
46	5J	0.42	0/1302	0.55	0/1728
47	5K	0.56	0/1426	0.66	1/1917 (0.1%)
48	RA	0.34	0/2769	0.67	1/3753 (0.0%)
49	RB	0.38	0/1121	0.62	0/1487
50	RD	0.31	0/2453	0.63	3/3308 (0.1%)
51	RE	0.38	0/8924	0.63	8/12070 (0.1%)
52	RF	0.34	0/2004	0.63	2/2697 (0.1%)
53	RG	0.39	0/1727	0.68	2/2329 (0.1%)
53	RH	0.42	0/1828	0.61	0/2470
54	RJ	0.50	0/6514	0.61	1/8768 (0.0%)
55	RK	0.44	0/2832	0.65	3/3825 (0.1%)
56	RL	0.29	0/4549	0.50	0/6241
56	RM	0.25	0/3765	0.47	0/5218
57	RN	0.36	0/4591	0.58	2/6187 (0.0%)
58	RO	0.38	0/3849	0.62	5/5261 (0.1%)
59	RP	0.28	0/12225	0.51	5/16812 (0.0%)
60	RQ	0.46	0/1678	0.58	0/2282
61	RS	0.33	0/2104	0.67	1/2854 (0.0%)
62	RT	0.33	0/1355	0.65	1/1821 (0.1%)
63	RY	0.29	0/307	0.51	0/415
All	All	0.51	0/222142	0.77	423/308838 (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
4	SC	0	1
5	SF	0	2
8	SI	0	3
9	SJ	0	1
11	SM	0	1
12	SO	0	1
13	SP	0	1
17	SZ	0	1
18	Sc	0	1
21	3D	0	3
22	3E	0	1
23	3F	0	1
24	3G	0	2
24	3H	0	1
25	A4	0	1
26	A5	0	1
27	A8	0	2
31	AG	0	2
32	B1	0	2
33	B2	0	8
34	B3	0	11
36	BE	0	1
39	5C	0	1
40	5D	0	1
43	5G	0	2
45	5I	0	2
48	RA	0	2
49	RB	0	1
51	RE	0	1
52	RF	0	1
54	RJ	0	2
55	RK	0	1
56	RL	0	1
56	RM	0	1
57	RN	0	1
58	RO	0	1
59	RP	0	3
60	RQ	0	1
62	RT	0	1
All	All	0	71

There are no bond length outliers.

All (423) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	3A	321	C	N1-C1'-C2'	-10.80	99.96	114.00
3	SA	861	U	C2-N1-C1'	10.60	130.42	117.70
3	SA	376	C	N1-C2-O2	10.43	125.16	118.90
3	SA	1174	C	N1-C2-O2	10.35	125.11	118.90
3	SA	1034	C	C5-C6-N1	10.00	126.00	121.00
1	3A	104	C	C5-C6-N1	9.71	125.86	121.00
26	A5	25	ASP	CB-CG-OD1	9.52	126.87	118.30
24	3G	67	LEU	CA-CB-CG	9.36	136.82	115.30
3	SA	1274	C	C6-N1-C2	-9.01	116.70	120.30
2	5A	312	U	P-O3'-C3'	8.94	130.43	119.70
4	SC	54	LEU	CA-CB-CG	8.93	135.85	115.30
3	SA	1743	U	N1-C2-O2	8.93	129.05	122.80
3	SA	1451	C	N3-C2-O2	-8.87	115.69	121.90
51	RE	924	LEU	CA-CB-CG	8.78	135.50	115.30
3	SA	1274	C	C2-N1-C1'	8.73	128.40	118.80
3	SA	1174	C	N3-C2-O2	-8.70	115.81	121.90
2	5A	310	U	N3-C2-O2	-8.64	116.15	122.20
1	3A	200	C	C2-N1-C1'	8.62	128.29	118.80
1	3A	104	C	C6-N1-C2	-8.57	116.87	120.30
3	SA	1254	U	N1-C2-O2	8.57	128.80	122.80
29	AE	95	ASP	CB-CG-OD1	8.49	125.94	118.30
3	SA	376	C	C2-N1-C1'	8.42	128.06	118.80
1	3A	89	C	C2-N1-C1'	8.41	128.05	118.80
3	SA	258	C	N1-C2-O2	8.38	123.93	118.90
3	SA	1451	C	C6-N1-C2	-8.29	116.98	120.30
3	SA	1174	C	C2-N1-C1'	8.29	127.92	118.80
3	SA	1743	U	C2-N1-C1'	8.23	127.58	117.70
3	SA	1274	C	C5-C6-N1	8.22	125.11	121.00
41	5E	448	LEU	CA-CB-CG	8.17	134.10	115.30
3	SA	607	G	N3-C4-C5	-8.17	124.52	128.60
1	3A	200	C	N1-C2-O2	8.15	123.79	118.90
3	SA	275	C	N1-C2-O2	8.10	123.76	118.90
3	SA	607	G	C2-N3-C4	8.05	115.93	111.90
20	3B	306	LEU	CA-CB-CG	8.05	133.82	115.30
3	SA	1783	C	C4'-C3'-O3'	8.03	129.07	113.00
3	SA	166	C	N1-C2-O2	7.97	123.68	118.90
3	SA	1254	U	N3-C2-O2	-7.94	116.64	122.20
3	SA	1053	G	O5'-P-OP1	-7.94	98.55	105.70
35	B8	521	LEU	CA-CB-CG	7.91	133.49	115.30
1	3A	89	C	C6-N1-C2	-7.88	117.15	120.30
3	SA	1274	C	N1-C2-O2	7.84	123.61	118.90
3	SA	374	U	C2-N1-C1'	7.83	127.10	117.70
3	SA	258	C	C2-N1-C1'	7.80	127.38	118.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	SA	607	G	C4-N9-C1'	7.78	136.62	126.50
48	RA	10	ASP	CB-CG-OD1	7.73	125.26	118.30
3	SA	376	C	N3-C2-O2	-7.72	116.50	121.90
1	3A	201	C	N1-C2-O2	7.70	123.52	118.90
3	SA	1703	C	N3-C2-O2	-7.68	116.53	121.90
3	SA	374	U	N1-C2-O2	7.67	128.17	122.80
1	3A	89	C	N1-C2-O2	7.66	123.50	118.90
3	SA	1769	U	N1-C2-O2	7.63	128.14	122.80
1	3A	89	C	C5-C6-N1	7.59	124.79	121.00
3	SA	861	U	C6-N1-C1'	-7.57	110.60	121.20
3	SA	1254	U	C2-N1-C1'	7.55	126.76	117.70
3	SA	1784	C	N3-C2-O2	-7.50	116.65	121.90
2	5A	91	U	C5-C6-N1	7.45	126.42	122.70
25	A4	225	LEU	CA-CB-CG	7.45	132.43	115.30
61	RS	270	LEU	CA-CB-CG	7.36	132.24	115.30
3	SA	1769	U	N3-C2-O2	-7.35	117.05	122.20
36	BE	536	LEU	CA-CB-CG	7.35	132.21	115.30
1	3A	308	U	N3-C2-O2	-7.30	117.09	122.20
27	A8	258	PRO	N-CA-CB	7.29	112.05	103.30
3	SA	1258	U	C2-N1-C1'	7.28	126.44	117.70
2	5A	310	U	N1-C2-O2	7.28	127.89	122.80
2	5A	90	G	O4'-C1'-N9	7.25	114.00	108.20
3	SA	275	C	C2-N1-C1'	7.25	126.77	118.80
3	SA	1228	G	N3-C4-C5	-7.23	124.99	128.60
3	SA	579	A	P-O3'-C3'	7.14	128.27	119.70
30	AF	469	LEU	CA-CB-CG	7.14	131.73	115.30
57	RN	662	LEU	CA-CB-CG	7.13	131.69	115.30
26	A5	24	LEU	CA-CB-CG	7.09	131.62	115.30
2	5A	312	U	C5-C6-N1	-7.09	119.16	122.70
3	SA	311	U	N1-C2-O2	7.09	127.76	122.80
3	SA	272	U	P-O3'-C3'	7.05	128.16	119.70
3	SA	1451	C	N1-C2-O2	7.04	123.13	118.90
39	5C	144	LEU	CA-CB-CG	7.04	131.49	115.30
21	3D	292	LEU	CA-CB-CG	7.00	131.39	115.30
50	RD	1223	PRO	N-CA-CB	6.99	111.69	103.30
3	SA	1056	U	N1-C2-O2	6.97	127.68	122.80
24	3H	65	LEU	CB-CG-CD1	-6.96	99.17	111.00
3	SA	1258	U	N1-C2-O2	6.96	127.67	122.80
3	SA	1782	A	N9-C1'-C2'	-6.95	104.35	112.00
1	3A	248	G	O4'-C1'-N9	6.93	113.75	108.20
3	SA	374	U	N3-C2-O2	-6.92	117.35	122.20
3	SA	280	U	N3-C2-O2	-6.92	117.36	122.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
27	A8	325	PRO	N-CA-CB	6.88	111.55	103.30
3	SA	1743	U	C6-N1-C1'	-6.85	111.61	121.20
3	SA	381	C	N3-C2-O2	-6.83	117.12	121.90
3	SA	1034	C	C6-N1-C2	-6.83	117.57	120.30
3	SA	1704	U	N1-C2-O2	6.82	127.57	122.80
1	3A	104	C	C2-N1-C1'	6.82	126.30	118.80
3	SA	209	U	N3-C2-O2	-6.81	117.44	122.20
2	5A	312	U	OP1-P-O3'	6.80	120.17	105.20
1	3A	72	C	C6-N1-C2	-6.79	117.58	120.30
3	SA	258	C	N3-C2-O2	-6.79	117.15	121.90
16	SY	132	LEU	CA-CB-CG	6.75	130.83	115.30
3	SA	311	U	C2-N1-C1'	6.73	125.77	117.70
3	SA	1174	C	C6-N1-C2	-6.71	117.62	120.30
3	SA	56	U	P-O3'-C3'	6.70	127.74	119.70
33	B2	757	ASP	CB-CG-OD1	6.69	124.32	118.30
51	RE	1105	PRO	O-C-N	-6.68	112.02	122.70
3	SA	607	G	N3-C4-N9	6.67	130.00	126.00
3	SA	545	A	O4'-C1'-N9	6.67	113.54	108.20
3	SA	1527	C	N1-C2-O2	6.66	122.90	118.90
3	SA	1258	U	N3-C2-O2	-6.65	117.55	122.20
3	SA	1661	U	C5-C6-N1	6.65	126.03	122.70
3	SA	648	G	N3-C4-N9	6.63	129.98	126.00
1	3A	99	U	C4'-C3'-O3'	6.63	126.25	113.00
27	A8	392	PRO	N-CA-CB	6.62	111.25	103.30
3	SA	1052	U	O4'-C1'-N1	6.62	113.50	108.20
3	SA	608	U	C2-N1-C1'	6.60	125.62	117.70
21	3D	142	LEU	CA-CB-CG	6.60	130.47	115.30
37	B6	18	LEU	CA-CB-CG	6.59	130.46	115.30
3	SA	1476	C	C2-N1-C1'	6.55	126.00	118.80
3	SA	864	U	C2-N1-C1'	6.53	125.54	117.70
24	3H	65	LEU	CA-CB-CG	6.52	130.30	115.30
3	SA	280	U	N1-C2-O2	6.51	127.36	122.80
3	SA	1175	U	N3-C2-O2	-6.50	117.65	122.20
3	SA	1274	C	N3-C2-O2	-6.49	117.35	121.90
30	AF	327	LEU	CA-CB-CG	6.49	130.24	115.30
54	RJ	252	LEU	CA-CB-CG	6.49	130.24	115.30
3	SA	280	U	C2-N1-C1'	6.49	125.48	117.70
3	SA	401	A	P-O3'-C3'	6.49	127.48	119.70
1	3A	318	U	O5'-P-OP2	-6.46	99.88	105.70
32	B1	717	LEU	CA-CB-CG	6.46	130.16	115.30
3	SA	302	U	N3-C2-O2	-6.45	117.68	122.20
3	SA	1535	U	N3-C2-O2	-6.45	117.68	122.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
45	5I	368	ASP	CB-CG-OD1	6.45	124.10	118.30
26	A5	452	LEU	CA-CB-CG	6.44	130.11	115.30
3	SA	166	C	N3-C2-O2	-6.43	117.40	121.90
4	SC	120	LEU	CA-CB-CG	6.43	130.08	115.30
41	5E	314	LEU	CA-CB-CG	6.42	130.06	115.30
1	3A	250	C	N1-C2-O2	6.40	122.74	118.90
3	SA	1232	U	N1-C2-O2	6.40	127.28	122.80
3	SA	275	C	N3-C2-O2	-6.39	117.43	121.90
3	SA	1228	G	C2-N3-C4	6.39	115.09	111.90
3	SA	864	U	N3-C2-O2	-6.38	117.73	122.20
3	SA	965	U	C2-N1-C1'	6.38	125.35	117.70
3	SA	1175	U	N1-C2-O2	6.38	127.26	122.80
1	3A	200	C	C6-N1-C1'	-6.36	113.16	120.80
3	SA	1440	C	C6-N1-C2	-6.36	117.75	120.30
3	SA	648	G	C4-N9-C1'	6.35	134.75	126.50
1	3A	317	A	C4'-C3'-O3'	6.34	125.68	113.00
3	SA	1594	G	P-O3'-C3'	6.29	127.25	119.70
1	3A	312	U	P-O3'-C3'	6.29	127.24	119.70
30	AF	95	LEU	CA-CB-CG	6.29	129.75	115.30
3	SA	38	C	N1-C2-O2	6.28	122.67	118.90
59	RP	48	LEU	CA-CB-CG	6.28	129.74	115.30
3	SA	1704	U	N3-C2-O2	-6.27	117.81	122.20
3	SA	1703	C	N1-C2-O2	6.26	122.66	118.90
3	SA	1056	U	N3-C2-O2	-6.25	117.83	122.20
26	A5	457	LEU	CA-CB-CG	6.23	129.63	115.30
27	A8	309	PRO	N-CA-CB	6.21	110.75	103.30
3	SA	826	U	O4'-C1'-N1	6.20	113.16	108.20
3	SA	1784	C	N1-C2-O2	6.19	122.61	118.90
3	SA	1527	C	C2-N1-C1'	6.19	125.61	118.80
3	SA	861	U	N1-C2-O2	6.18	127.13	122.80
2	5A	312	U	C2-N1-C1'	-6.17	110.30	117.70
3	SA	1228	G	C4-N9-C1'	6.16	134.51	126.50
3	SA	935	U	N1-C2-O2	6.15	127.11	122.80
3	SA	1440	C	C5-C6-N1	6.15	124.07	121.00
1	3A	198	U	P-O3'-C3'	6.14	127.07	119.70
3	SA	1441	C	N3-C2-O2	-6.14	117.60	121.90
3	SA	864	U	N1-C2-O2	6.13	127.09	122.80
1	3A	308	U	N1-C2-O2	6.11	127.08	122.80
1	3A	200	C	C5-C6-N1	6.10	124.05	121.00
3	SA	607	G	C8-N9-C1'	-6.10	119.07	127.00
3	SA	648	G	C8-N9-C1'	-6.10	119.08	127.00
3	SA	209	U	N1-C2-O2	6.09	127.07	122.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	SA	273	G	C4-N9-C1'	6.09	134.42	126.50
3	SA	376	C	C6-N1-C2	-6.09	117.86	120.30
50	RD	1205	PRO	N-CA-CB	6.09	110.60	103.30
58	RO	269	LEU	CA-CB-CG	6.08	129.28	115.30
3	SA	514	G	N7-C8-N9	6.07	116.14	113.10
3	SA	1259	U	C5-C6-N1	6.05	125.72	122.70
3	SA	1476	C	C5-C6-N1	6.04	124.02	121.00
55	RK	117	LEU	CA-CB-CG	6.04	129.19	115.30
3	SA	1055	U	N3-C2-O2	-6.04	117.97	122.20
3	SA	1769	U	C2-N1-C1'	6.02	124.92	117.70
3	SA	311	U	N3-C2-O2	-6.01	117.99	122.20
3	SA	1439	C	N3-C2-O2	-6.00	117.70	121.90
42	5F	57	LEU	CA-CB-CG	6.00	129.11	115.30
2	5A	492	G	P-O3'-C3'	6.00	126.90	119.70
3	SA	1620	C	N1-C2-O2	6.00	122.50	118.90
32	B1	521	LEU	CA-CB-CG	6.00	129.10	115.30
3	SA	575	C	N1-C2-O2	5.99	122.50	118.90
3	SA	-7	A	P-O3'-C3'	5.99	126.89	119.70
3	SA	1476	C	C6-N1-C2	-5.98	117.91	120.30
62	RT	250	LEU	CA-CB-CG	5.97	129.04	115.30
1	3A	72	C	C5-C6-N1	5.96	123.98	121.00
9	SJ	29	LEU	CA-CB-CG	5.95	128.99	115.30
27	A8	453	PRO	N-CA-CB	5.94	110.43	103.30
3	SA	1228	G	N3-C4-N9	5.92	129.55	126.00
3	SA	645	C	N1-C2-O2	5.92	122.45	118.90
3	SA	608	U	N1-C2-O2	5.91	126.94	122.80
3	SA	275	C	C6-N1-C2	-5.91	117.94	120.30
3	SA	1232	U	C2-N1-C1'	5.91	124.79	117.70
3	SA	1232	U	N3-C2-O2	-5.91	118.06	122.20
3	SA	1084	A	OP1-P-O3'	5.91	118.19	105.20
59	RP	1797	LEU	CA-CB-CG	5.90	128.88	115.30
32	B1	479	LEU	CA-CB-CG	5.90	128.87	115.30
3	SA	1216	C	N3-C2-O2	-5.89	117.77	121.90
3	SA	1084	A	P-O3'-C3'	5.89	126.77	119.70
3	SA	381	C	N1-C2-O2	5.89	122.43	118.90
43	5G	109	LEU	CA-CB-CG	5.88	128.84	115.30
40	5D	28	LEU	CA-CB-CG	5.88	128.82	115.30
3	SA	1034	C	C2-N1-C1'	5.88	125.26	118.80
3	SA	1679	G	O4'-C1'-N9	5.88	112.90	108.20
3	SA	0	U	P-O3'-C3'	5.87	126.74	119.70
3	SA	1254	U	C5-C6-N1	5.86	125.63	122.70
43	5G	152	LEU	CA-CB-CG	5.86	128.78	115.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
53	RG	96	LEU	CA-CB-CG	5.85	128.76	115.30
3	SA	562	G	O4'-C1'-N9	5.84	112.87	108.20
34	B3	401	LEU	CA-CB-CG	5.83	128.71	115.30
3	SA	1055	U	N1-C2-O2	5.83	126.88	122.80
3	SA	542	A	P-O3'-C3'	5.83	126.69	119.70
27	A8	390	PRO	N-CA-CB	5.83	110.29	103.30
32	B1	69	LEU	CA-CB-CG	5.83	128.70	115.30
27	A8	429	PRO	N-CA-CB	5.80	110.27	103.30
27	A8	298	PRO	N-CA-CB	5.79	110.25	103.30
3	SA	411	C	N1-C2-O2	5.79	122.37	118.90
3	SA	1734	U	N3-C2-O2	-5.79	118.15	122.20
3	SA	417	A	P-O3'-C3'	5.78	126.64	119.70
36	BE	522	LEU	CA-CB-CG	5.78	128.60	115.30
39	5C	74	LEU	CA-CB-CG	5.76	128.56	115.30
36	BE	872	LEU	CA-CB-CG	5.75	128.52	115.30
3	SA	194	U	C2-N1-C1'	5.75	124.59	117.70
3	SA	376	C	C5-C6-N1	5.74	123.87	121.00
3	SA	612	U	C2-N1-C1'	5.74	124.59	117.70
3	SA	885	G	C8-N9-C4	-5.73	104.11	106.40
3	SA	894	U	N1-C2-O2	5.73	126.81	122.80
30	AF	195	LEU	CA-CB-CG	5.73	128.47	115.30
36	BE	121	LEU	CA-CB-CG	5.73	128.47	115.30
27	A8	235	PRO	N-CA-CB	5.72	110.16	103.30
3	SA	87	C	C6-N1-C2	-5.72	118.01	120.30
3	SA	1448	G	C5-C6-O6	5.71	132.03	128.60
34	B3	342	ASP	CB-CG-OD1	5.70	123.43	118.30
8	SI	38	LEU	CA-CB-CG	5.70	128.41	115.30
3	SA	373	G	N3-C4-C5	-5.70	125.75	128.60
3	SA	310	C	C6-N1-C2	-5.70	118.02	120.30
3	SA	1199	G	N3-C4-N9	5.69	129.42	126.00
3	SA	1521	G	P-O3'-C3'	5.69	126.53	119.70
1	3A	201	C	N3-C2-O2	-5.68	117.92	121.90
29	AE	604	LEU	CA-CB-CG	5.68	128.36	115.30
3	SA	376	C	C6-N1-C1'	-5.67	114.00	120.80
3	SA	1034	C	N1-C2-O2	5.67	122.30	118.90
35	B8	387	LEU	CA-CB-CG	5.67	128.33	115.30
45	5I	62	LEU	CA-CB-CG	5.66	128.32	115.30
3	SA	569	C	C6-N1-C2	-5.66	118.04	120.30
25	A4	422	LEU	CA-CB-CG	5.65	128.30	115.30
3	SA	1174	C	C5-C6-N1	5.63	123.81	121.00
32	B1	716	ASP	CB-CG-OD1	5.63	123.37	118.30
3	SA	1743	U	N3-C2-O2	-5.63	118.26	122.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
31	AG	449	LEU	CA-CB-CG	5.62	128.23	115.30
1	3A	106	C	C5-C6-N1	5.62	123.81	121.00
3	SA	273	G	N3-C4-N9	5.58	129.35	126.00
3	SA	1056	U	C2-N1-C1'	5.58	124.40	117.70
3	SA	894	U	N3-C2-O2	-5.58	118.30	122.20
25	A4	534	LEU	CA-CB-CG	5.58	128.12	115.30
3	SA	411	C	N3-C2-O2	-5.57	118.00	121.90
3	SA	1705	C	C6-N1-C2	-5.57	118.07	120.30
3	SA	1441	C	N1-C2-O2	5.56	122.24	118.90
1	3A	313	A	C4-C5-C6	-5.56	114.22	117.00
28	A9	516	LEU	CA-CB-CG	5.55	128.07	115.30
3	SA	273	G	N3-C4-C5	-5.55	125.83	128.60
36	BE	417	LEU	CA-CB-CG	5.54	128.04	115.30
3	SA	38	C	C6-N1-C2	-5.54	118.09	120.30
39	5C	414	LEU	CA-CB-CG	5.53	128.02	115.30
1	3A	313	A	N3-C4-N9	-5.52	122.99	127.40
53	RG	50	LEU	CA-CB-CG	5.51	127.98	115.30
2	5A	90	G	C8-N9-C1'	5.51	134.16	127.00
35	B8	272	LEU	CA-CB-CG	5.51	127.96	115.30
3	SA	87	C	C5-C6-N1	5.50	123.75	121.00
5	SF	42	LEU	CA-CB-CG	5.50	127.96	115.30
3	SA	1585	U	N1-C2-O2	5.50	126.65	122.80
29	AE	526	LEU	CA-CB-CG	5.49	127.93	115.30
3	SA	1161	C	C5-C6-N1	5.48	123.74	121.00
47	5K	17	LEU	CA-CB-CG	5.48	127.91	115.30
29	AE	370	LEU	CA-CB-CG	5.48	127.89	115.30
3	SA	965	U	N1-C2-O2	5.47	126.63	122.80
3	SA	1734	U	N1-C2-O2	5.46	126.62	122.80
20	3C	306	LEU	CA-CB-CG	5.45	127.84	115.30
36	BE	614	LEU	CA-CB-CG	5.45	127.84	115.30
3	SA	38	C	C2-N1-C1'	5.45	124.79	118.80
39	5C	416	LEU	CA-CB-CG	5.45	127.83	115.30
34	B3	471	PRO	C-N-CA	5.45	135.31	121.70
3	SA	50	C	C2-N1-C1'	5.44	124.79	118.80
1	3A	89	C	N3-C2-O2	-5.44	118.09	121.90
3	SA	894	U	C2-N1-C1'	5.44	124.22	117.70
27	A8	316	PRO	N-CA-CB	5.43	109.82	103.30
3	SA	373	G	C4-N9-C1'	5.43	133.56	126.50
3	SA	1585	U	N3-C2-O2	-5.43	118.40	122.20
55	RK	296	LEU	CA-CB-CG	5.43	127.78	115.30
3	SA	608	U	N3-C2-O2	-5.42	118.40	122.20
4	SC	172	LEU	CA-CB-CG	5.42	127.77	115.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	SA	275	C	C5-C6-N1	5.42	123.71	121.00
3	SA	935	U	N3-C2-O2	-5.42	118.41	122.20
3	SA	258	C	C6-N1-C1'	-5.41	114.30	120.80
31	AG	323	LEU	CA-CB-CG	5.41	127.75	115.30
3	SA	258	C	C6-N1-C2	-5.40	118.14	120.30
1	3A	248	G	P-O3'-C3'	5.40	126.18	119.70
3	SA	916	U	N3-C2-O2	-5.40	118.42	122.20
3	SA	514	G	C8-N9-C4	-5.40	104.24	106.40
34	B3	736	LEU	CA-CB-CG	5.39	127.71	115.30
3	SA	128	U	C2-N1-C1'	5.38	124.16	117.70
29	AE	547	ILE	CG1-CB-CG2	-5.38	99.55	111.40
3	SA	1448	G	N1-C6-O6	-5.38	116.67	119.90
3	SA	908	U	N3-C2-O2	-5.38	118.43	122.20
3	SA	1717	G	C4-N9-C1'	5.38	133.49	126.50
3	SA	648	G	C6-C5-N7	-5.38	127.17	130.40
21	3D	152	LEU	CA-CB-CG	5.37	127.65	115.30
3	SA	1174	C	C6-N1-C1'	-5.37	114.36	120.80
31	AG	889	ASP	CB-CG-OD1	5.37	123.13	118.30
3	SA	311	U	C5-C6-N1	5.36	125.38	122.70
23	3F	315	LEU	CA-CB-CG	5.36	127.63	115.30
3	SA	607	G	C8-N9-C4	-5.36	104.26	106.40
2	5A	312	U	O4'-C1'-N1	5.36	112.49	108.20
3	SA	79	C	N1-C2-O2	5.35	122.11	118.90
3	SA	908	U	N1-C2-O2	5.35	126.54	122.80
3	SA	530	C	N1-C2-O2	5.34	122.11	118.90
22	3E	401	LEU	CA-CB-CG	5.34	127.58	115.30
3	SA	75	U	C2-N1-C1'	5.34	124.10	117.70
51	RE	1037	LEU	CA-CB-CG	-5.34	103.02	115.30
34	B3	162	LEU	CB-CG-CD2	-5.33	101.93	111.00
3	SA	1439	C	N1-C2-O2	5.33	122.10	118.90
59	RP	155	LEU	CA-CB-CG	5.33	127.56	115.30
3	SA	937	C	C6-N1-C2	-5.32	118.17	120.30
3	SA	38	C	N3-C2-O2	-5.32	118.18	121.90
2	5A	90	G	C4-N9-C1'	-5.32	119.59	126.50
51	RE	365	LEU	CA-CB-CG	5.32	127.53	115.30
3	SA	680	U	C5-C6-N1	5.31	125.35	122.70
51	RE	840	LEU	CA-CB-CG	5.31	127.50	115.30
3	SA	1064	G	C4-N9-C1'	5.30	133.39	126.50
3	SA	1646	C	N1-C2-O2	5.29	122.08	118.90
3	SA	25	C	C2-N1-C1'	5.29	124.61	118.80
3	SA	680	U	N1-C2-O2	5.28	126.50	122.80
1	3A	104	C	C2-N3-C4	5.27	122.54	119.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	SA	960	U	N3-C2-O2	-5.27	118.51	122.20
39	5C	148	LEU	CA-CB-CG	5.27	127.43	115.30
3	SA	380	U	N1-C2-O2	5.27	126.49	122.80
3	SA	916	U	N1-C2-O2	5.26	126.48	122.80
3	SA	1708	U	C2-N1-C1'	5.26	124.02	117.70
3	SA	49	C	C5-C6-N1	5.26	123.63	121.00
3	SA	50	C	C6-N1-C2	-5.26	118.19	120.30
3	SA	443	C	C5-C6-N1	5.26	123.63	121.00
36	BE	536	LEU	CB-CG-CD2	-5.26	102.06	111.00
3	SA	1269	U	N3-C2-O2	-5.26	118.52	122.20
3	SA	1664	C	N3-C2-O2	-5.26	118.22	121.90
58	RO	388	LEU	CA-CB-CG	5.25	127.36	115.30
3	SA	8	U	N3-C2-O2	-5.24	118.53	122.20
22	3E	227	LEU	CA-CB-CG	5.24	127.35	115.30
3	SA	935	U	C5-C6-N1	5.24	125.32	122.70
3	SA	-7	A	OP1-P-O3'	5.23	116.72	105.20
23	3F	348	LEU	CA-CB-CG	5.23	127.33	115.30
15	SX	93	LEU	CA-CB-CG	5.23	127.33	115.30
52	RF	147	LEU	CA-CB-CG	5.23	127.32	115.30
34	B3	12	LEU	CA-CB-CG	5.22	127.31	115.30
51	RE	1105	PRO	CA-C-N	5.22	128.69	117.20
3	SA	279	G	N3-C4-N9	-5.22	122.87	126.00
29	AE	94	LEU	CA-CB-CG	5.22	127.30	115.30
3	SA	827	C	C2-N1-C1'	5.21	124.53	118.80
26	A5	151	LEU	CA-CB-CG	5.21	127.29	115.30
59	RP	1770	LEU	CA-CB-CG	5.21	127.28	115.30
41	5E	449	ASP	CB-CG-OD1	5.20	122.98	118.30
3	SA	373	G	N3-C4-N9	5.20	129.12	126.00
3	SA	1269	U	N1-C2-O2	5.19	126.44	122.80
22	3E	141	LEU	CA-CB-CG	5.19	127.24	115.30
3	SA	677	G	N3-C4-N9	-5.19	122.89	126.00
34	B3	394	LEU	CA-CB-CG	5.18	127.23	115.30
1	3A	39	C	C2-N1-C1'	5.18	124.50	118.80
3	SA	612	U	N1-C2-O2	5.18	126.43	122.80
33	B2	267	ASP	C-N-CA	5.18	134.65	121.70
3	SA	380	U	N3-C2-O2	-5.18	118.58	122.20
35	B8	521	LEU	CB-CG-CD1	-5.18	102.20	111.00
1	3A	39	C	C6-N1-C2	-5.17	118.23	120.30
1	3A	205	G	P-O3'-C3'	5.16	125.89	119.70
4	SC	110	LEU	CA-CB-CG	5.15	127.14	115.30
3	SA	1704	U	C2-N1-C1'	5.15	123.88	117.70
3	SA	443	C	C6-N1-C2	-5.14	118.24	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	SA	861	U	N3-C2-O2	-5.14	118.60	122.20
58	RO	211	LEU	CA-CB-CG	5.14	127.13	115.30
2	5A	310	U	C6-N1-C2	-5.14	117.92	121.00
3	SA	273	G	C8-N9-C1'	-5.14	120.32	127.00
3	SA	411	C	C6-N1-C2	-5.14	118.25	120.30
55	RK	325	LEU	CA-CB-CG	5.13	127.09	115.30
3	SA	885	G	N1-C6-O6	-5.11	116.83	119.90
25	A4	465	LEU	CA-CB-CG	5.09	127.02	115.30
1	3A	249	G	O5'-P-OP1	-5.09	101.12	105.70
3	SA	1492	A	C4-N9-C1'	5.09	135.46	126.30
3	SA	1535	U	C6-N1-C2	-5.09	117.95	121.00
3	SA	35	U	C5-C6-N1	5.09	125.24	122.70
1	3A	89	C	C6-N1-C1'	-5.08	114.70	120.80
3	SA	130	C	C2-N1-C1'	5.07	124.38	118.80
3	SA	1053	G	C8-N9-C4	-5.07	104.37	106.40
14	SR	123	ARG	C-N-CD	-5.07	109.46	120.60
1	3A	200	C	C6-N1-C2	-5.06	118.27	120.30
1	3A	198	U	OP1-P-O3'	5.06	116.34	105.20
3	SA	75	U	N3-C2-O2	-5.06	118.66	122.20
52	RF	58	LEU	CA-CB-CG	5.06	126.93	115.30
51	RE	1102	LEU	CA-CB-CG	5.05	126.93	115.30
3	SA	1664	C	N1-C2-O2	5.05	121.93	118.90
3	SA	861	U	C5-C6-N1	5.05	125.22	122.70
40	5D	91	LEU	CA-CB-CG	5.05	126.91	115.30
58	RO	264	LEU	CA-CB-CG	5.05	126.91	115.30
4	SC	147	ALA	C-N-CA	5.04	134.31	121.70
25	A4	435	PRO	C-N-CA	5.04	134.31	121.70
32	B1	701	LEU	CA-CB-CG	5.04	126.90	115.30
3	SA	1664	C	C2-N1-C1'	5.04	124.34	118.80
33	B2	231	LEU	CA-CB-CG	5.04	126.90	115.30
50	RD	1502	LEU	CA-CB-CG	5.04	126.89	115.30
3	SA	414	C	C5-C6-N1	5.03	123.52	121.00
3	SA	1222	C	C5-C6-N1	5.03	123.52	121.00
3	SA	35	U	N1-C2-O2	5.03	126.32	122.80
51	RE	396	LEU	CA-CB-CG	5.03	126.86	115.30
3	SA	885	G	N9-C4-C5	5.03	107.41	105.40
32	B1	436	LEU	CA-CB-CG	5.02	126.84	115.30
3	SA	960	U	N1-C2-O2	5.01	126.31	122.80
3	SA	1717	G	N3-C4-N9	5.01	129.00	126.00
58	RO	202	LEU	CA-CB-CG	5.01	126.81	115.30
59	RP	2033	LYS	C-N-CA	5.01	134.22	121.70
3	SA	1636	C	C5-C6-N1	5.00	123.50	121.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	SA	1664	C	C6-N1-C2	-5.00	118.30	120.30
57	RN	744	LEU	CA-CB-CG	5.00	126.80	115.30

There are no chirality outliers.

All (71) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
21	3D	142	LEU	Peptide
21	3D	202	HIS	Peptide
21	3D	286	ARG	Peptide
22	3E	331	LYS	Peptide
23	3F	237	ASP	Peptide
24	3G	59	GLU	Peptide
24	3G	9	PHE	Peptide
24	3H	59	GLU	Peptide
39	5C	551	SER	Peptide
40	5D	138	ASP	Peptide
43	5G	254	PHE	Peptide
43	5G	74	ASP	Peptide
45	5I	230	ASN	Peptide
45	5I	283	ASP	Peptide
25	A4	54	LYS	Peptide
26	A5	167	SER	Peptide
27	A8	496	TYR	Peptide
27	A8	529	HIS	Peptide
31	AG	178	PHE	Peptide
31	AG	780	GLU	Peptide
32	B1	288	ASP	Peptide
32	B1	690	ALA	Peptide
33	B2	131	GLY	Peptide
33	B2	213	LYS	Peptide
33	B2	266	SER	Peptide
33	B2	267	ASP	Peptide
33	B2	278	ASP	Peptide
33	B2	44	SER	Peptide
33	B2	613	ALA	Peptide
33	B2	916	HIS	Peptide
34	B3	34	THR	Peptide
34	B3	435	ALA	Peptide
34	B3	473	ALA	Peptide
34	B3	479	ILE	Peptide
34	B3	480	ILE	Peptide

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Mol	Chain	Res	Type	Group
34	B3	585	ASN	Peptide
34	B3	593	CYS	Peptide
34	B3	594	GLY	Peptide
34	B3	627	ASN	Peptide
34	B3	89	HIS	Peptide
34	B3	90	LEU	Peptide
36	BE	94	TYR	Peptide
48	RA	111	TRP	Peptide
48	RA	173	LEU	Peptide
49	RB	261	SER	Peptide
51	RE	767	GLN	Peptide
52	RF	253	ALA	Peptide
54	RJ	1026	LYS	Peptide
54	RJ	868	ARG	Peptide
55	RK	333	PHE	Peptide
56	RL	743	VAL	Peptide
56	RM	743	VAL	Peptide
57	RN	286	SER	Peptide
58	RO	144	PRO	Peptide
59	RP	1746	LYS	Peptide
59	RP	2051	ASP	Peptide
59	RP	835	LEU	Peptide
60	RQ	313	PHE	Peptide
62	RT	124	LEU	Peptide
4	SC	238	GLU	Peptide
5	SF	193	GLY	Peptide
5	SF	195	ILE	Peptide
8	SI	133	THR	Peptide
8	SI	31	SER	Peptide
8	SI	64	VAL	Peptide
9	SJ	85	PRO	Peptide
11	SM	128	CYS	Peptide
12	SO	58	HIS	Peptide
13	SP	90	ARG	Peptide
17	SZ	76	TYR	Peptide
18	Sc	49	HIS	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	
4	SC	228/255 (89%)	196 (86%)	32 (14%)	0	100	100
5	SF	227/261 (87%)	197 (87%)	29 (13%)	1 (0%)	34	72
6	SG	211/225 (94%)	195 (92%)	16 (8%)	0	100	100
7	SH	161/236 (68%)	143 (89%)	18 (11%)	0	100	100
8	SI	161/190 (85%)	143 (89%)	18 (11%)	0	100	100
9	SJ	162/200 (81%)	140 (86%)	22 (14%)	0	100	100
10	SK	169/197 (86%)	163 (96%)	6 (4%)	0	100	100
11	SM	119/156 (76%)	103 (87%)	16 (13%)	0	100	100
12	SO	132/151 (87%)	123 (93%)	9 (7%)	0	100	100
13	SP	116/137 (85%)	100 (86%)	15 (13%)	1 (1%)	17	57
14	SR	123/143 (86%)	112 (91%)	11 (9%)	0	100	100
15	SX	125/130 (96%)	119 (95%)	6 (5%)	0	100	100
16	SY	101/145 (70%)	90 (89%)	11 (11%)	0	100	100
17	SZ	100/135 (74%)	87 (87%)	12 (12%)	1 (1%)	15	55
18	Sc	78/82 (95%)	69 (88%)	9 (12%)	0	100	100
19	Sd	61/67 (91%)	57 (93%)	4 (7%)	0	100	100
20	3B	236/327 (72%)	222 (94%)	14 (6%)	0	100	100
20	3C	221/327 (68%)	207 (94%)	14 (6%)	0	100	100
21	3D	359/504 (71%)	346 (96%)	13 (4%)	0	100	100
22	3E	427/511 (84%)	387 (91%)	40 (9%)	0	100	100
23	3F	446/573 (78%)	403 (90%)	42 (9%)	1 (0%)	47	81
24	3G	119/126 (94%)	107 (90%)	11 (9%)	1 (1%)	19	60
24	3H	119/126 (94%)	111 (93%)	8 (7%)	0	100	100
25	A4	648/776 (84%)	590 (91%)	58 (9%)	0	100	100
26	A5	504/643 (78%)	465 (92%)	39 (8%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
27	A8	516/713 (72%)	397 (77%)	107 (21%)	12 (2%)	6 34
28	A9	126/575 (22%)	115 (91%)	11 (9%)	0	100 100
29	AE	1496/1769 (85%)	1367 (91%)	129 (9%)	0	100 100
30	AF	489/513 (95%)	442 (90%)	47 (10%)	0	100 100
31	AG	812/896 (91%)	731 (90%)	80 (10%)	1 (0%)	51 86
32	B1	787/923 (85%)	732 (93%)	55 (7%)	0	100 100
33	B2	813/943 (86%)	724 (89%)	87 (11%)	2 (0%)	47 81
34	B3	733/817 (90%)	606 (83%)	125 (17%)	2 (0%)	41 77
35	B8	469/594 (79%)	439 (94%)	30 (6%)	0	100 100
36	BE	814/939 (87%)	765 (94%)	49 (6%)	0	100 100
37	B6	368/440 (84%)	341 (93%)	27 (7%)	0	100 100
38	5B	58/214 (27%)	55 (95%)	3 (5%)	0	100 100
39	5C	452/554 (82%)	419 (93%)	32 (7%)	1 (0%)	47 81
40	5D	165/250 (66%)	145 (88%)	20 (12%)	0	100 100
41	5E	187/593 (32%)	175 (94%)	10 (5%)	2 (1%)	14 52
42	5F	180/183 (98%)	164 (91%)	16 (9%)	0	100 100
43	5G	217/290 (75%)	203 (94%)	14 (6%)	0	100 100
44	5H	72/610 (12%)	65 (90%)	7 (10%)	0	100 100
45	5I	457/489 (94%)	421 (92%)	36 (8%)	0	100 100
46	5J	147/217 (68%)	136 (92%)	11 (8%)	0	100 100
47	5K	171/189 (90%)	166 (97%)	5 (3%)	0	100 100
48	RA	332/707 (47%)	276 (83%)	56 (17%)	0	100 100
49	RB	132/357 (37%)	117 (89%)	14 (11%)	1 (1%)	19 60
50	RD	310/1729 (18%)	284 (92%)	23 (7%)	3 (1%)	15 55
51	RE	1067/1237 (86%)	999 (94%)	68 (6%)	0	100 100
52	RF	233/297 (78%)	203 (87%)	30 (13%)	0	100 100
53	RG	212/252 (84%)	182 (86%)	30 (14%)	0	100 100
53	RH	226/252 (90%)	219 (97%)	7 (3%)	0	100 100
54	RJ	784/1183 (66%)	721 (92%)	62 (8%)	1 (0%)	51 86
55	RK	358/367 (98%)	341 (95%)	17 (5%)	0	100 100
56	RL	781/1056 (74%)	664 (85%)	115 (15%)	2 (0%)	41 77

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
56	RM	738/1056 (70%)	625 (85%)	109 (15%)	4 (0%)	29 69
57	RN	593/810 (73%)	545 (92%)	47 (8%)	1 (0%)	47 81
58	RO	523/552 (95%)	455 (87%)	68 (13%)	0	100 100
59	RP	2042/2493 (82%)	1815 (89%)	226 (11%)	1 (0%)	100 100
60	RQ	220/899 (24%)	199 (90%)	21 (10%)	0	100 100
61	RS	247/483 (51%)	225 (91%)	22 (9%)	0	100 100
62	RT	163/326 (50%)	147 (90%)	16 (10%)	0	100 100
63	RY	35/534 (7%)	29 (83%)	6 (17%)	0	100 100
All	All	23878/33924 (70%)	21529 (90%)	2311 (10%)	38 (0%)	50 81

All (38) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
27	A8	258	PRO
27	A8	309	PRO
27	A8	325	PRO
27	A8	390	PRO
27	A8	392	PRO
27	A8	446	VAL
27	A8	472	ILE
50	RD	1223	PRO
56	RL	744	PRO
56	RM	744	PRO
56	RM	905	PRO
17	SZ	51	GLU
54	RJ	82	LYS
27	A8	235	PRO
31	AG	434	GLN
33	B2	132	THR
34	B3	91	LYS
56	RM	904	LEU
57	RN	285	PRO
23	3F	552	TRP
27	A8	369	ILE
41	5E	476	MET
5	SF	194	THR
33	B2	118	ASN
41	5E	481	PRO
49	RB	274	ILE

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Mol	Chain	Res	Type
50	RD	1204	VAL
50	RD	1222	LYS
56	RL	743	VAL
56	RM	743	VAL
13	SP	123	SER
27	A8	439	LYS
34	B3	71	PRO
39	5C	16	GLU
59	RP	2052	GLN
24	3G	10	PRO
27	A8	306	ILE
27	A8	339	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
4	SC	203/224 (91%)	201 (99%)	2 (1%)	76 86
5	SF	196/222 (88%)	190 (97%)	6 (3%)	40 62
6	SG	180/191 (94%)	180 (100%)	0	100 100
7	SH	139/201 (69%)	137 (99%)	2 (1%)	67 80
8	SI	146/170 (86%)	145 (99%)	1 (1%)	84 90
9	SJ	136/161 (84%)	134 (98%)	2 (2%)	65 80
10	SK	147/166 (89%)	146 (99%)	1 (1%)	84 90
11	SM	110/137 (80%)	108 (98%)	2 (2%)	59 77
12	SO	117/128 (91%)	116 (99%)	1 (1%)	78 87
13	SP	90/105 (86%)	89 (99%)	1 (1%)	73 84
14	SR	105/119 (88%)	105 (100%)	0	100 100
15	SX	108/111 (97%)	107 (99%)	1 (1%)	78 87
16	SY	85/120 (71%)	84 (99%)	1 (1%)	71 83
17	SZ	85/113 (75%)	85 (100%)	0	100 100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
18	Sc	69/71 (97%)	69 (100%)	0	100	100
19	Sd	56/60 (93%)	56 (100%)	0	100	100
20	3B	201/240 (84%)	201 (100%)	0	100	100
20	3C	190/240 (79%)	187 (98%)	3 (2%)	62	79
21	3D	296/435 (68%)	293 (99%)	3 (1%)	76	86
22	3E	262/433 (60%)	261 (100%)	1 (0%)	91	94
23	3F	396/503 (79%)	394 (100%)	2 (0%)	88	93
24	3G	100/104 (96%)	100 (100%)	0	100	100
24	3H	100/104 (96%)	100 (100%)	0	100	100
25	A4	591/713 (83%)	584 (99%)	7 (1%)	71	83
26	A5	433/574 (75%)	432 (100%)	1 (0%)	93	96
27	A8	174/657 (26%)	164 (94%)	10 (6%)	20	45
28	A9	89/533 (17%)	88 (99%)	1 (1%)	73	84
29	AE	708/1633 (43%)	705 (100%)	3 (0%)	91	94
30	AF	437/454 (96%)	433 (99%)	4 (1%)	78	87
31	AG	750/826 (91%)	740 (99%)	10 (1%)	69	81
32	B1	696/812 (86%)	691 (99%)	5 (1%)	84	90
33	B2	712/832 (86%)	707 (99%)	5 (1%)	84	90
34	B3	665/719 (92%)	655 (98%)	10 (2%)	65	80
35	B8	421/529 (80%)	420 (100%)	1 (0%)	93	96
36	BE	718/819 (88%)	714 (99%)	4 (1%)	86	92
37	B6	251/414 (61%)	247 (98%)	4 (2%)	62	79
38	5B	57/196 (29%)	55 (96%)	2 (4%)	36	59
39	5C	394/480 (82%)	392 (100%)	2 (0%)	88	93
40	5D	156/234 (67%)	154 (99%)	2 (1%)	69	81
41	5E	175/535 (33%)	162 (93%)	13 (7%)	13	38
42	5F	171/172 (99%)	169 (99%)	2 (1%)	71	83
43	5G	194/258 (75%)	190 (98%)	4 (2%)	53	72
44	5H	63/538 (12%)	63 (100%)	0	100	100
45	5I	416/443 (94%)	414 (100%)	2 (0%)	88	93
46	5J	140/200 (70%)	140 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
47	5K	157/169 (93%)	157 (100%)	0	100	100
48	RA	303/636 (48%)	300 (99%)	3 (1%)	76	86
49	RB	117/315 (37%)	114 (97%)	3 (3%)	46	66
50	RD	226/1544 (15%)	220 (97%)	6 (3%)	44	65
51	RE	984/1125 (88%)	975 (99%)	9 (1%)	78	87
52	RF	221/274 (81%)	219 (99%)	2 (1%)	78	87
53	RG	195/222 (88%)	193 (99%)	2 (1%)	76	86
53	RH	206/222 (93%)	204 (99%)	2 (1%)	76	86
54	RJ	683/1039 (66%)	676 (99%)	7 (1%)	76	86
55	RK	307/312 (98%)	303 (99%)	4 (1%)	69	81
56	RL	164/934 (18%)	162 (99%)	2 (1%)	71	83
57	RN	422/732 (58%)	421 (100%)	1 (0%)	93	96
58	RO	329/506 (65%)	328 (100%)	1 (0%)	92	95
59	RP	499/2307 (22%)	493 (99%)	6 (1%)	71	83
60	RQ	148/808 (18%)	145 (98%)	3 (2%)	55	74
61	RS	225/424 (53%)	225 (100%)	0	100	100
62	RT	146/282 (52%)	144 (99%)	2 (1%)	67	80
63	RY	31/482 (6%)	30 (97%)	1 (3%)	39	61
All	All	17291/29262 (59%)	17116 (99%)	175 (1%)	77	86

All (175) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
4	SC	172	LEU
4	SC	205	PHE
5	SF	108	ARG
5	SF	143	ASP
5	SF	206	ASP
5	SF	207	LEU
5	SF	211	LYS
5	SF	240	LYS
7	SH	71	THR
7	SH	92	ARG
8	SI	189	THR
9	SJ	165	LEU
9	SJ	195	ARG

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Mol	Chain	Res	Type
10	SK	57	ARG
11	SM	43	LYS
11	SM	136	ARG
12	SO	87	ASP
13	SP	107	ARG
15	SX	70	ASN
16	SY	97	ASP
20	3C	237	VAL
20	3C	262	LYS
20	3C	306	LEU
21	3D	103	LYS
21	3D	129	ARG
21	3D	285	ARG
22	3E	265	PHE
23	3F	370	ARG
23	3F	506	ARG
25	A4	190	VAL
25	A4	282	ASP
25	A4	423	LYS
25	A4	436	ASP
25	A4	648	PHE
25	A4	739	LYS
25	A4	776	PHE
26	A5	434	THR
27	A8	505	LYS
27	A8	526	LEU
27	A8	536	ARG
27	A8	549	ARG
27	A8	563	LEU
27	A8	576	ARG
27	A8	633	GLN
27	A8	634	LEU
27	A8	636	GLN
27	A8	671	ARG
28	A9	483	LYS
29	AE	617	LYS
29	AE	645	ARG
29	AE	699	ARG
30	AF	199	ARG
30	AF	261	VAL
30	AF	432	TYR
30	AF	508	LEU

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Mol	Chain	Res	Type
31	AG	141	LEU
31	AG	259	VAL
31	AG	336	ARG
31	AG	368	ASP
31	AG	421	LYS
31	AG	434	GLN
31	AG	435	ASP
31	AG	436	PHE
31	AG	615	TRP
31	AG	716	ARG
32	B1	164	THR
32	B1	249	ARG
32	B1	337	TYR
32	B1	418	ARG
32	B1	519	LEU
33	B2	47	GLU
33	B2	75	ARG
33	B2	144	ASN
33	B2	576	VAL
33	B2	588	ILE
34	B3	30	LYS
34	B3	67	LEU
34	B3	95	VAL
34	B3	212	LEU
34	B3	222	LEU
34	B3	358	ASN
34	B3	533	LYS
34	B3	534	ARG
34	B3	554	ASP
34	B3	570	THR
35	B8	22	LEU
36	BE	309	ILE
36	BE	570	ILE
36	BE	728	ARG
36	BE	743	ARG
37	B6	4	THR
37	B6	67	ARG
37	B6	106	ASP
37	B6	133	TYR
38	5B	158	LYS
38	5B	211	LEU
39	5C	153	THR

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Mol	Chain	Res	Type
39	5C	392	VAL
40	5D	18	GLN
40	5D	161	ARG
41	5E	302	LYS
41	5E	345	LEU
41	5E	428	GLU
41	5E	448	LEU
41	5E	451	LEU
41	5E	494	GLU
41	5E	515	MET
41	5E	516	SER
41	5E	517	LYS
41	5E	520	LEU
41	5E	522	ARG
41	5E	537	SER
41	5E	538	LYS
42	5F	48	ASN
42	5F	75	GLU
43	5G	211	ASN
43	5G	216	LYS
43	5G	257	ARG
43	5G	282	ARG
45	5I	250	ARG
45	5I	417	ARG
48	RA	76	THR
48	RA	210	ARG
48	RA	227	ARG
49	RB	331	LYS
49	RB	338	THR
49	RB	341	ARG
50	RD	1466	ARG
50	RD	1521	LEU
50	RD	1668	LYS
50	RD	1670	LYS
50	RD	1686	LYS
50	RD	1706	LYS
51	RE	223	ARG
51	RE	227	LYS
51	RE	289	ARG
51	RE	742	PHE
51	RE	1073	ASN
51	RE	1086	ASN

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Mol	Chain	Res	Type
51	RE	1089	PHE
51	RE	1191	LYS
51	RE	1230	MET
52	RF	19	LYS
52	RF	69	LYS
53	RG	32	THR
53	RG	100	LEU
53	RH	82	ARG
53	RH	197	ASP
54	RJ	214	ARG
54	RJ	566	ARG
54	RJ	869	THR
54	RJ	973	ARG
54	RJ	976	ILE
54	RJ	1128	LYS
54	RJ	1141	LYS
55	RK	90	CYS
55	RK	214	LYS
55	RK	335	THR
55	RK	340	LYS
56	RL	9	ARG
56	RL	83	ARG
57	RN	766	ARG
58	RO	493	TYR
59	RP	201	ARG
59	RP	1749	LYS
59	RP	1770	LEU
59	RP	1813	LYS
59	RP	1815	CYS
59	RP	1896	ILE
60	RQ	330	THR
60	RQ	898	PHE
60	RQ	899	LYS
62	RT	237	PHE
62	RT	241	ARG
63	RY	487	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (298) such sidechains are listed below:

Mol	Chain	Res	Type
4	SC	74	GLN
4	SC	92	GLN

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Mol	Chain	Res	Type
4	SC	101	HIS
4	SC	194	ASN
6	SG	63	GLN
6	SG	169	ASN
6	SG	186	ASN
7	SH	140	ASN
7	SH	201	GLN
8	SI	29	ASN
8	SI	42	GLN
8	SI	170	GLN
9	SJ	32	GLN
9	SJ	84	HIS
9	SJ	103	GLN
9	SJ	159	GLN
11	SM	81	HIS
13	SP	12	GLN
14	SR	32	ASN
14	SR	74	HIS
15	SX	12	ASN
15	SX	16	ASN
18	Sc	42	ASN
20	3B	91	HIS
20	3B	183	HIS
20	3B	258	HIS
21	3D	39	ASN
21	3D	85	ASN
21	3D	168	GLN
21	3D	213	ASN
22	3E	191	HIS
22	3E	256	ASN
22	3E	286	ASN
22	3E	289	GLN
22	3E	400	GLN
23	3F	155	ASN
23	3F	235	HIS
23	3F	525	GLN
23	3F	561	ASN
24	3G	19	GLN
24	3G	29	ASN
24	3G	38	ASN
24	3H	5	ASN
24	3H	18	GLN

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Mol	Chain	Res	Type
24	3H	45	ASN
25	A4	53	HIS
25	A4	179	HIS
25	A4	279	HIS
25	A4	292	ASN
25	A4	317	ASN
25	A4	426	GLN
25	A4	438	GLN
25	A4	452	HIS
25	A4	529	ASN
25	A4	589	ASN
26	A5	32	GLN
26	A5	67	ASN
26	A5	115	ASN
26	A5	293	ASN
26	A5	302	ASN
26	A5	316	ASN
26	A5	324	ASN
26	A5	333	ASN
26	A5	443	GLN
27	A8	588	GLN
28	A9	478	ASN
28	A9	509	GLN
29	AE	14	ASN
29	AE	141	ASN
29	AE	166	ASN
29	AE	219	ASN
29	AE	224	ASN
29	AE	258	HIS
29	AE	477	ASN
29	AE	480	ASN
29	AE	545	ASN
29	AE	673	ASN
29	AE	730	GLN
30	AF	48	ASN
30	AF	64	GLN
30	AF	125	HIS
30	AF	133	HIS
30	AF	156	ASN
30	AF	289	ASN
30	AF	481	GLN
31	AG	50	ASN

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Mol	Chain	Res	Type
31	AG	105	HIS
31	AG	190	GLN
31	AG	266	ASN
31	AG	269	GLN
31	AG	325	GLN
31	AG	332	GLN
31	AG	370	GLN
31	AG	375	ASN
31	AG	393	ASN
31	AG	407	ASN
31	AG	410	ASN
31	AG	453	HIS
31	AG	467	GLN
31	AG	489	ASN
31	AG	568	ASN
31	AG	579	ASN
31	AG	605	ASN
31	AG	669	ASN
31	AG	706	HIS
31	AG	881	ASN
32	B1	92	HIS
32	B1	142	HIS
32	B1	190	HIS
32	B1	201	HIS
32	B1	297	GLN
32	B1	303	ASN
32	B1	349	ASN
32	B1	386	HIS
32	B1	452	ASN
32	B1	456	HIS
32	B1	483	GLN
32	B1	549	GLN
32	B1	552	ASN
32	B1	795	ASN
32	B1	813	HIS
32	B1	837	ASN
32	B1	842	ASN
33	B2	172	GLN
33	B2	390	GLN
33	B2	455	GLN
33	B2	524	HIS
33	B2	596	ASN

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Mol	Chain	Res	Type
33	B2	628	HIS
33	B2	629	ASN
33	B2	657	GLN
33	B2	770	ASN
33	B2	791	ASN
33	B2	856	ASN
33	B2	879	GLN
34	B3	241	GLN
34	B3	337	HIS
34	B3	387	HIS
34	B3	519	ASN
34	B3	667	GLN
34	B3	749	ASN
34	B3	753	HIS
34	B3	767	HIS
34	B3	792	HIS
35	B8	162	ASN
35	B8	167	GLN
35	B8	224	ASN
35	B8	282	ASN
35	B8	311	ASN
35	B8	352	GLN
35	B8	472	GLN
35	B8	492	ASN
35	B8	528	GLN
35	B8	592	ASN
36	BE	163	GLN
36	BE	289	ASN
36	BE	481	ASN
36	BE	501	HIS
36	BE	514	ASN
36	BE	627	ASN
36	BE	708	ASN
36	BE	877	ASN
36	BE	911	ASN
36	BE	916	HIS
37	B6	90	GLN
37	B6	115	ASN
37	B6	166	ASN
37	B6	287	ASN
38	5B	207	ASN
39	5C	101	ASN

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Mol	Chain	Res	Type
39	5C	124	HIS
39	5C	133	HIS
39	5C	151	ASN
39	5C	164	GLN
39	5C	170	GLN
39	5C	371	HIS
39	5C	394	HIS
40	5D	42	HIS
40	5D	68	HIS
40	5D	144	ASN
40	5D	153	ASN
41	5E	303	GLN
41	5E	434	HIS
41	5E	486	ASN
41	5E	493	GLN
42	5F	7	HIS
42	5F	48	ASN
42	5F	144	ASN
42	5F	153	ASN
42	5F	163	ASN
43	5G	118	ASN
43	5G	145	HIS
43	5G	211	ASN
43	5G	235	GLN
44	5H	560	ASN
45	5I	20	GLN
45	5I	46	ASN
45	5I	109	HIS
45	5I	242	ASN
45	5I	260	GLN
45	5I	336	HIS
45	5I	371	ASN
45	5I	406	HIS
45	5I	460	GLN
46	5J	135	HIS
46	5J	184	ASN
47	5K	29	GLN
47	5K	43	ASN
48	RA	82	HIS
48	RA	96	HIS
48	RA	119	ASN
48	RA	147	ASN

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Mol	Chain	Res	Type
48	RA	230	GLN
48	RA	268	GLN
48	RA	282	ASN
48	RA	339	HIS
49	RB	314	ASN
49	RB	318	ASN
50	RD	1485	GLN
50	RD	1522	ASN
50	RD	1525	ASN
51	RE	170	GLN
51	RE	293	ASN
51	RE	402	ASN
51	RE	409	ASN
51	RE	506	GLN
51	RE	520	ASN
51	RE	537	ASN
51	RE	568	ASN
51	RE	602	ASN
51	RE	834	ASN
51	RE	841	ASN
51	RE	872	ASN
51	RE	969	ASN
51	RE	1029	ASN
51	RE	1033	ASN
51	RE	1073	ASN
51	RE	1078	HIS
51	RE	1086	ASN
51	RE	1194	HIS
51	RE	1199	ASN
51	RE	1203	ASN
51	RE	1215	ASN
51	RE	1228	ASN
52	RF	23	HIS
52	RF	73	GLN
52	RF	90	ASN
52	RF	135	ASN
52	RF	136	ASN
52	RF	187	HIS
52	RF	197	GLN
53	RG	105	ASN
53	RG	125	ASN
53	RH	69	ASN

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Mol	Chain	Res	Type
53	RH	125	ASN
53	RH	250	ASN
54	RJ	126	ASN
54	RJ	157	ASN
54	RJ	276	HIS
54	RJ	289	HIS
54	RJ	778	GLN
54	RJ	1082	GLN
55	RK	16	ASN
55	RK	334	ASN
56	RL	16	ASN
56	RL	75	ASN
56	RL	133	ASN
57	RN	8	ASN
57	RN	56	ASN
57	RN	89	GLN
57	RN	482	GLN
57	RN	703	GLN
57	RN	771	ASN
57	RN	797	ASN
58	RO	192	GLN
58	RO	266	ASN
58	RO	268	GLN
58	RO	273	GLN
58	RO	304	ASN
58	RO	306	GLN
58	RO	343	GLN
58	RO	434	ASN
58	RO	472	HIS
58	RO	474	HIS
59	RP	58	ASN
59	RP	1686	GLN
59	RP	1702	HIS
59	RP	1707	HIS
59	RP	1785	ASN
59	RP	1787	ASN
59	RP	1802	HIS
59	RP	1816	HIS
60	RQ	303	GLN
60	RQ	310	HIS
60	RQ	344	GLN
60	RQ	839	ASN

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Mol	Chain	Res	Type
60	RQ	867	GLN
60	RQ	876	GLN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	3A	169/333 (50%)	55 (32%)	8 (4%)
2	5A	186/700 (26%)	54 (29%)	4 (2%)
3	SA	1261/1809 (69%)	482 (38%)	19 (1%)
All	All	1616/2842 (56%)	591 (36%)	31 (1%)

All (591) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	3A	2	U
1	3A	14	A
1	3A	15	U
1	3A	24	U
1	3A	25	U
1	3A	27	U
1	3A	28	A
1	3A	30	A
1	3A	33	A
1	3A	35	U
1	3A	38	U
1	3A	56	A
1	3A	60	A
1	3A	61	G
1	3A	87	G
1	3A	88	U
1	3A	89	C
1	3A	90	C
1	3A	91	C
1	3A	97	C
1	3A	98	U
1	3A	99	U
1	3A	101	G
1	3A	103	A
1	3A	111	G
1	3A	115	G
1	3A	198	U

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Mol	Chain	Res	Type
1	3A	199	G
1	3A	201	C
1	3A	204	U
1	3A	205	G
1	3A	206	C
1	3A	246	A
1	3A	248	G
1	3A	249	G
1	3A	252	C
1	3A	264	C
1	3A	267	A
1	3A	305	G
1	3A	310	G
1	3A	311	G
1	3A	313	A
1	3A	314	C
1	3A	317	A
1	3A	318	U
1	3A	319	G
1	3A	320	G
1	3A	321	C
1	3A	322	A
1	3A	323	G
1	3A	324	U
1	3A	325	C
1	3A	328	A
1	3A	329	C
1	3A	332	G
2	5A	5	G
2	5A	6	A
2	5A	7	A
2	5A	8	A
2	5A	11	A
2	5A	13	U
2	5A	14	U
2	5A	15	G
2	5A	63	G
2	5A	64	U
2	5A	70	A
2	5A	83	U
2	5A	86	C
2	5A	87	C

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Mol	Chain	Res	Type
2	5A	90	G
2	5A	279	A
2	5A	280	A
2	5A	281	G
2	5A	292	A
2	5A	294	U
2	5A	304	U
2	5A	305	A
2	5A	309	A
2	5A	310	U
2	5A	311	C
2	5A	312	U
2	5A	313	A
2	5A	468	A
2	5A	472	A
2	5A	474	A
2	5A	481	U
2	5A	482	A
2	5A	485	G
2	5A	487	A
2	5A	488	U
2	5A	490	G
2	5A	491	U
2	5A	493	A
2	5A	519	A
2	5A	525	U
2	5A	526	U
2	5A	536	A
2	5A	537	G
2	5A	539	A
2	5A	540	U
2	5A	541	U
2	5A	542	U
2	5A	548	A
2	5A	549	G
2	5A	583	U
2	5A	586	A
2	5A	587	G
2	5A	589	U
2	5A	591	U
3	SA	-6	A
3	SA	-5	G

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Mol	Chain	Res	Type
3	SA	-4	A
3	SA	-1	G
3	SA	0	U
3	SA	1	U
3	SA	2	A
3	SA	17	C
3	SA	18	C
3	SA	19	A
3	SA	21	U
3	SA	23	G
3	SA	25	C
3	SA	26	A
3	SA	29	U
3	SA	35	U
3	SA	36	C
3	SA	37	U
3	SA	50	C
3	SA	51	A
3	SA	52	U
3	SA	53	G
3	SA	55	A
3	SA	56	U
3	SA	57	G
3	SA	60	U
3	SA	61	A
3	SA	63	G
3	SA	65	A
3	SA	66	U
3	SA	67	A
3	SA	68	A
3	SA	69	G
3	SA	72	A
3	SA	73	U
3	SA	74	U
3	SA	75	U
3	SA	77	U
3	SA	81	G
3	SA	85	A
3	SA	92	A
3	SA	96	G
3	SA	97	C
3	SA	100	A

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Mol	Chain	Res	Type
3	SA	102	U
3	SA	103	A
3	SA	104	A
3	SA	105	A
3	SA	106	U
3	SA	114	C
3	SA	115	G
3	SA	116	U
3	SA	119	A
3	SA	127	G
3	SA	128	U
3	SA	129	U
3	SA	130	C
3	SA	131	C
3	SA	141	U
3	SA	145	A
3	SA	146	U
3	SA	147	A
3	SA	149	C
3	SA	153	G
3	SA	159	U
3	SA	160	C
3	SA	161	U
3	SA	168	A
3	SA	174	U
3	SA	175	G
3	SA	176	C
3	SA	177	U
3	SA	182	A
3	SA	183	U
3	SA	184	C
3	SA	187	G
3	SA	188	A
3	SA	190	C
3	SA	191	C
3	SA	192	U
3	SA	193	U
3	SA	194	U
3	SA	195	G
3	SA	197	A
3	SA	202	A
3	SA	203	U

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Mol	Chain	Res	Type
3	SA	204	G
3	SA	206	A
3	SA	210	A
3	SA	211	U
3	SA	214	G
3	SA	226	A
3	SA	228	G
3	SA	230	C
3	SA	233	C
3	SA	234	G
3	SA	236	A
3	SA	237	C
3	SA	238	U
3	SA	239	C
3	SA	240	U
3	SA	241	U
3	SA	242	U
3	SA	243	G
3	SA	254	A
3	SA	256	A
3	SA	258	C
3	SA	261	U
3	SA	262	U
3	SA	265	A
3	SA	266	A
3	SA	267	U
3	SA	272	U
3	SA	273	G
3	SA	275	C
3	SA	276	C
3	SA	277	U
3	SA	278	U
3	SA	279	G
3	SA	280	U
3	SA	281	G
3	SA	283	U
3	SA	290	G
3	SA	308	C
3	SA	309	C
3	SA	311	U
3	SA	312	A
3	SA	316	A

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Mol	Chain	Res	Type
3	SA	319	U
3	SA	320	U
3	SA	321	C
3	SA	324	U
3	SA	325	G
3	SA	333	A
3	SA	334	G
3	SA	337	G
3	SA	338	C
3	SA	350	U
3	SA	352	A
3	SA	355	G
3	SA	357	G
3	SA	359	A
3	SA	360	A
3	SA	361	C
3	SA	362	G
3	SA	365	G
3	SA	366	A
3	SA	369	A
3	SA	371	G
3	SA	373	G
3	SA	374	U
3	SA	375	U
3	SA	377	G
3	SA	379	U
3	SA	382	C
3	SA	383	G
3	SA	386	G
3	SA	387	A
3	SA	390	G
3	SA	400	A
3	SA	401	A
3	SA	402	C
3	SA	403	G
3	SA	411	C
3	SA	416	A
3	SA	417	A
3	SA	418	G
3	SA	419	G
3	SA	421	A
3	SA	422	G

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Mol	Chain	Res	Type
3	SA	423	G
3	SA	424	C
3	SA	425	A
3	SA	426	G
3	SA	429	G
3	SA	436	A
3	SA	437	A
3	SA	439	U
3	SA	440	U
3	SA	441	A
3	SA	444	C
3	SA	445	A
3	SA	448	C
3	SA	454	U
3	SA	455	C
3	SA	456	A
3	SA	457	G
3	SA	468	A
3	SA	469	C
3	SA	470	A
3	SA	471	A
3	SA	473	A
3	SA	477	A
3	SA	480	G
3	SA	486	G
3	SA	487	G
3	SA	496	G
3	SA	501	U
3	SA	502	U
3	SA	505	A
3	SA	506	A
3	SA	514	G
3	SA	520	A
3	SA	534	A
3	SA	538	A
3	SA	539	G
3	SA	541	A
3	SA	542	A
3	SA	543	C
3	SA	545	A
3	SA	557	G
3	SA	558	U

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Mol	Chain	Res	Type
3	SA	563	U
3	SA	564	G
3	SA	565	C
3	SA	570	A
3	SA	572	C
3	SA	574	G
3	SA	575	C
3	SA	578	U
3	SA	579	A
3	SA	580	A
3	SA	583	C
3	SA	584	C
3	SA	585	A
3	SA	586	G
3	SA	587	C
3	SA	594	A
3	SA	595	G
3	SA	602	U
3	SA	603	U
3	SA	604	A
3	SA	606	A
3	SA	608	U
3	SA	609	U
3	SA	610	G
3	SA	611	U
3	SA	612	U
3	SA	613	G
3	SA	614	C
3	SA	615	A
3	SA	616	G
3	SA	635	A
3	SA	636	A
3	SA	638	U
3	SA	644	C
3	SA	648	G
3	SA	652	G
3	SA	654	C
3	SA	656	G
3	SA	657	U
3	SA	658	C
3	SA	677	G
3	SA	678	A

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Mol	Chain	Res	Type
3	SA	686	C
3	SA	687	G
3	SA	688	G
3	SA	689	G
3	SA	691	C
3	SA	692	C
3	SA	827	C
3	SA	828	U
3	SA	840	U
3	SA	841	U
3	SA	848	C
3	SA	859	A
3	SA	860	U
3	SA	863	A
3	SA	864	U
3	SA	865	A
3	SA	873	U
3	SA	877	G
3	SA	894	U
3	SA	901	G
3	SA	904	G
3	SA	906	A
3	SA	912	U
3	SA	913	G
3	SA	914	G
3	SA	926	A
3	SA	930	A
3	SA	933	A
3	SA	934	C
3	SA	935	U
3	SA	945	U
3	SA	951	A
3	SA	953	G
3	SA	960	U
3	SA	966	A
3	SA	969	C
3	SA	970	A
3	SA	1037	C
3	SA	1039	A
3	SA	1040	G
3	SA	1052	U
3	SA	1053	G

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Mol	Chain	Res	Type
3	SA	1056	U
3	SA	1057	U
3	SA	1059	U
3	SA	1060	U
3	SA	1062	A
3	SA	1063	U
3	SA	1076	A
3	SA	1079	U
3	SA	1081	A
3	SA	1082	C
3	SA	1084	A
3	SA	1085	G
3	SA	1086	A
3	SA	1106	U
3	SA	1107	G
3	SA	1108	G
3	SA	1109	G
3	SA	1110	G
3	SA	1111	G
3	SA	1114	G
3	SA	1118	G
3	SA	1119	G
3	SA	1122	G
3	SA	1125	A
3	SA	1126	G
3	SA	1127	G
3	SA	1128	C
3	SA	1129	U
3	SA	1131	A
3	SA	1132	A
3	SA	1145	U
3	SA	1146	G
3	SA	1158	C
3	SA	1164	G
3	SA	1178	G
3	SA	1191	U
3	SA	1192	C
3	SA	1193	A
3	SA	1195	C
3	SA	1196	A
3	SA	1197	C
3	SA	1198	G

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Mol	Chain	Res	Type
3	SA	1199	G
3	SA	1200	G
3	SA	1201	G
3	SA	1202	A
3	SA	1205	C
3	SA	1206	U
3	SA	1208	A
3	SA	1210	C
3	SA	1213	G
3	SA	1217	A
3	SA	1218	G
3	SA	1219	A
3	SA	1220	C
3	SA	1223	A
3	SA	1227	A
3	SA	1228	G
3	SA	1229	G
3	SA	1230	A
3	SA	1232	U
3	SA	1233	G
3	SA	1235	C
3	SA	1236	A
3	SA	1252	C
3	SA	1253	U
3	SA	1254	U
3	SA	1255	G
3	SA	1258	U
3	SA	1263	G
3	SA	1266	U
3	SA	1268	G
3	SA	1271	G
3	SA	1272	U
3	SA	1273	G
3	SA	1275	A
3	SA	1276	U
3	SA	1436	A
3	SA	1440	C
3	SA	1441	C
3	SA	1442	U
3	SA	1443	U
3	SA	1449	U
3	SA	1450	U

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Mol	Chain	Res	Type
3	SA	1453	G
3	SA	1457	C
3	SA	1461	C
3	SA	1469	A
3	SA	1472	C
3	SA	1473	U
3	SA	1474	G
3	SA	1475	A
3	SA	1476	C
3	SA	1482	C
3	SA	1488	G
3	SA	1492	A
3	SA	1522	U
3	SA	1523	G
3	SA	1524	A
3	SA	1527	C
3	SA	1533	C
3	SA	1535	U
3	SA	1536	G
3	SA	1537	C
3	SA	1539	G
3	SA	1569	A
3	SA	1570	A
3	SA	1573	A
3	SA	1582	U
3	SA	1584	G
3	SA	1590	G
3	SA	1594	G
3	SA	1595	U
3	SA	1596	C
3	SA	1601	G
3	SA	1602	C
3	SA	1607	G
3	SA	1614	A
3	SA	1618	C
3	SA	1628	U
3	SA	1630	U
3	SA	1633	A
3	SA	1651	A
3	SA	1655	A
3	SA	1657	U
3	SA	1658	G

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Mol	Chain	Res	Type
3	SA	1659	A
3	SA	1661	U
3	SA	1665	U
3	SA	1670	G
3	SA	1675	C
3	SA	1677	C
3	SA	1679	G
3	SA	1680	G
3	SA	1681	A
3	SA	1682	U
3	SA	1683	C
3	SA	1687	U
3	SA	1689	A
3	SA	1692	G
3	SA	1693	A
3	SA	1696	G
3	SA	1697	G
3	SA	1700	C
3	SA	1708	U
3	SA	1709	C
3	SA	1710	U
3	SA	1711	C
3	SA	1713	G
3	SA	1717	G
3	SA	1718	G
3	SA	1719	A
3	SA	1721	A
3	SA	1724	U
3	SA	1725	U
3	SA	1727	G
3	SA	1728	A
3	SA	1731	A
3	SA	1732	A
3	SA	1736	G
3	SA	1737	G
3	SA	1742	U
3	SA	1743	U
3	SA	1745	G
3	SA	1749	A
3	SA	1750	A
3	SA	1755	A
3	SA	1756	A

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Mol	Chain	Res	Type
3	SA	1757	G
3	SA	1758	U
3	SA	1768	G
3	SA	1769	U
3	SA	1771	U
3	SA	1780	G
3	SA	1781	A
3	SA	1782	A
3	SA	1783	C
3	SA	1792	G
3	SA	1793	G
3	SA	1794	A
3	SA	1795	U
3	SA	1797	A
3	SA	1798	U
3	SA	1799	U
3	SA	1800	A
3	SA	1801	A

All (31) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	3A	97	C
1	3A	98	U
1	3A	198	U
1	3A	248	G
1	3A	312	U
1	3A	318	U
1	3A	322	A
1	3A	323	G
2	5A	312	U
2	5A	487	A
2	5A	492	G
2	5A	536	A
3	SA	-7	A
3	SA	0	U
3	SA	56	U
3	SA	68	A
3	SA	272	U
3	SA	372	G
3	SA	401	A
3	SA	417	A

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Mol	Chain	Res	Type
3	SA	538	A
3	SA	542	A
3	SA	579	A
3	SA	602	U
3	SA	1052	U
3	SA	1084	A
3	SA	1197	C
3	SA	1521	G
3	SA	1594	G
3	SA	1632	C
3	SA	1781	A

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

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

5.5 Carbohydrates

There are no monosaccharides in this entry.

5.6 Ligand geometry

Of 4 ligands modelled in this entry, 3 are monoatomic - leaving 1 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
66	GTP	RJ	1201	67	26,34,34	0.94	2 (7%)	32,54,54	0.92	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
66	GTP	RJ	1201	67	-	3/18/38/38	0/3/3/3

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
66	RJ	1201	GTP	C5-C6	-2.47	1.42	1.47
66	RJ	1201	GTP	C8-N7	-2.05	1.31	1.35

There are no bond angle outliers.

There are no chirality outliers.

All (3) torsion outliers are listed below:

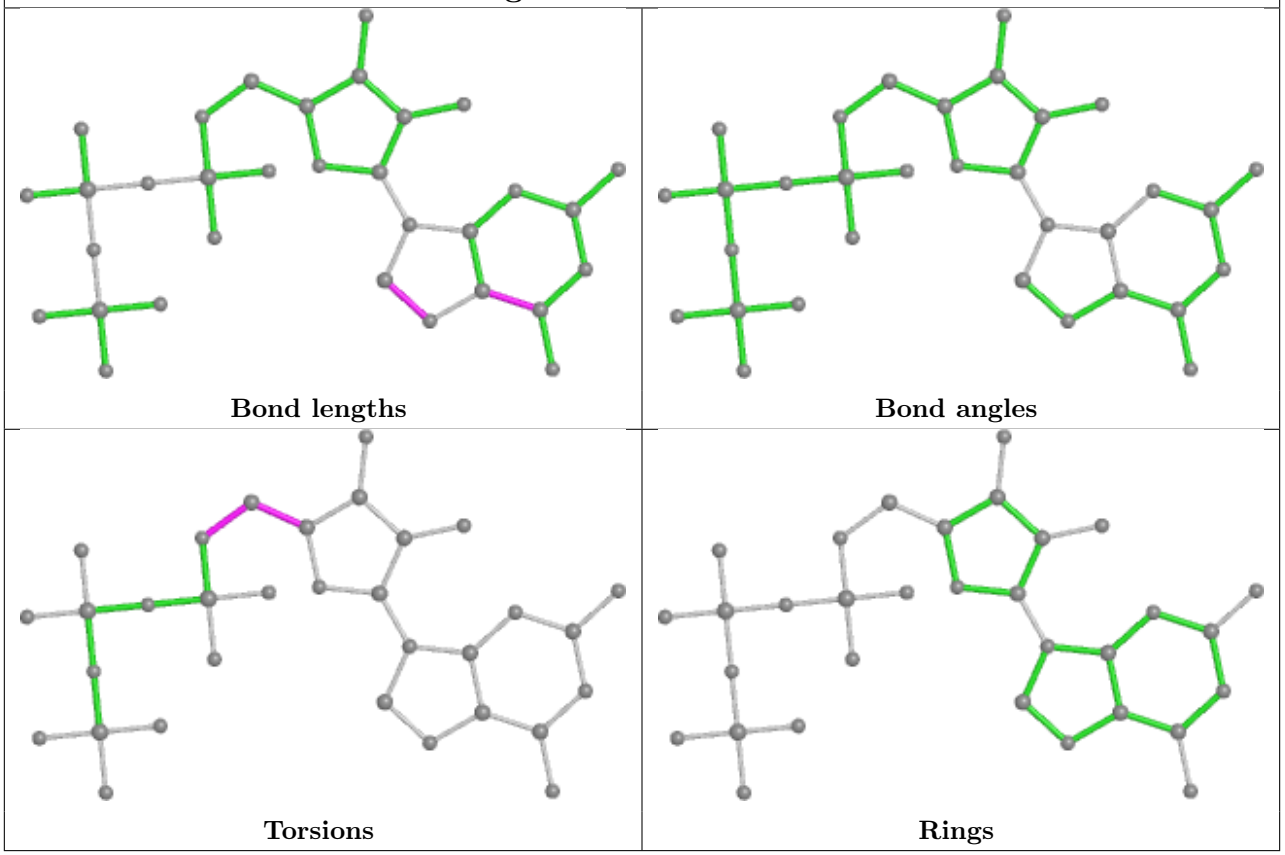
Mol	Chain	Res	Type	Atoms
66	RJ	1201	GTP	O4'-C4'-C5'-O5'
66	RJ	1201	GTP	C3'-C4'-C5'-O5'
66	RJ	1201	GTP	C4'-C5'-O5'-PA

There are no ring outliers.

No monomer is involved in short contacts.

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

Ligand GTP RJ 1201



5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

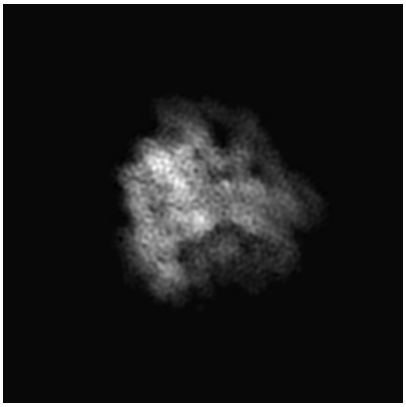
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-0951. These allow visual inspection of the internal detail of the map and identification of artifacts.

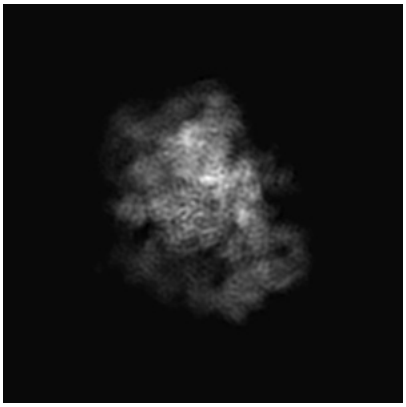
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

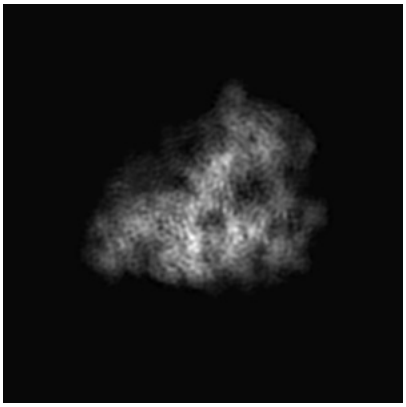
6.1.1 Primary map



X



Y

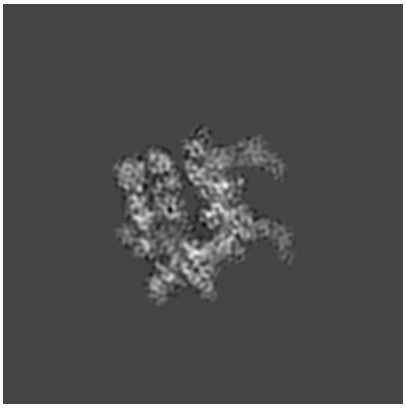


Z

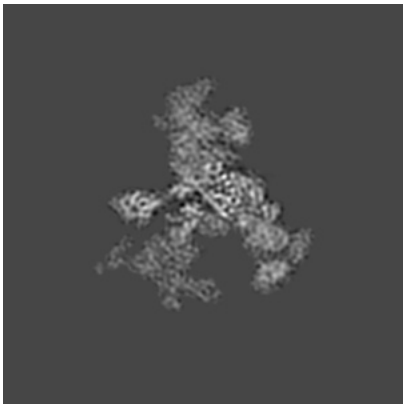
The images above show the map projected in three orthogonal directions.

6.2 Central slices

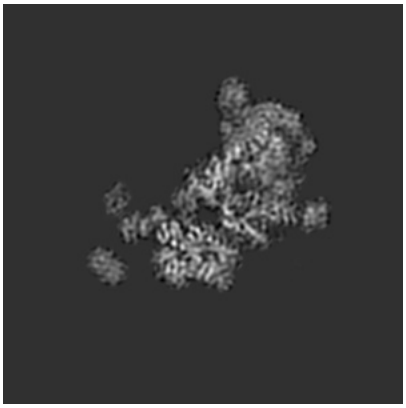
6.2.1 Primary map



X Index: 224



Y Index: 224

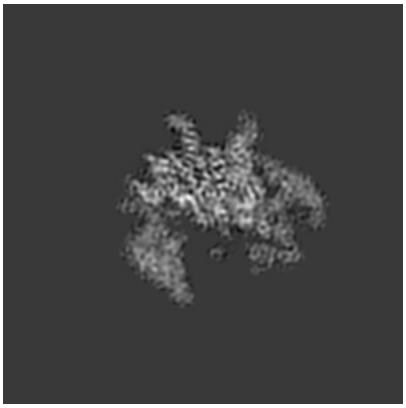


Z Index: 224

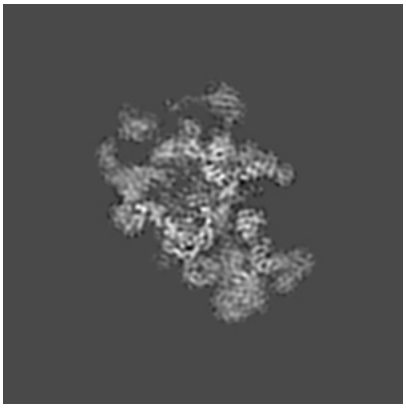
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

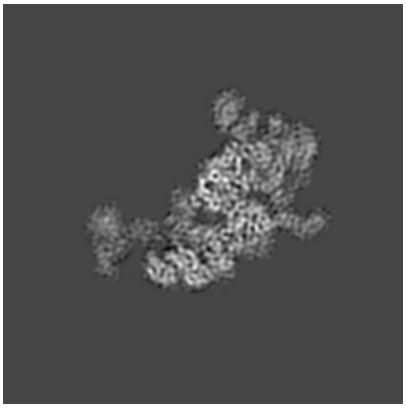
6.3.1 Primary map



X Index: 252



Y Index: 194

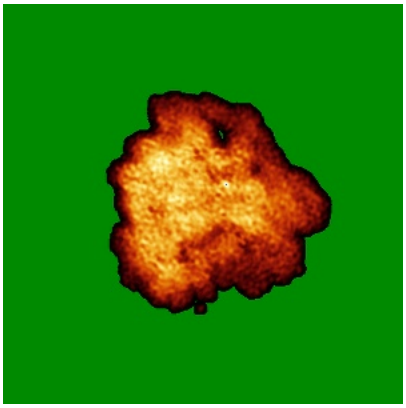


Z Index: 243

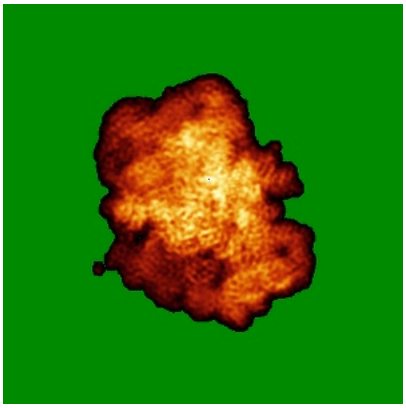
The images above show the largest variance slices of the map in three orthogonal directions.

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

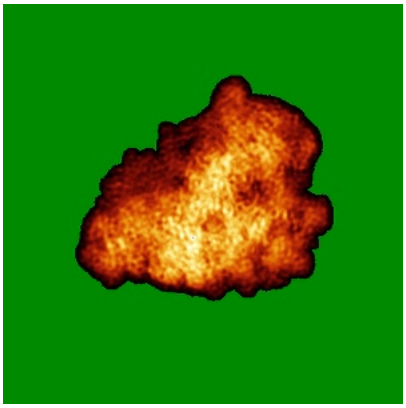
6.4.1 Primary map



X



Y



Z

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

6.5 Orthogonal surface views (i)

6.5.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.014. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

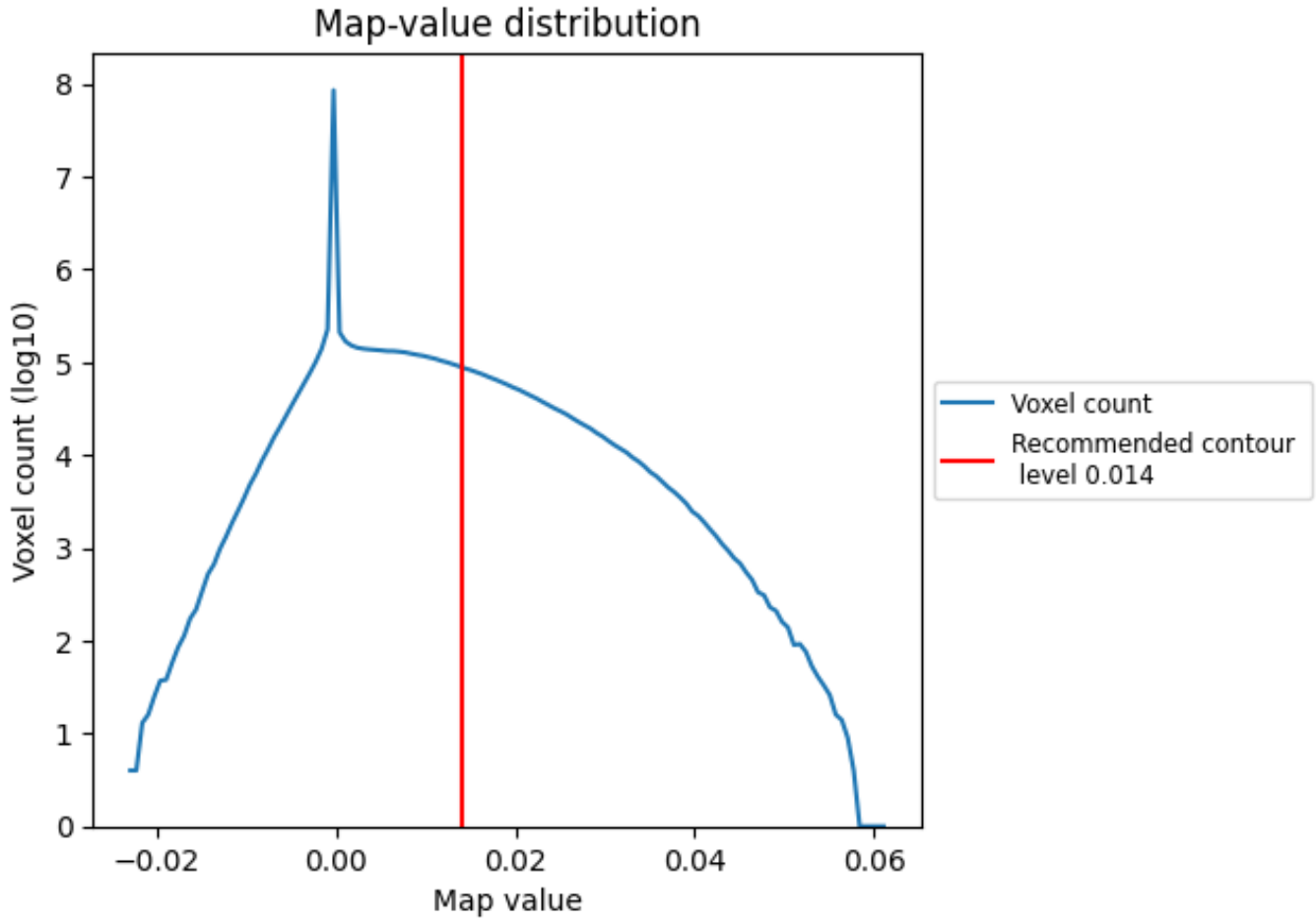
6.6 Mask visualisation (i)

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

7 Map analysis

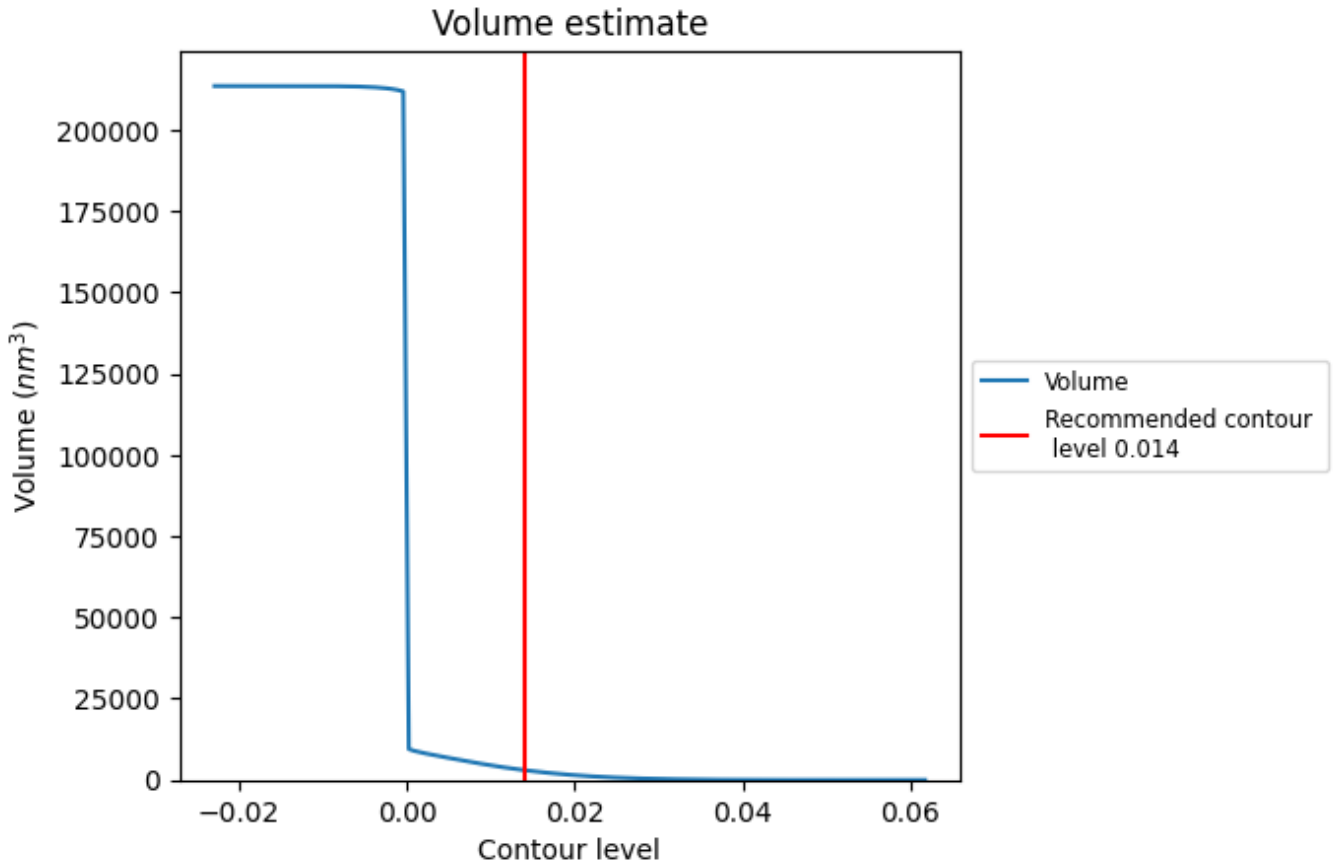
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

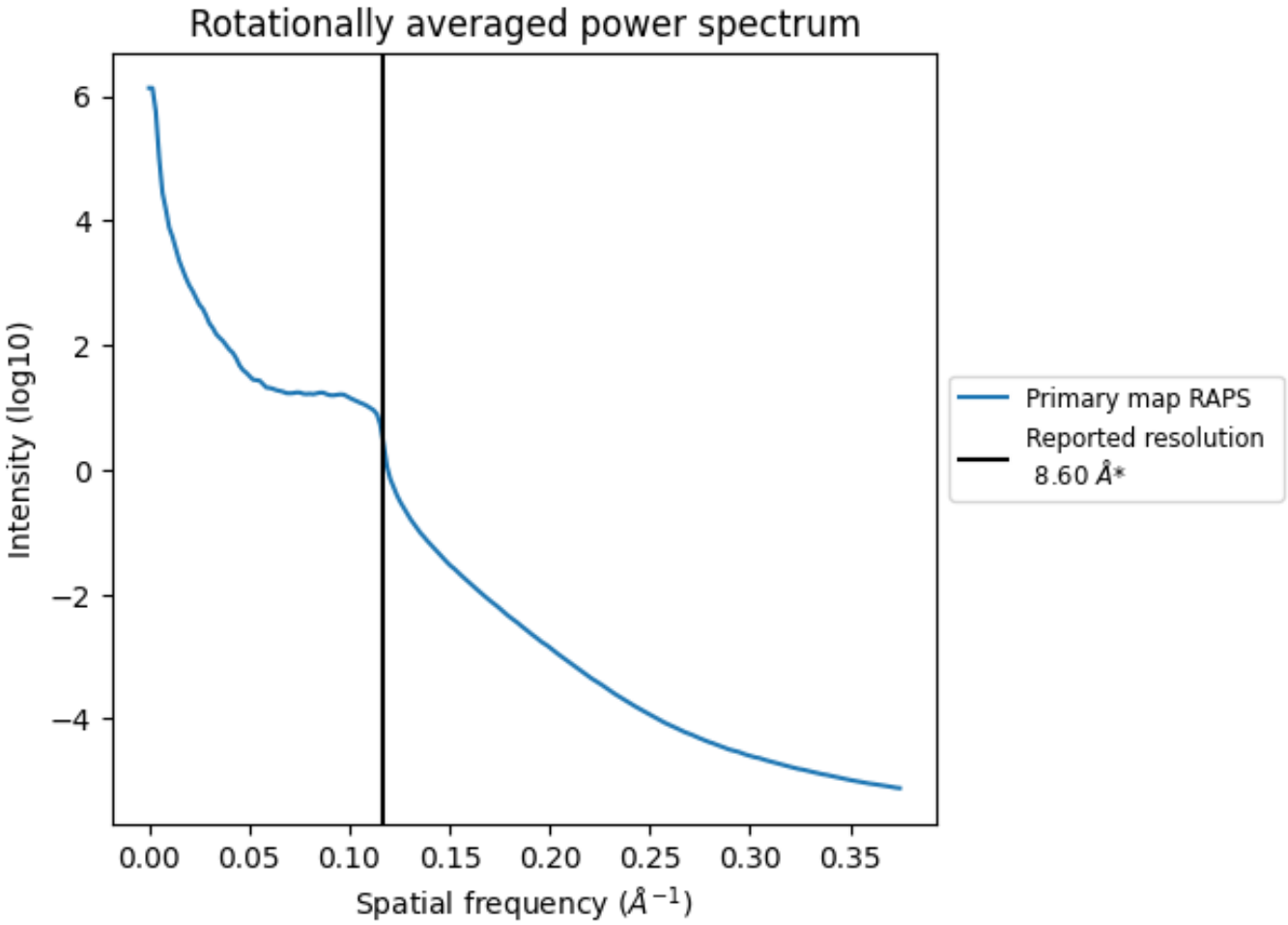
7.2 Volume estimate



The volume at the recommended contour level is 3008 nm^3; this corresponds to an approximate mass of 2717 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 0.116 Å^{-1}

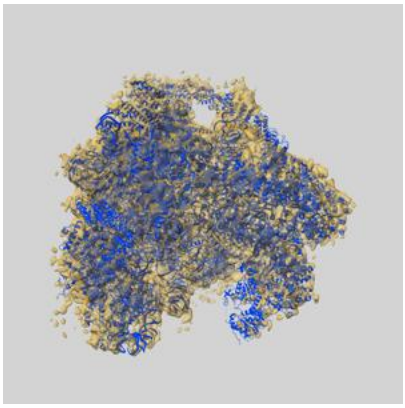
8 Fourier-Shell correlation (i)

This section was not generated. No FSC curve or half-maps provided.

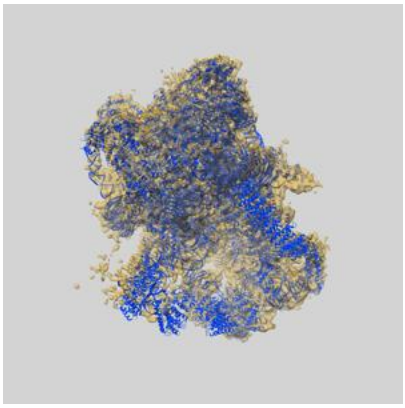
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-0951 and PDB model 6LQR. Per-residue inclusion information can be found in section 3 on page 17.

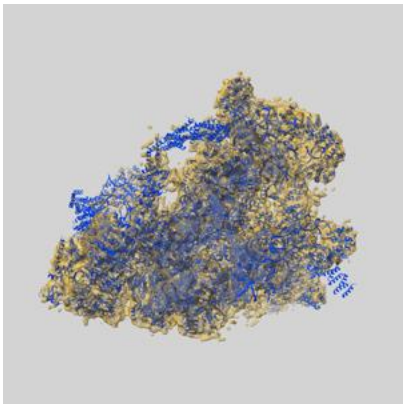
9.1 Map-model overlay



X



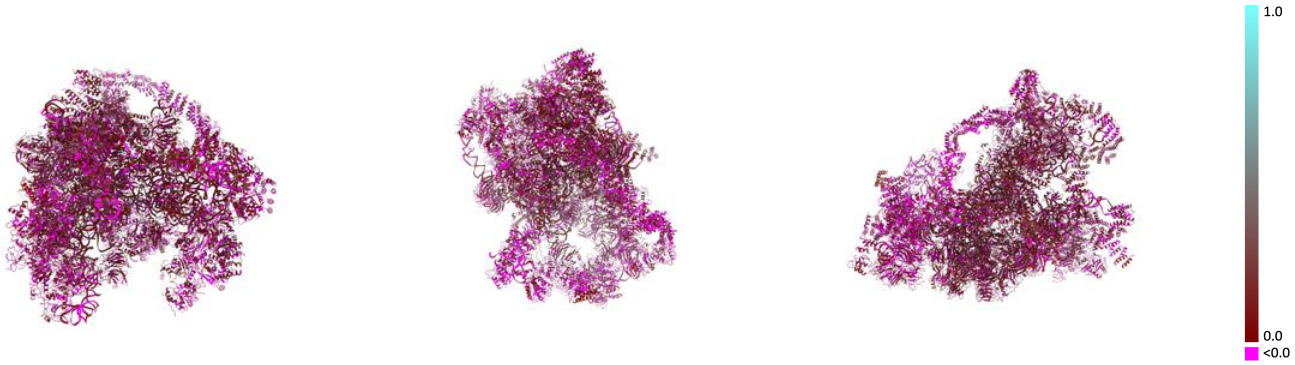
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.014 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.

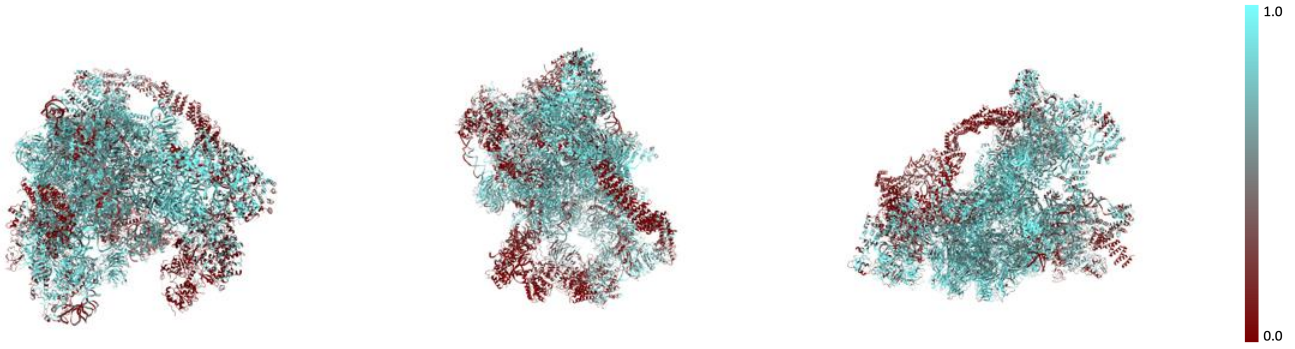
9.2 Q-score mapped to coordinate model



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.

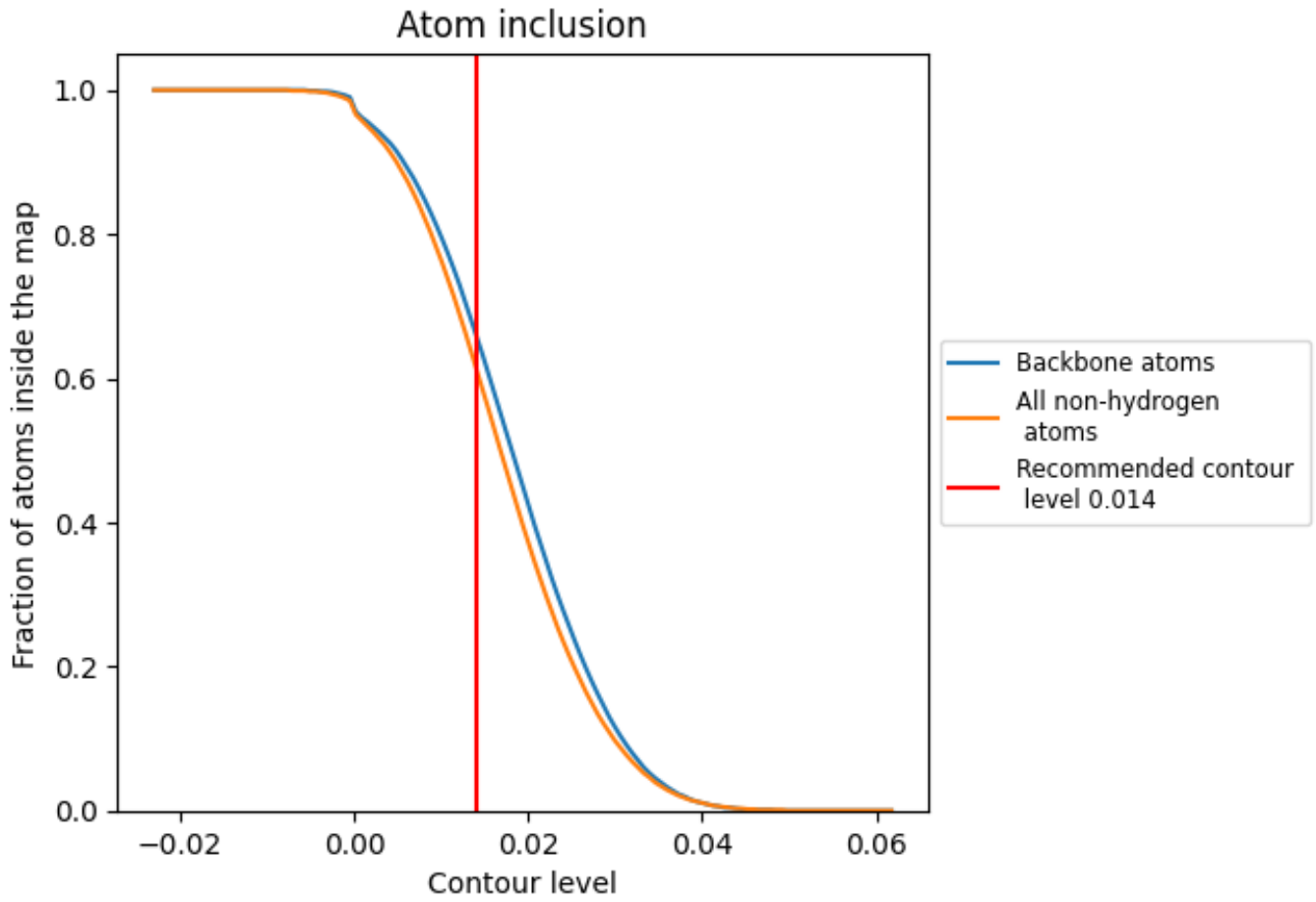
9.3 Atom inclusion mapped to coordinate model



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 (0.014).

9.4 Atom inclusion (i)



At the recommended contour level, 66% of all backbone atoms, 62% 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 (0.014) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.6160	0.0800
3A	0.9100	0.1510
3B	0.7970	0.1140
3C	0.6800	0.0660
3D	0.8060	0.1300
3E	0.6940	0.0930
3F	0.8070	0.1120
3G	0.7630	0.1090
3H	0.7880	0.1290
5A	0.5880	0.0630
5B	0.1210	0.0310
5C	0.7700	0.1040
5D	0.4060	0.0490
5E	0.7420	0.1350
5F	0.7360	0.1260
5G	0.6730	0.0950
5H	0.7540	0.1070
5I	0.8410	0.1040
5J	0.5670	0.0960
5K	0.7420	0.1100
A4	0.6850	0.0470
A5	0.6060	0.0740
A8	0.5480	0.0590
A9	0.4820	0.0400
AE	0.3840	0.0540
AF	0.4860	0.0490
AG	0.6670	0.0340
B1	0.8250	0.1060
B2	0.7950	0.0960
B3	0.7850	0.0710
B6	0.7680	0.1260
B8	0.7800	0.0970
BE	0.8310	0.1070
RA	0.5970	0.0600
RB	0.7440	0.1240

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Chain	Atom inclusion	Q-score
RD	0.0800	0.0120
RE	0.5560	0.0610
RF	0.3930	0.0800
RG	0.1280	0.0160
RH	0.1390	0.0120
RJ	0.7030	0.1020
RK	0.7460	0.1140
RL	0.3280	0.0860
RM	0.1560	0.0450
RN	0.1110	0.0080
RO	0.0220	-0.0030
RP	0.6090	0.0830
RQ	0.5520	0.0900
RS	0.0450	-0.0100
RT	0.4820	0.0510
RY	0.3750	0.0560
SA	0.7140	0.1010
SC	0.5150	0.0690
SF	0.7690	0.0950
SG	0.7890	0.1220
SH	0.5730	0.0710
SI	0.6500	0.1140
SJ	0.7190	0.0430
SK	0.7950	0.1150
SM	0.8200	0.0610
SO	0.6930	0.0860
SP	0.6230	0.0520
SR	0.7910	0.1080
SX	0.5930	0.1030
SY	0.6430	0.0990
SZ	0.7610	0.1050
Sc	0.5460	0.0810
Sd	0.7760	0.1250
X1	0.5360	0.0930