Full wwPDB EM Validation Report ⓘ

May 20, 2024 – 02:08 AM JST

PDB ID	:	7D63
EMDB ID	:	EMD-30588
Title	:	Cryo-EM structure of 90S preribosome with inactive Utp24 (state C)
Authors	:	Du, Y.; Zhang, J.; An, W.; Ye, K.
Deposited on	:	2020-09-29
Resolution	:	12.30 Å(reported)
Based on initial model	:	6LQR

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

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

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

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

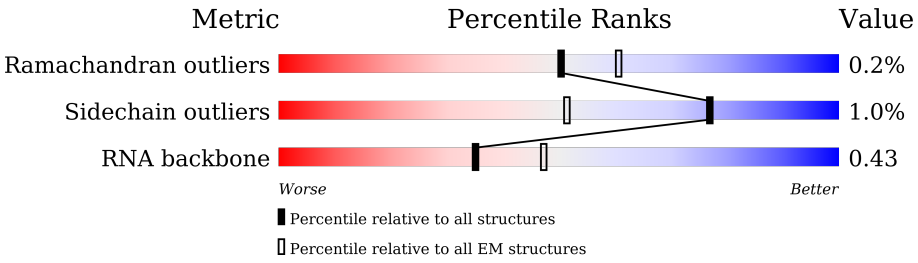
EMDB validation analysis	:	0.0.1.dev92
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36.2

1 Overall quality at a glance

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

The reported resolution of this entry is 12.30 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	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	8% 34% 15% · 47%
2	5A	700	13% 19% 7% · 73%
3	SA	1812	23% 42% 28% · 27%
4	SC	255	80% 87% · 10%
5	SF	261	37% 84% · 12%
6	SG	225	22% 95% 5%
7	SH	236	32% 70% · 29%
8	SI	190	77% 84% · 13%

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Mol	Chain	Length	Quality of chain
9	SJ	200	28% 81% 17%
10	SK	197	30% 86% 13%
11	SM	155	28% 77% 21%
12	SO	151	72% 87% 11%
13	SP	137	68% 84% 14%
14	SR	143	26% 87% 13%
15	SX	130	83% 96%
16	SY	145	26% 70% 29%
17	SZ	135	27% 74% 24%
18	Sc	82	83% 96%
19	Sd	67	24% 94% 6%
20	3B	327	30% 73% 27%
20	3C	327	28% 68% 31%
21	3D	504	18% 72% 27%
22	3E	511	35% 83% 16%
23	3F	573	18% 78% 21%
24	3G	126	16% 93%
24	3H	126	32% 94%
25	A4	776	19% 84% 15%
26	A5	643	25% 79% 20%
27	A8	713	32% 71% 25%
28	A9	575	6% 22% 78%
29	AE	1769	62% 86% 13%
30	AF	513	26% 95%
31	AG	896	21% 91% 8%

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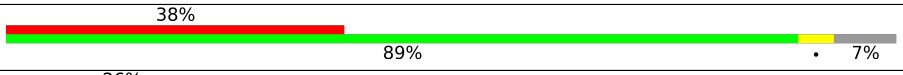
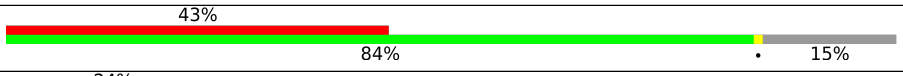
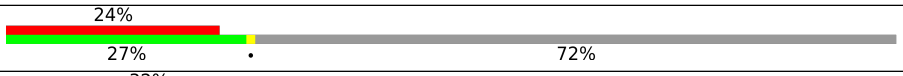
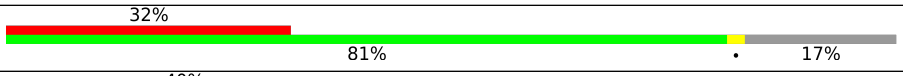
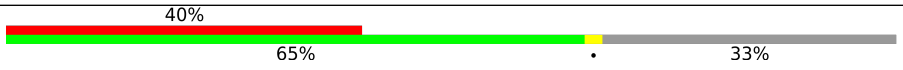
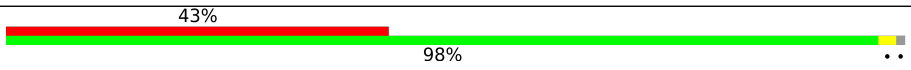
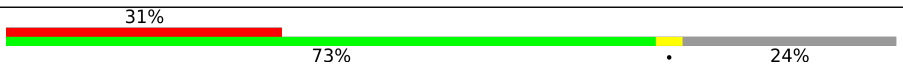
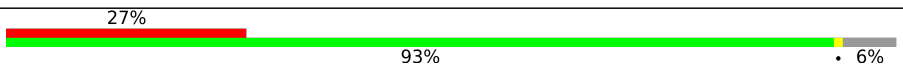
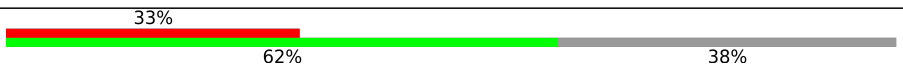
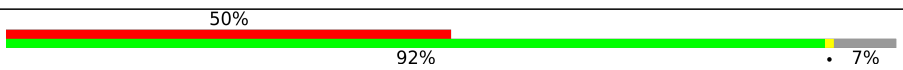
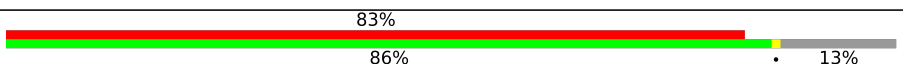
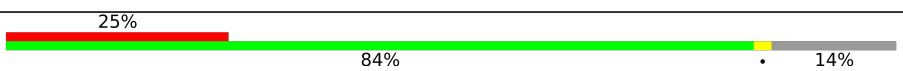
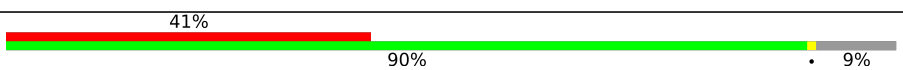
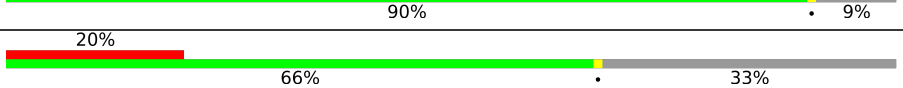
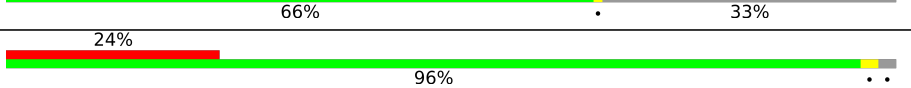
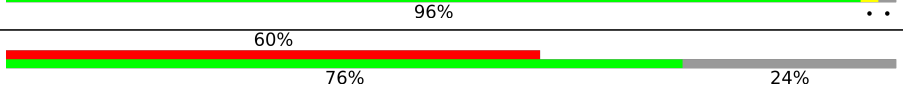
Mol	Chain	Length	Quality of chain
32	B1	900	
33	B2	943	
34	B3	817	
35	B8	594	
36	BE	939	
37	B6	440	
38	5B	214	
39	5C	554	
40	5D	250	
41	5E	593	
42	5F	183	
43	5G	290	
44	5H	610	
45	5I	489	
46	5J	217	
47	5K	189	
48	RA	707	
49	RB	357	
50	RE	1237	
51	RF	297	
52	RG	252	
52	RH	252	
53	RJ	1183	
54	RK	367	
55	RL	1056	

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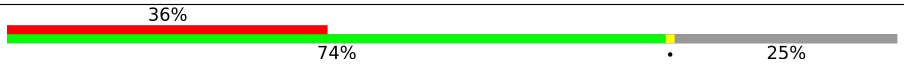
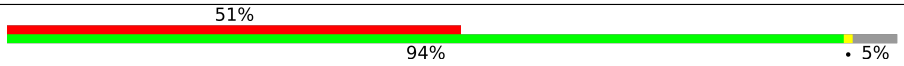
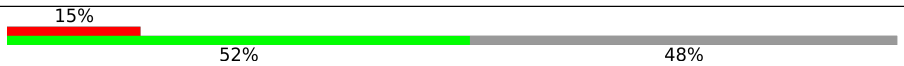
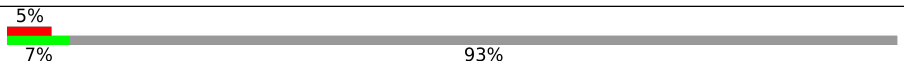
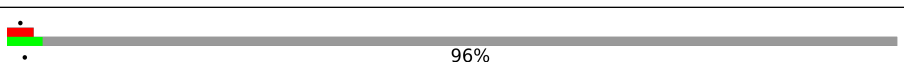
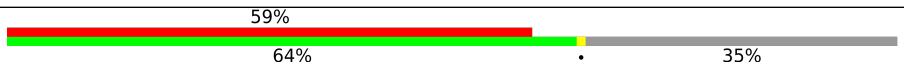
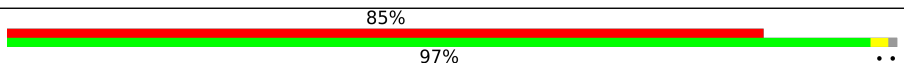
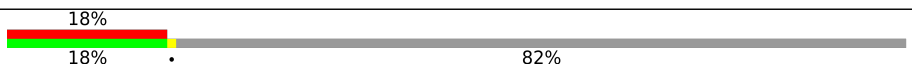
Mol	Chain	Length	Quality of chain
55	RM	1056	
56	RN	810	
57	RO	552	
58	RP	2493	
59	RQ	899	
60	RS	480	
61	RY	534	
62	X1	611	
63	RT	326	
64	ST	146	
65	SU	144	
66	RD	1729	
67	RZ	1267	

2 Entry composition

There are 71 unique types of molecules in this entry. The entry contains 225233 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 rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
3	SA	1331	28383	12684	5049	9319	1331	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	134	Total	C	N	O	S	0	0
			1131	715	206	207	3		

- 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 U3 small nucleolar RNA-associated protein 22.

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

- Molecule 51 is a protein called Ribosomal RNA-processing protein 7.

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

- Molecule 52 is a protein called Ribosomal RNA small subunit methyltransferase NEP1.

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

- Molecule 53 is a protein called Ribosome biogenesis protein BMS1.

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

- Molecule 54 is a protein called RNA 3'-terminal phosphate cyclase-like protein.

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

- Molecule 55 is a protein called RNA cytidine acetyltransferase.

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

- Molecule 56 is a protein called Nucleolar complex protein 14.

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

- Molecule 57 is a protein called Nucleolar complex protein 4.

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

- Molecule 58 is a protein called U3 small nucleolar RNA-associated protein 20.

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

- Molecule 59 is a protein called U3 small nucleolar RNA-associated protein 14.

Mol	Chain	Residues	Atoms					AltConf	Trace
59	RQ	275	Total	C	N	O	S	0	0
			1853	1139	356	356	2		

- Molecule 60 is a protein called Essential nuclear protein 1.

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

- Molecule 61 is a protein called Protein BFR2.

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

- Molecule 62 is a protein called Unassigned peptides 1.

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

- Molecule 63 is a protein called Pno1.

Mol	Chain	Residues	Atoms					AltConf	Trace
63	RT	212	Total	C	N	O	S	0	0
			1587	1010	290	283	4		

- Molecule 64 is a protein called 40S ribosomal protein S18-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
64	ST	110	Total	C	N	O	S	0	0
			896	565	170	159	2		

- Molecule 65 is a protein called 40S ribosomal protein S19-A.

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

- Molecule 66 is a protein called rRNA biogenesis protein RRP5.

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

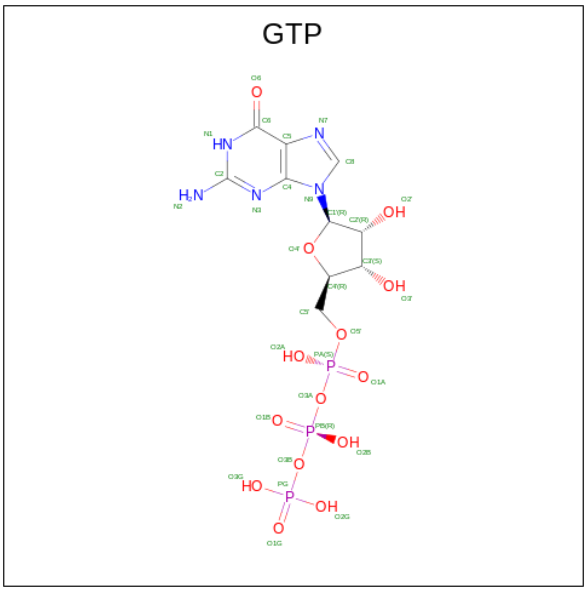
- Molecule 67 is a protein called Probable ATP-dependent RNA helicase DHR1.

Mol	Chain	Residues	Atoms					AltConf	Trace
67	RZ	839	Total	C	N	O	S	1	0
			6604	4215	1146	1208	35		

- Molecule 68 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
68	Sc	1	Total	Zn	0
			1	1	
68	5K	1	Total	Zn	0
			1	1	

- Molecule 69 is GUANOSINE-5'-TRIPHOSPHATE (three-letter code: GTP) (formula: $C_{10}H_{16}N_5O_{14}P_3$).

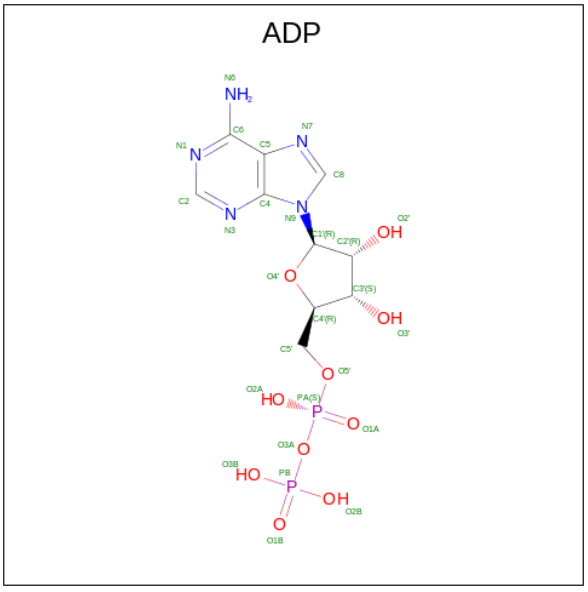


Mol	Chain	Residues	Atoms					AltConf
69	RJ	1	Total	C	N	O	P	0
			32	10	5	14	3	

- Molecule 70 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

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

- Molecule 71 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$).



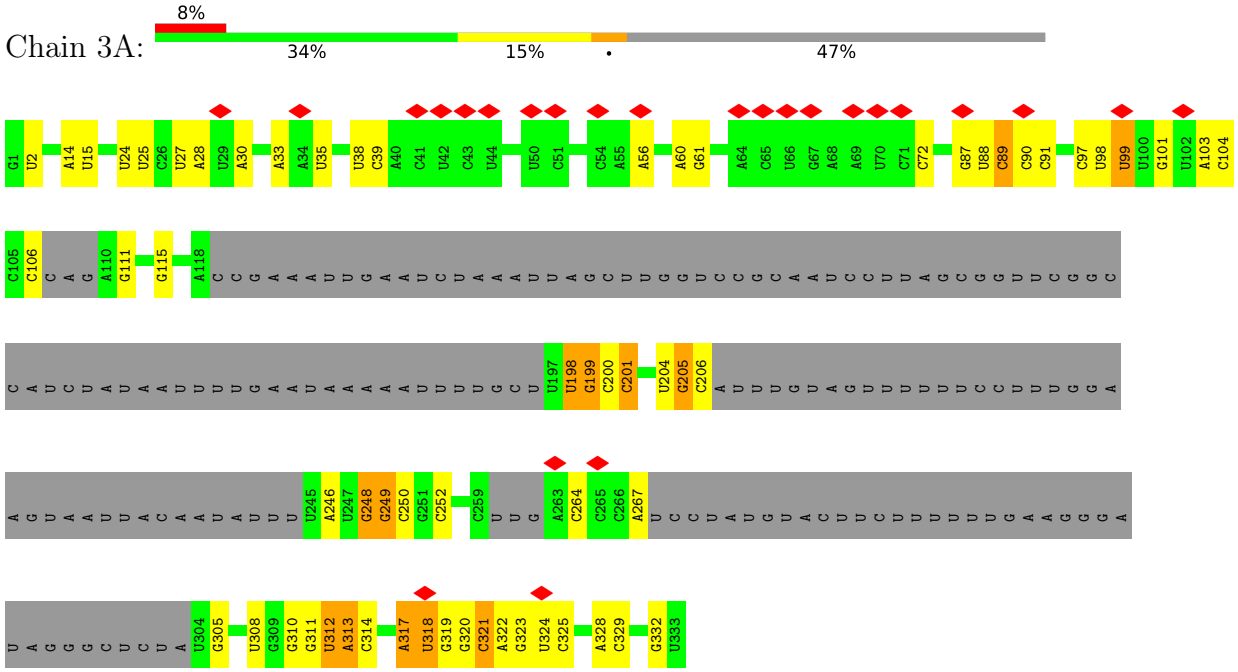
Mol	Chain	Residues	Atoms					AltConf
71	RZ	1	Total	C	N	O	P	0
			27	10	5	10	2	

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.

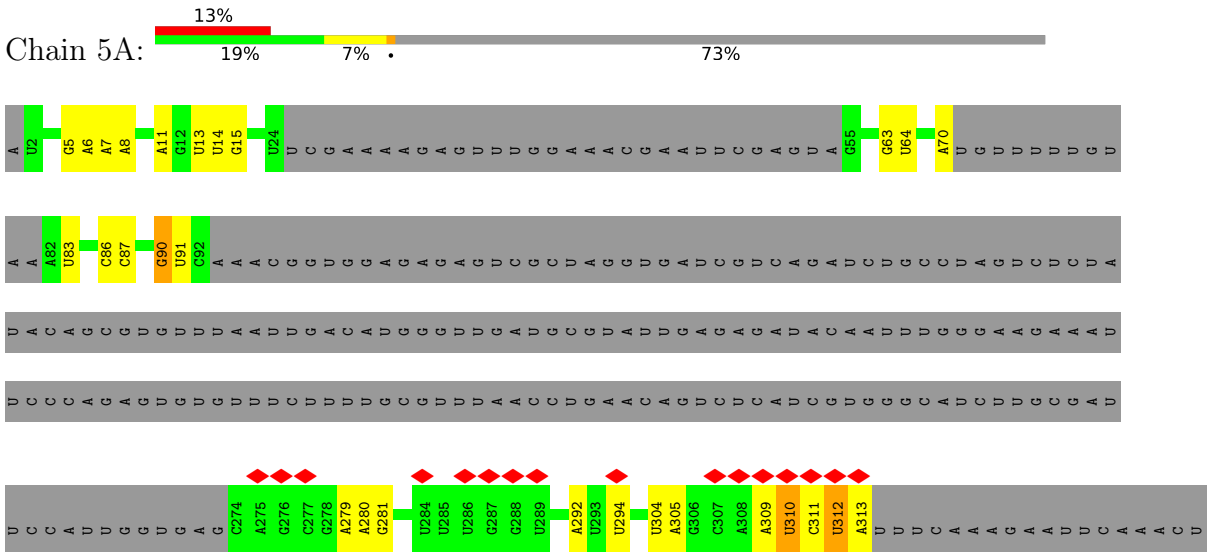
• Molecule 1: U3 snoRNA

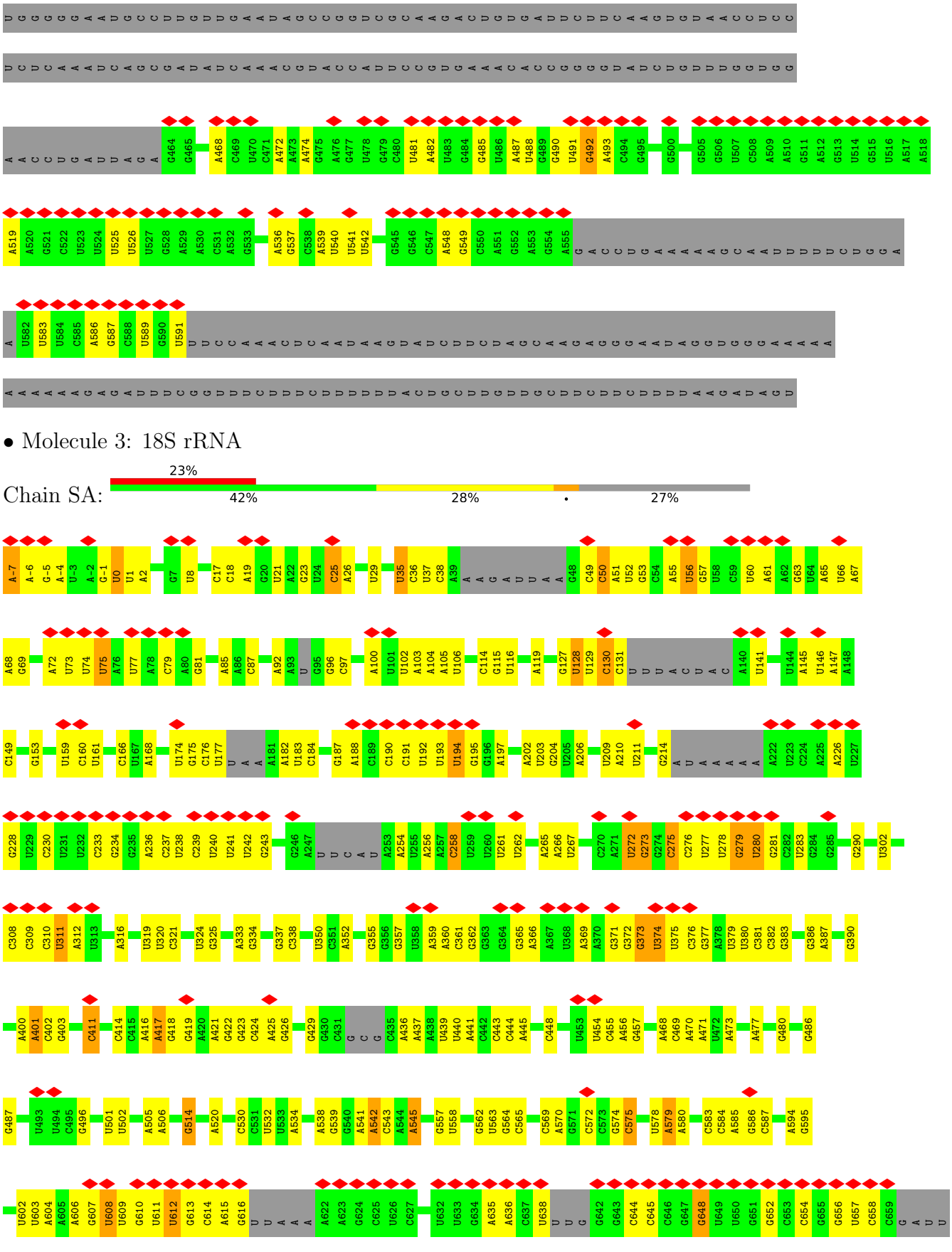
Chain 3A:



• Molecule 2: 5' ETS

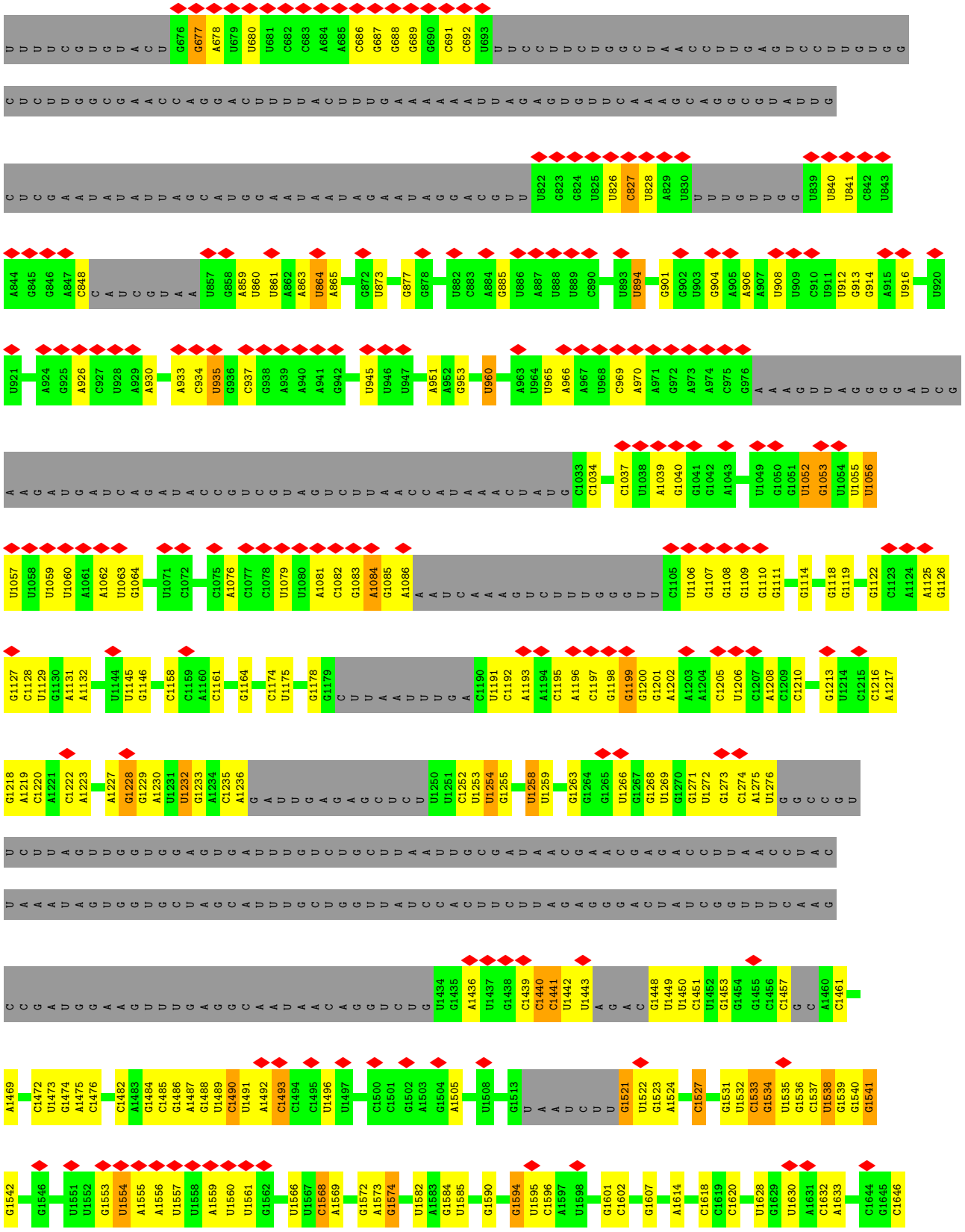
Chain 5A:

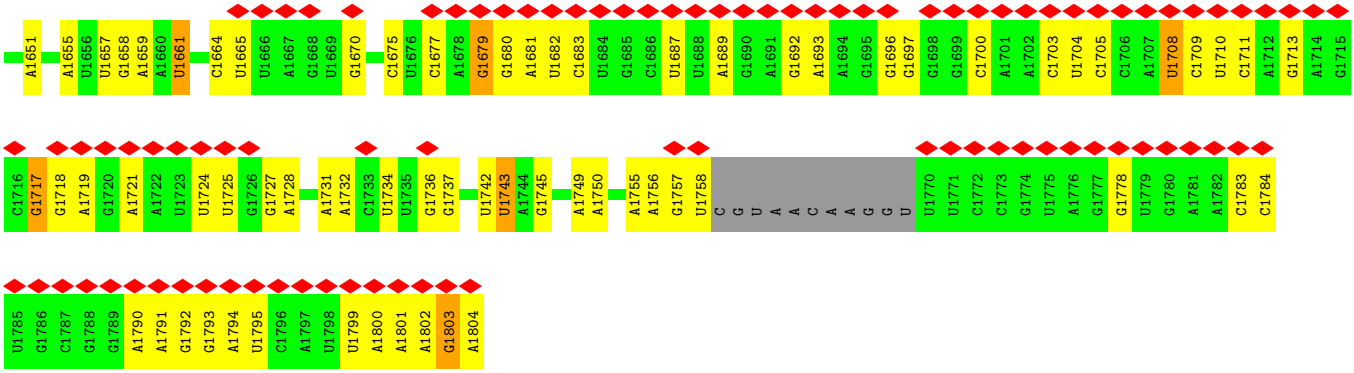




• Molecule 3: 18S rRNA

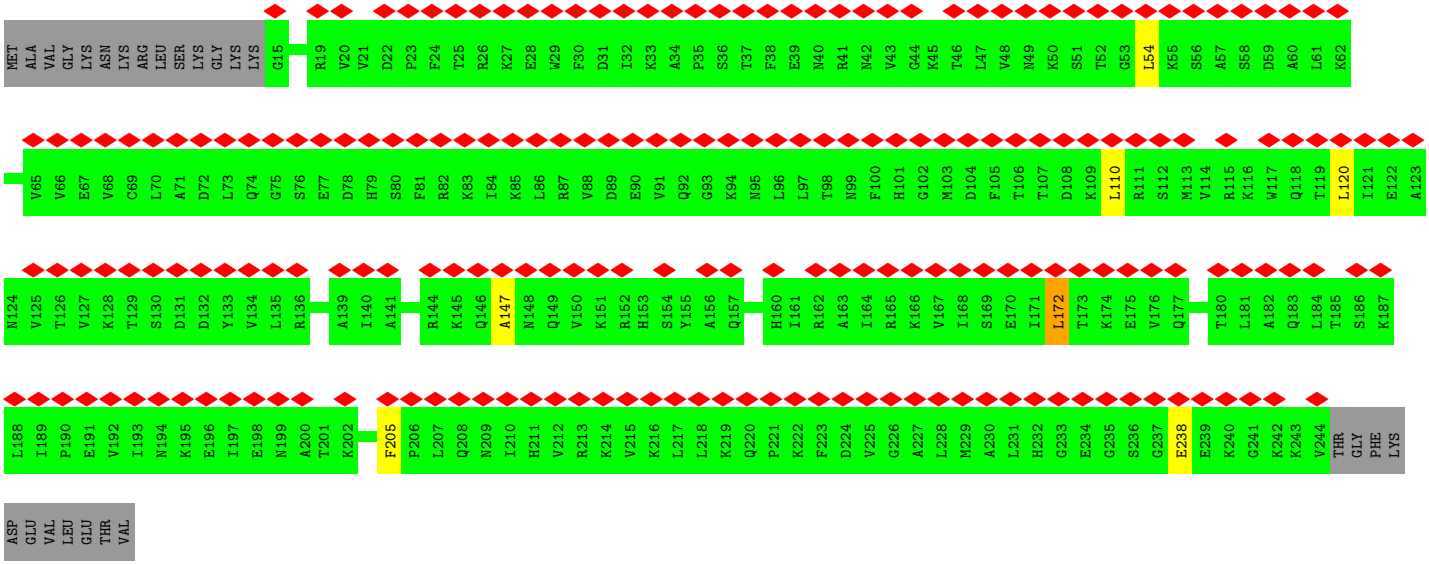
Chain SA:





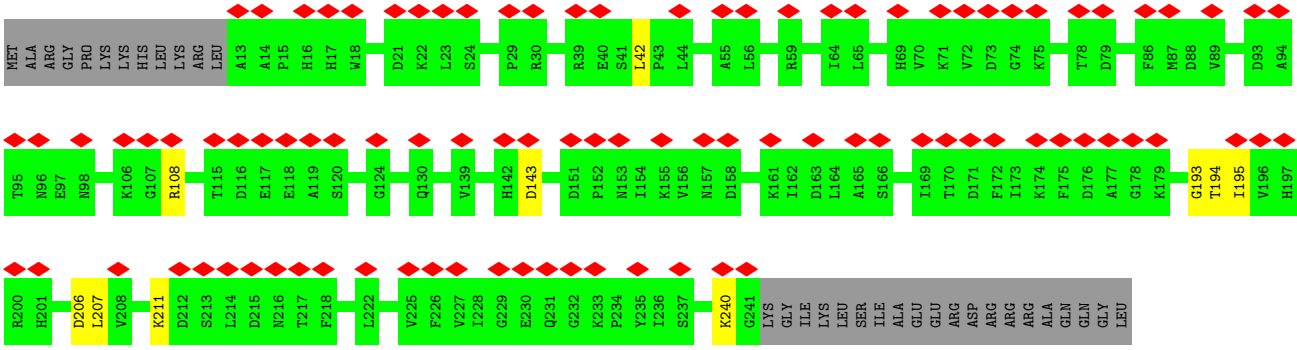
• Molecule 4: 40S ribosomal protein S1-A

Chain SC:



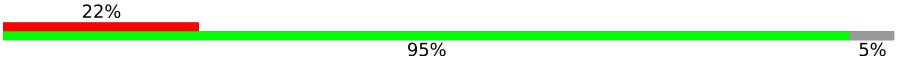
• Molecule 5: 40S ribosomal protein S4-A

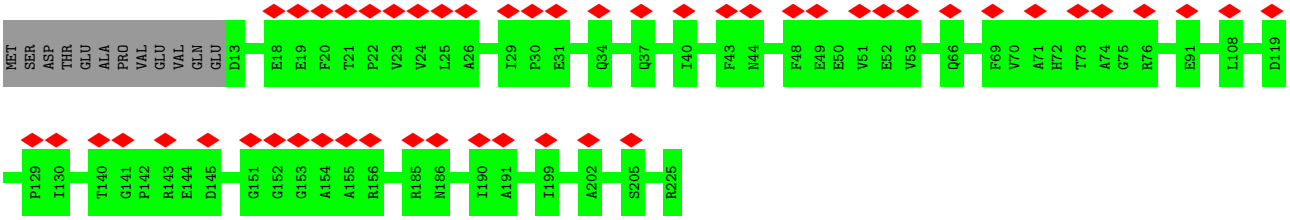
Chain SF:



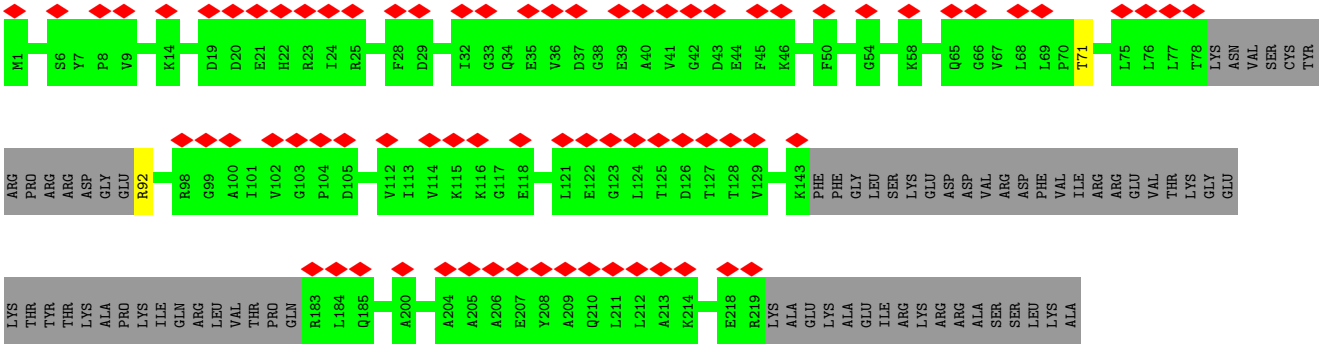
• Molecule 6: 40S ribosomal protein S5

Chain SG:

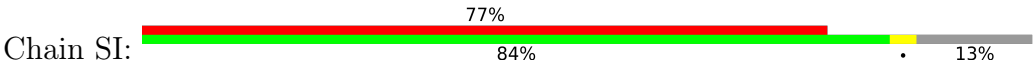


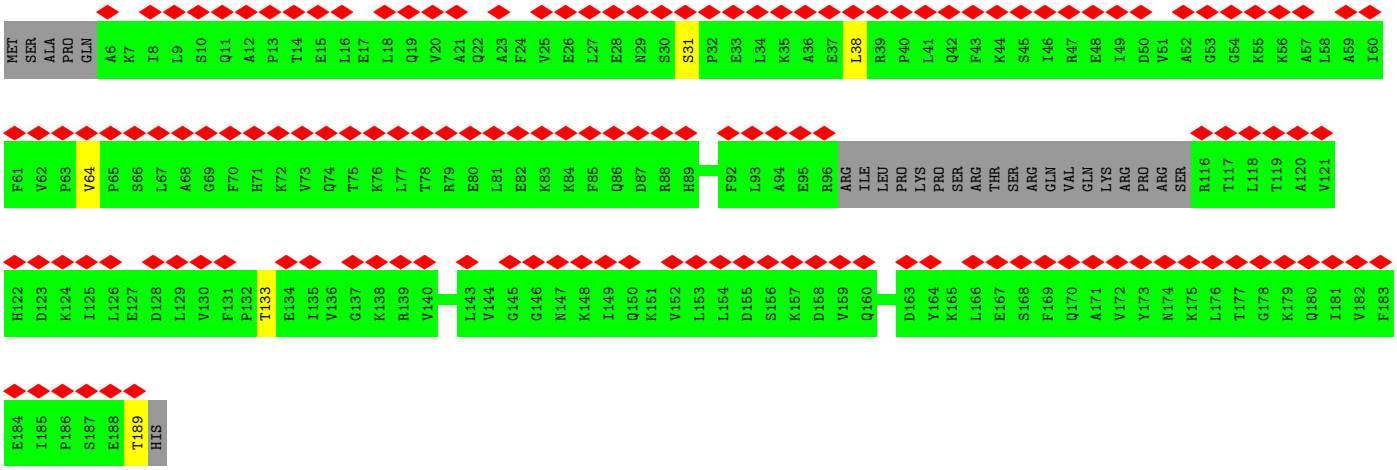


• Molecule 7: 40S ribosomal protein S6-A

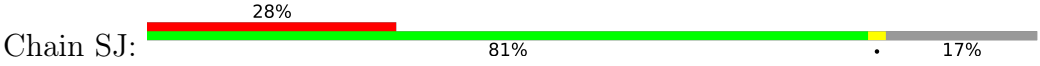


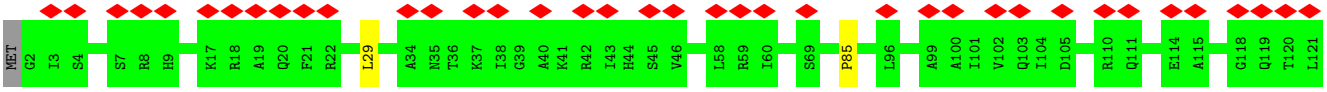
• Molecule 8: 40S ribosomal protein S7-A

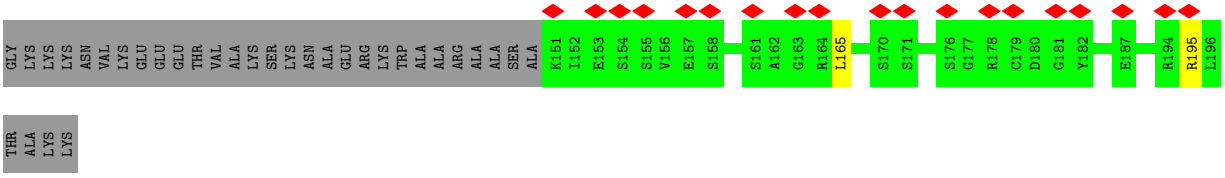




• Molecule 9: 40S ribosomal protein S8-A

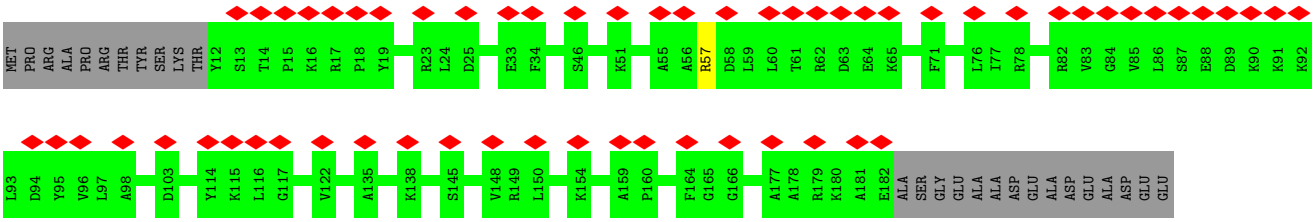






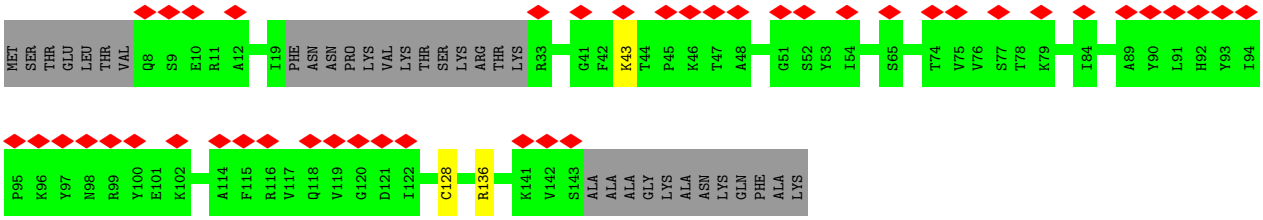
• Molecule 10: 40S ribosomal protein S9-A

Chain SK:



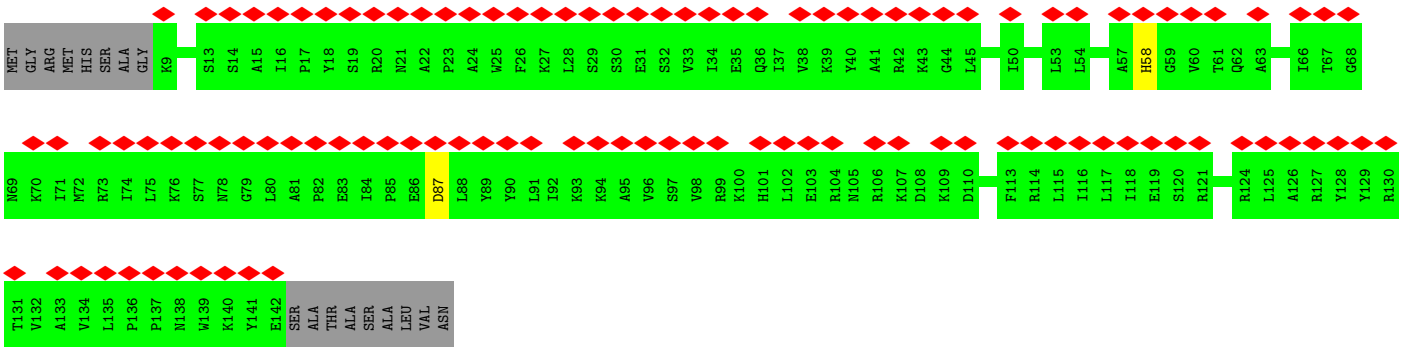
• Molecule 11: 40S ribosomal protein S11-A

Chain SM:



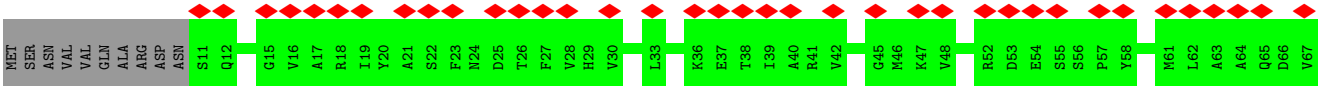
• Molecule 12: 40S ribosomal protein S13

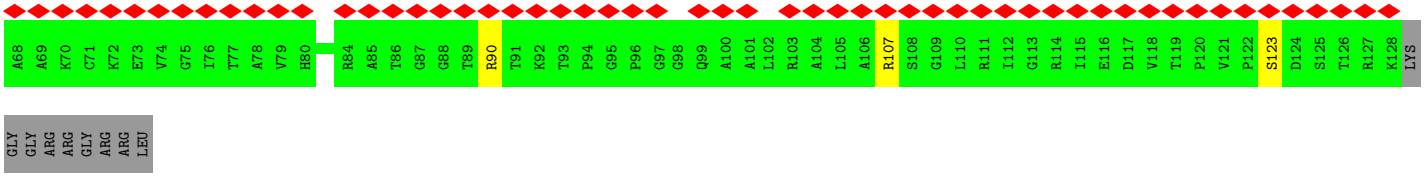
Chain SO:



• Molecule 13: 40S ribosomal protein S14-A

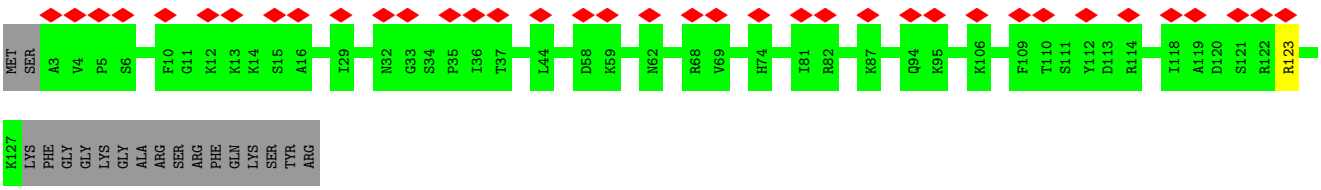
Chain SP:





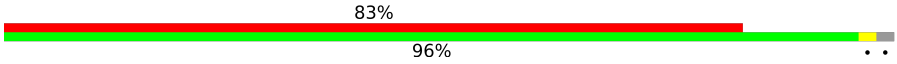
• Molecule 14: 40S ribosomal protein S16-A

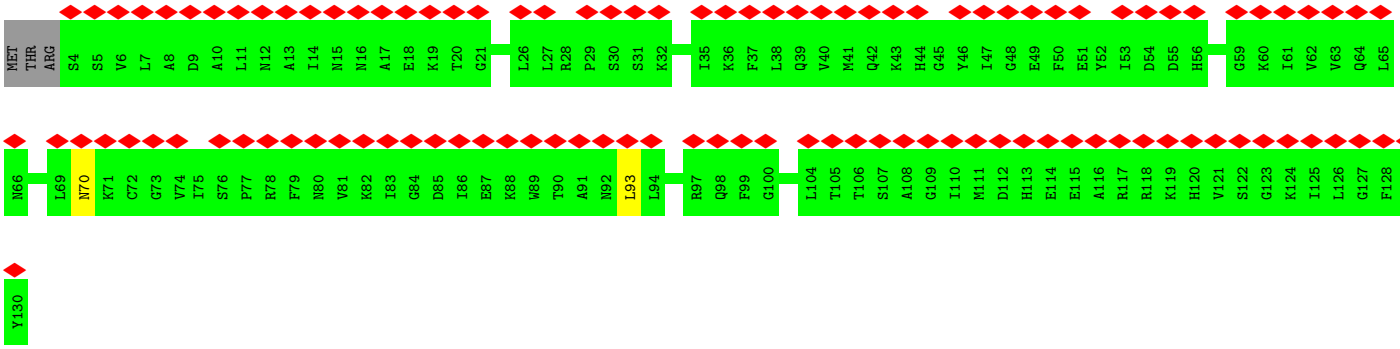
Chain SR:



• Molecule 15: 40S ribosomal protein S22-B

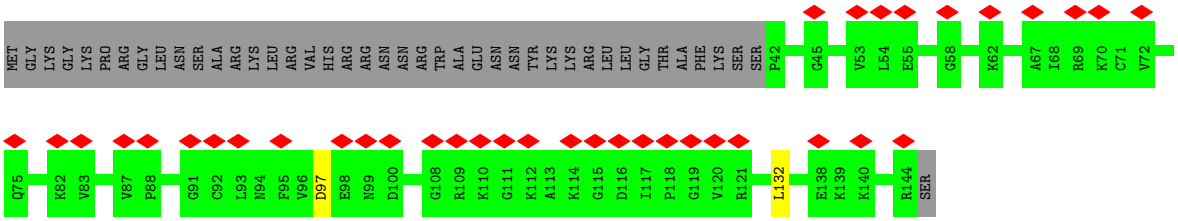
Chain SX:





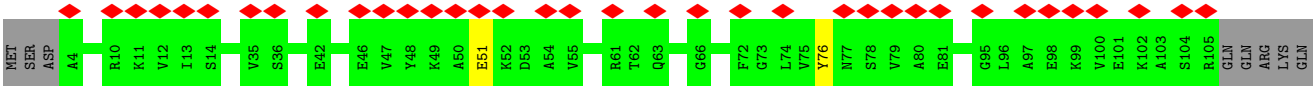
• Molecule 16: 40S ribosomal protein S23-A

Chain SY:



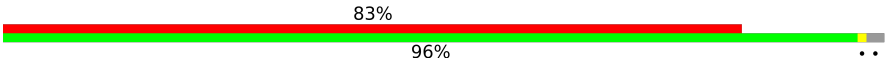
• Molecule 17: 40S ribosomal protein S24-A

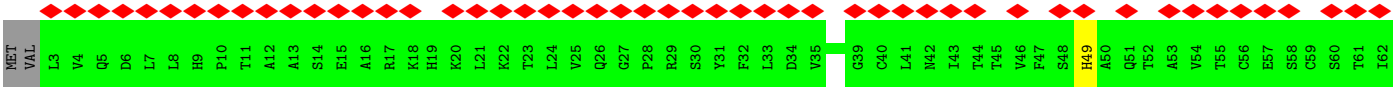
Chain SZ:

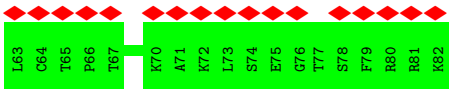


• Molecule 18: 40S ribosomal protein S27-A

Chain Sc:

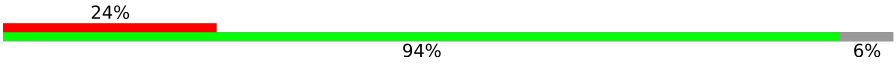


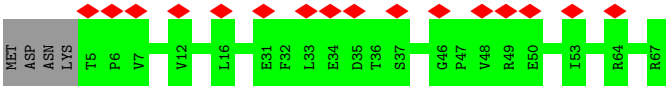




• Molecule 19: 40S ribosomal protein S28-A

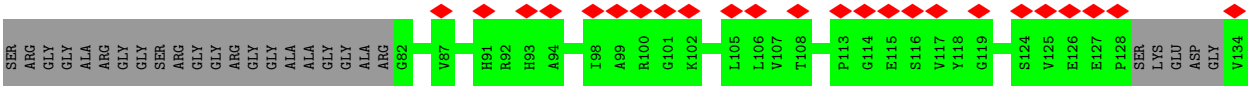
Chain Sd:

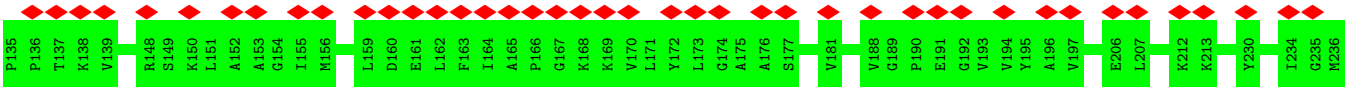


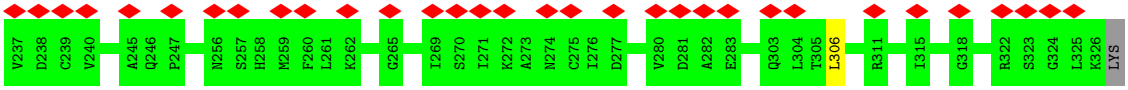


• Molecule 20: rRNA 2'-O-methyltransferase fibrillarin

Chain 3B:

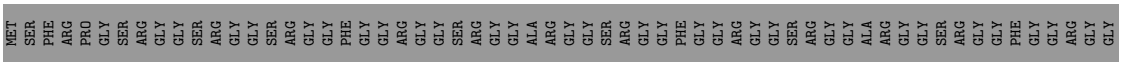


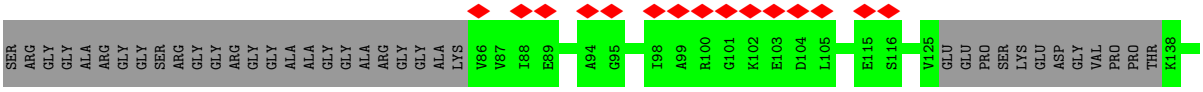


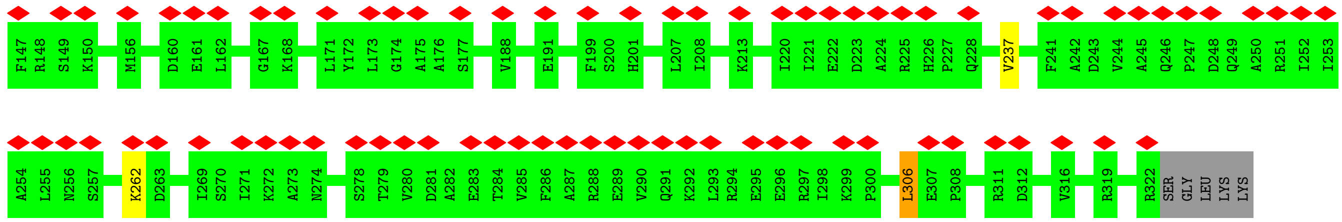


• Molecule 20: rRNA 2'-O-methyltransferase fibrillarin

Chain 3C:

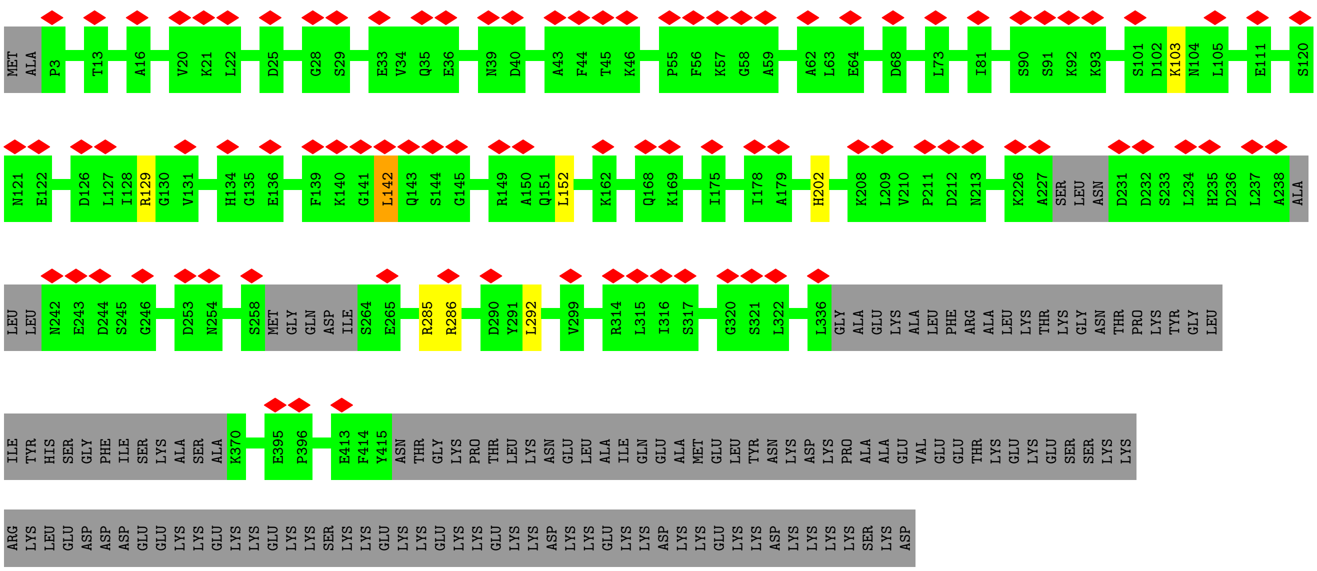






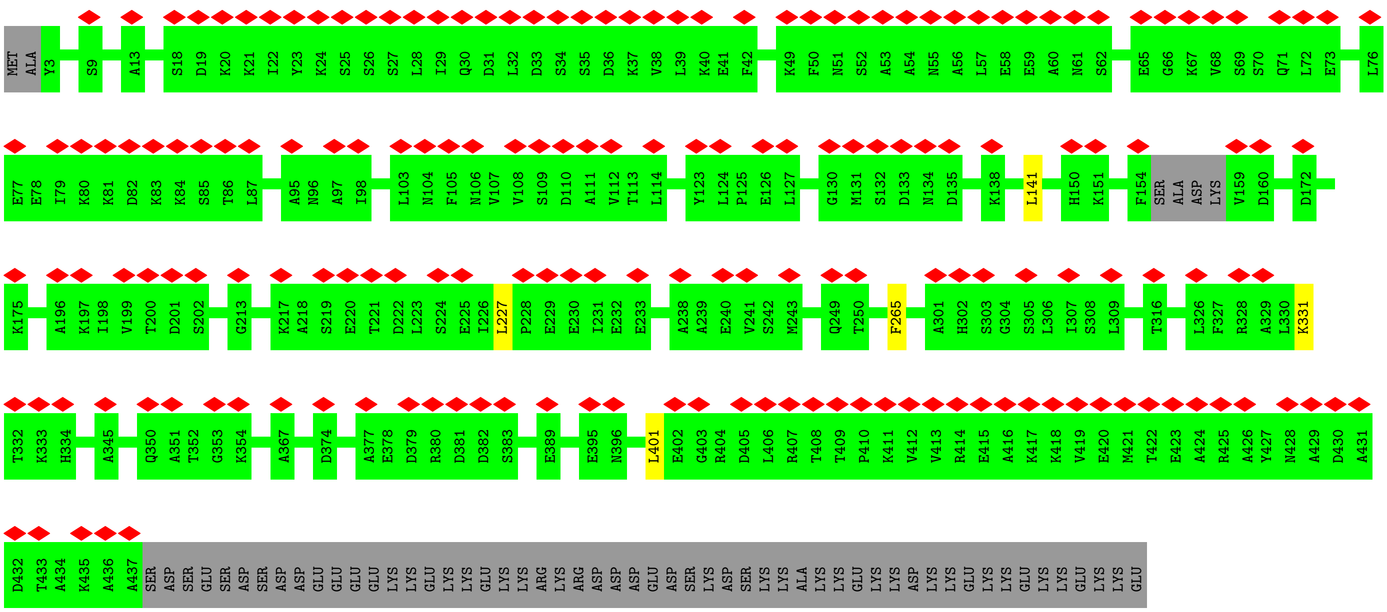
- Molecule 21: Nucleolar protein 56

Chain 3D:



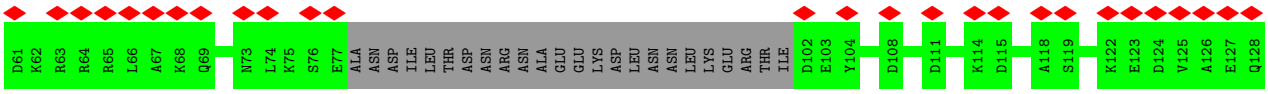
- Molecule 22: Nucleolar protein 58

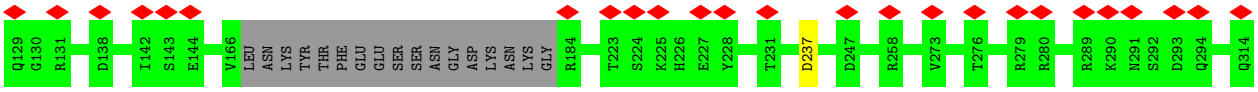
Chain 3E:

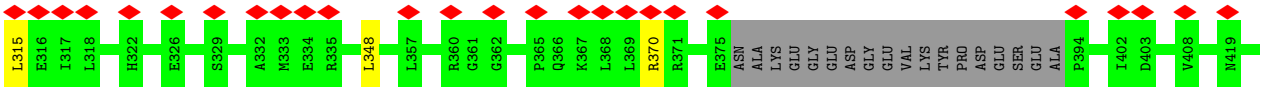


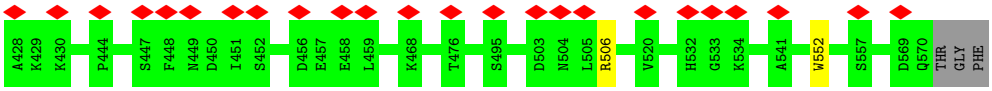
• Molecule 23: Ribosomal RNA-processing protein 9

Chain 3F:



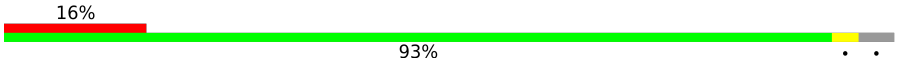


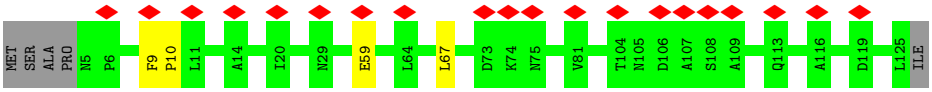




• Molecule 24: 13 kDa ribonucleoprotein-associated protein

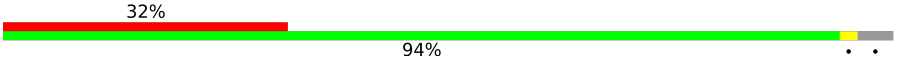
Chain 3G:

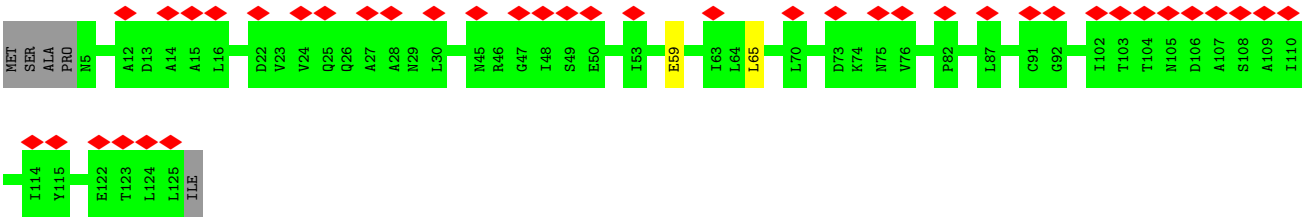




• Molecule 24: 13 kDa ribonucleoprotein-associated protein

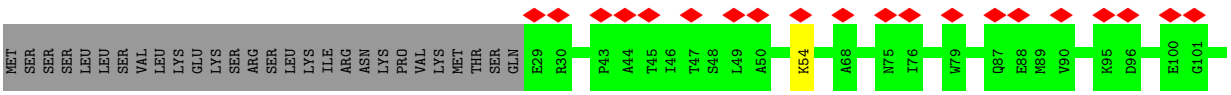
Chain 3H:

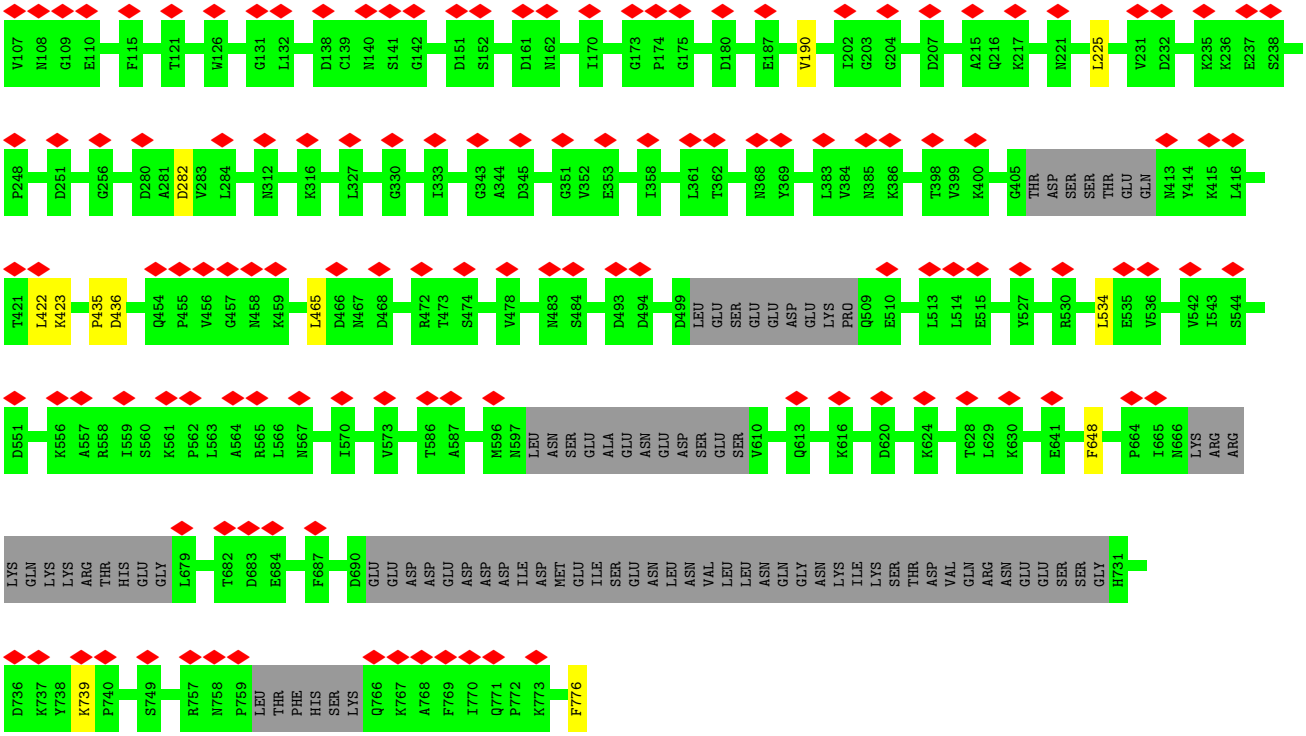




• Molecule 25: U3 small nucleolar RNA-associated protein 4

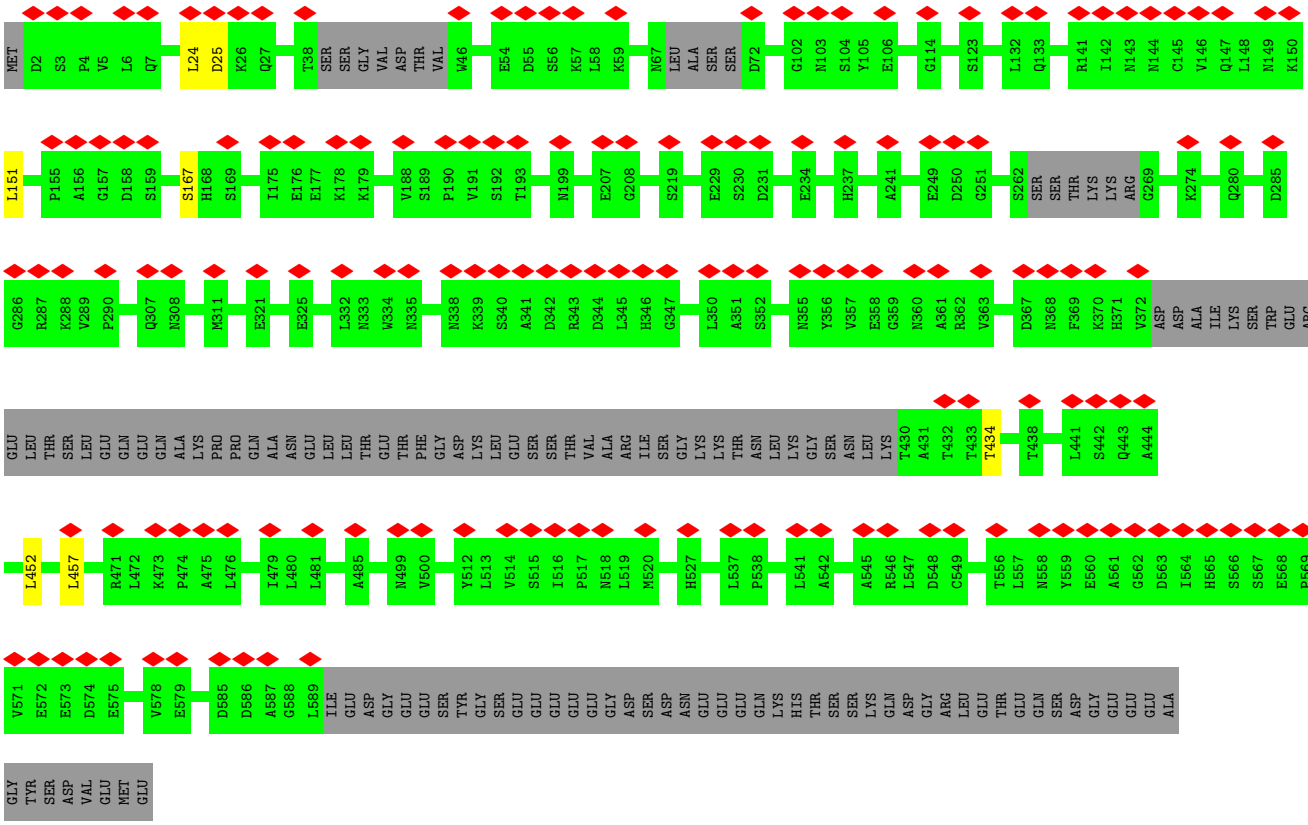
Chain A4:





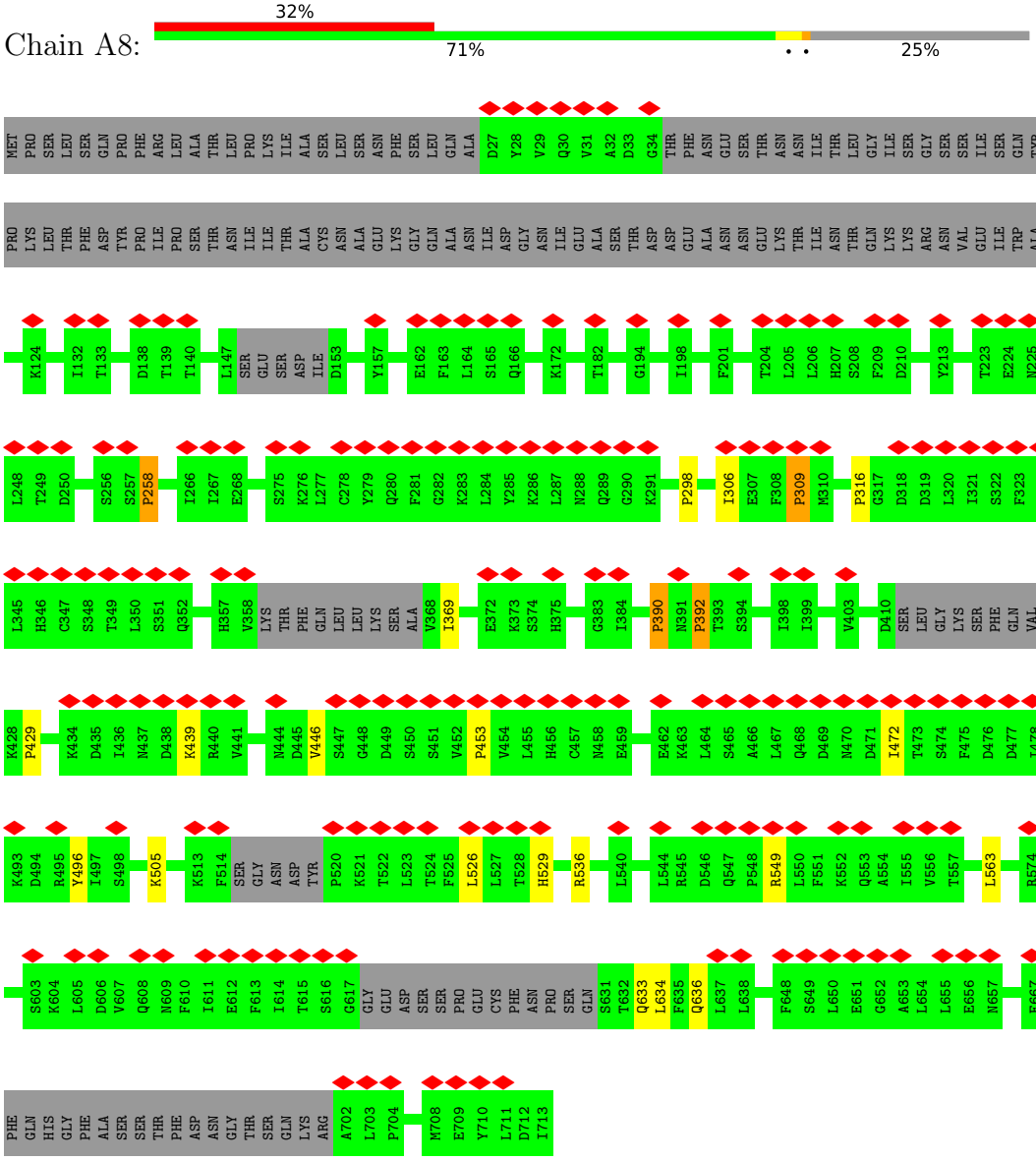
• Molecule 26: U3 small nucleolar RNA-associated protein 5

Chain A5:



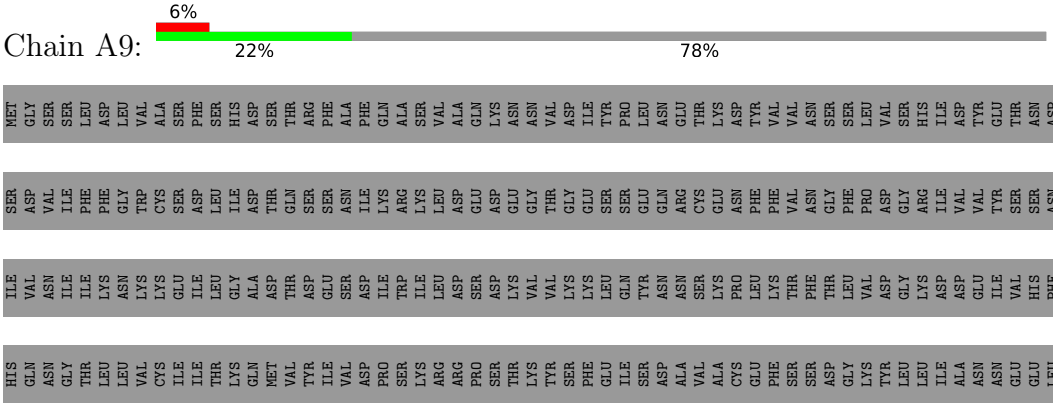
• Molecule 27: U3 small nucleolar RNA-associated protein 8

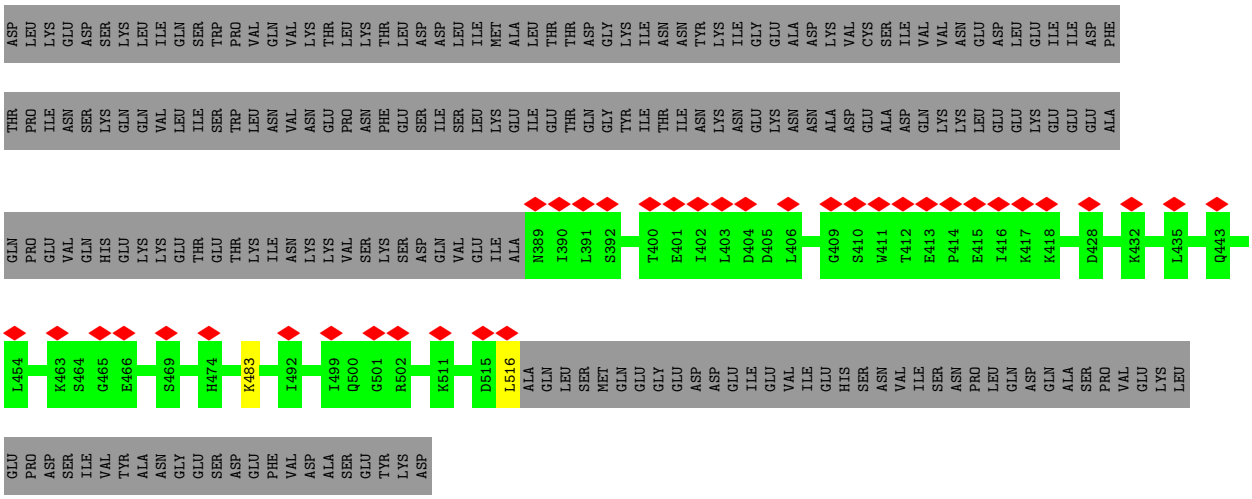
Chain A8:



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

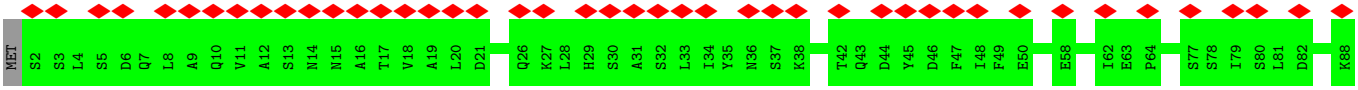
Chain A9:

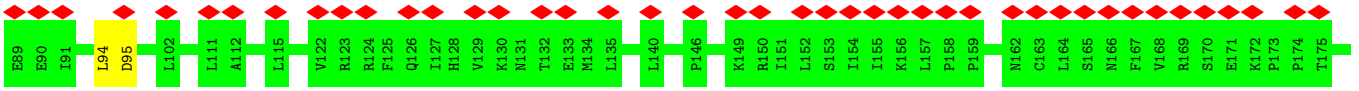


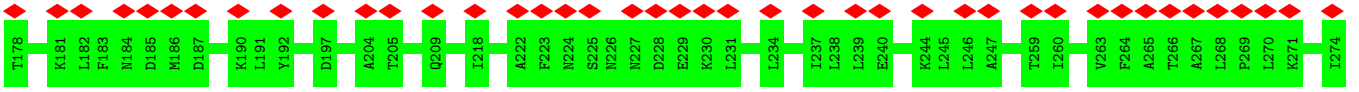


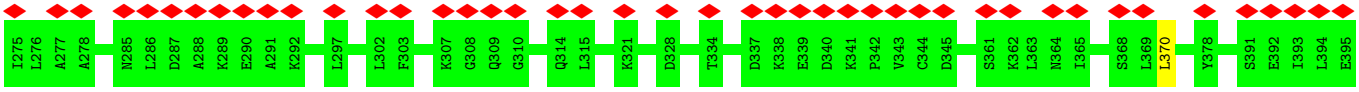
• Molecule 29: U3 small nucleolar RNA-associated protein 10

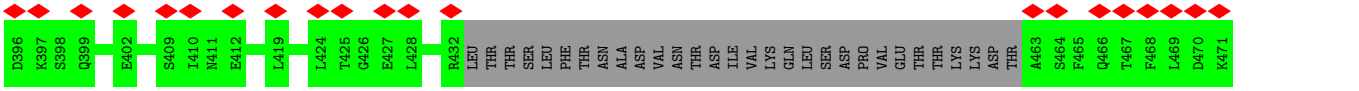
Chain AE:

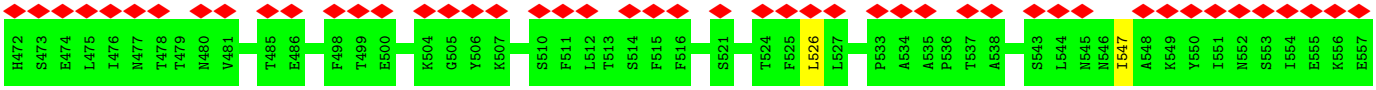


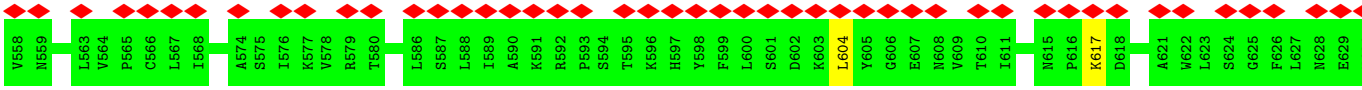


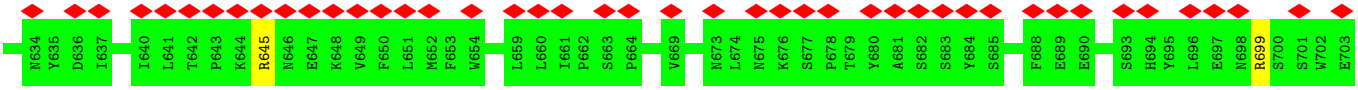


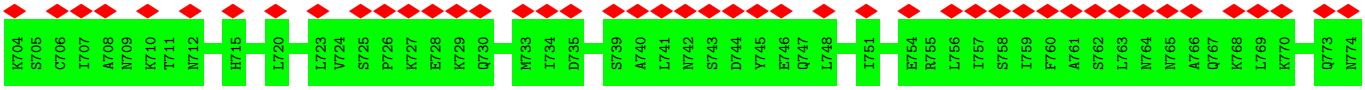


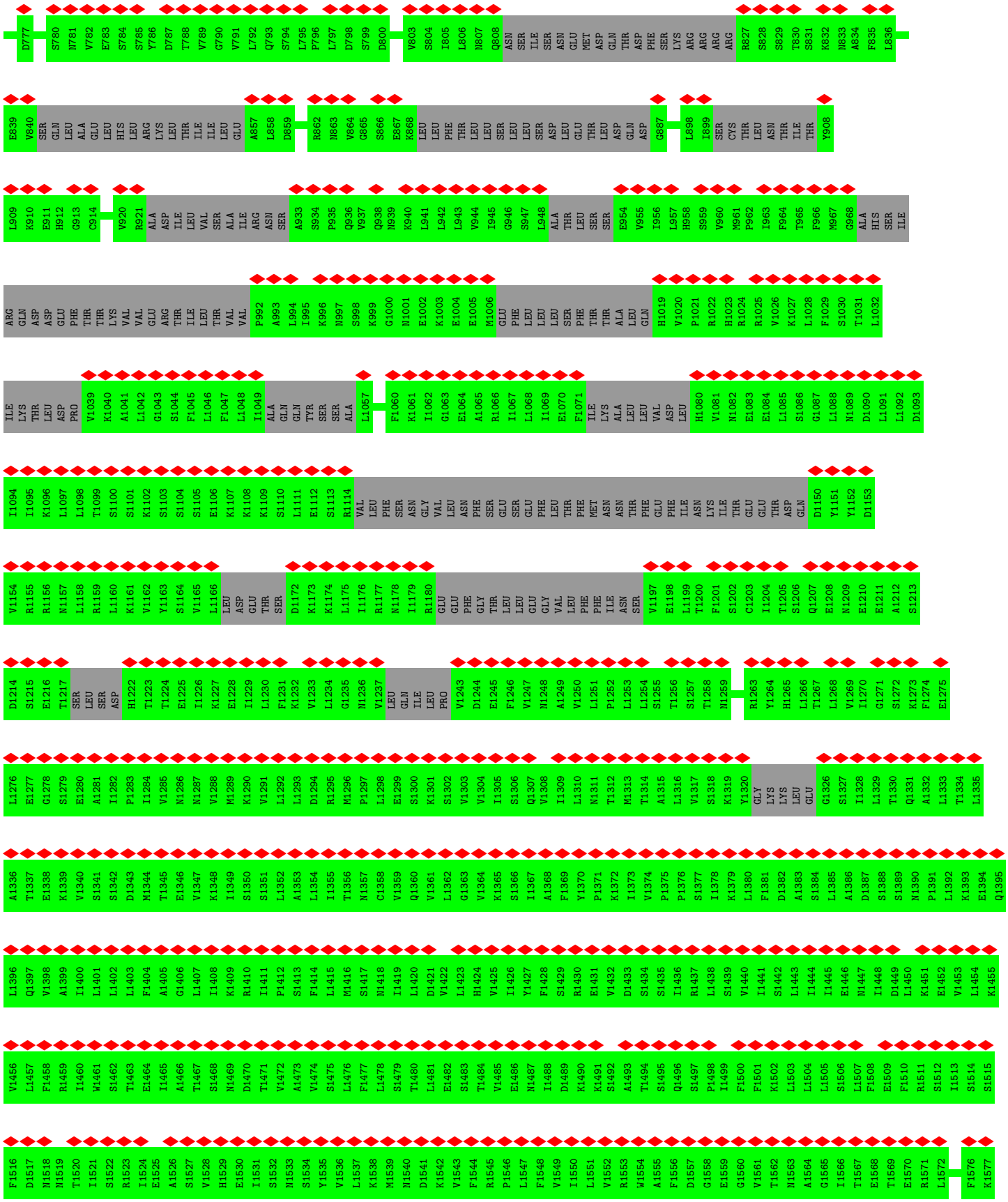








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E839 V840 SER GLN LEU ALA GLU LEU HIS LEU ARG LYS LEU THR ILE ILE LEU GLU A857 L858 D859 R862 N863 V864 G865 S866 E867 K868 LEU LEU PHE THR LEU LEU SER LEU LEU SER ASP LEU GLU THR LEU ASP GLN ASP G887 L898 I899 SER CYS THR LEU ASN THR ILE THR Y908
L909 K910 E911 H912 G913 C914 V920 R921 ALA ASP ILE LEU VAL SER ALA ILE ARG ASN SER A933 S934 P935 Q936 V937 Q938 N939 K940 L941 L942 L943 V944 I945 G946 S947 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 P1021 R1022 H1023 R1024 R1025 V1026 K1027 L1028 F1029 S1030 T1031 L1032
ILE LYS THR LEU ASP PRO V1039 K1040 A1041 L1042 G1043 S1044 F1045 L1046 F1047 L1048 I1049 ALA GLN GLN TYR SER SER ALA L1057 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
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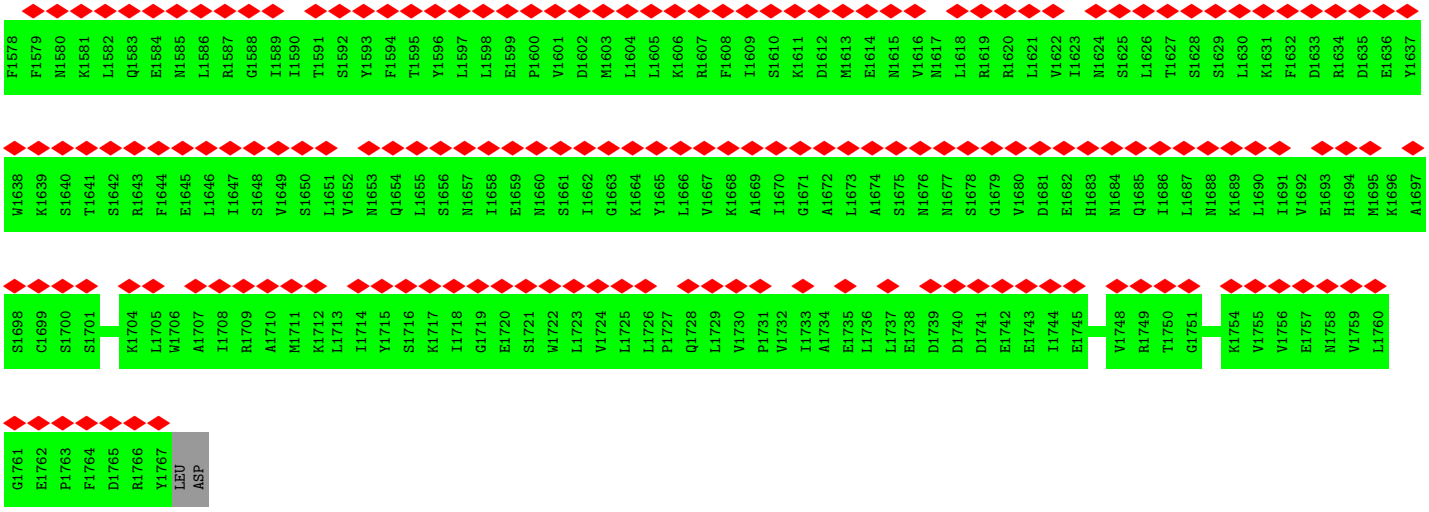
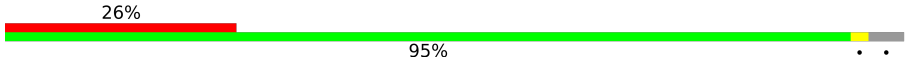
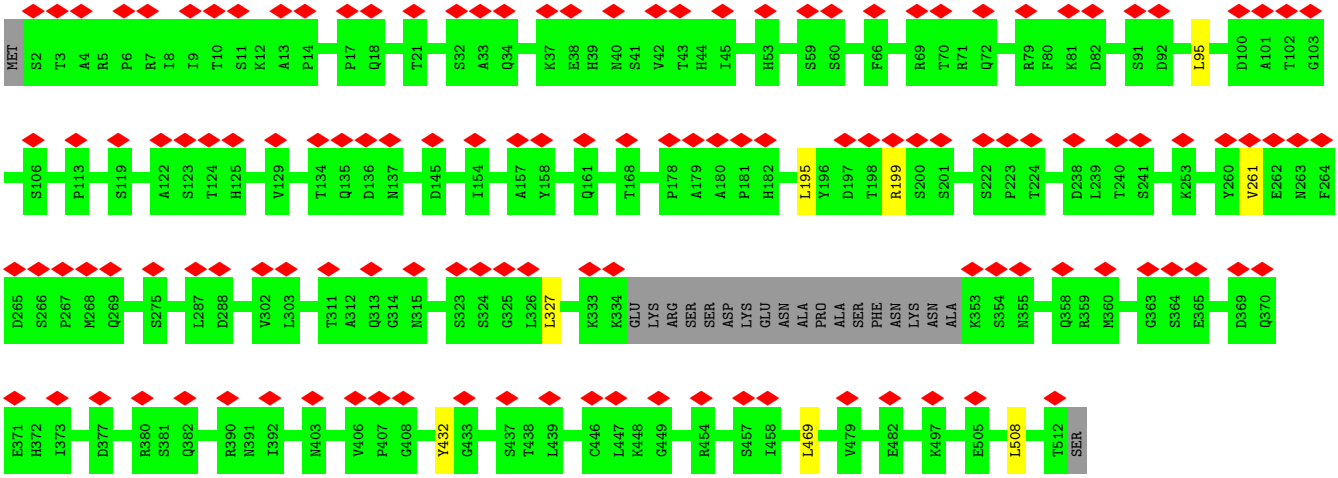


• Molecule 30: U3 small nucleolar RNA-associated protein 15

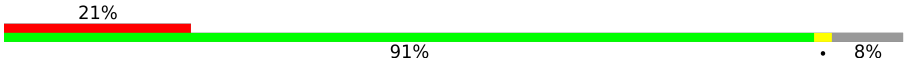
Chain AF:

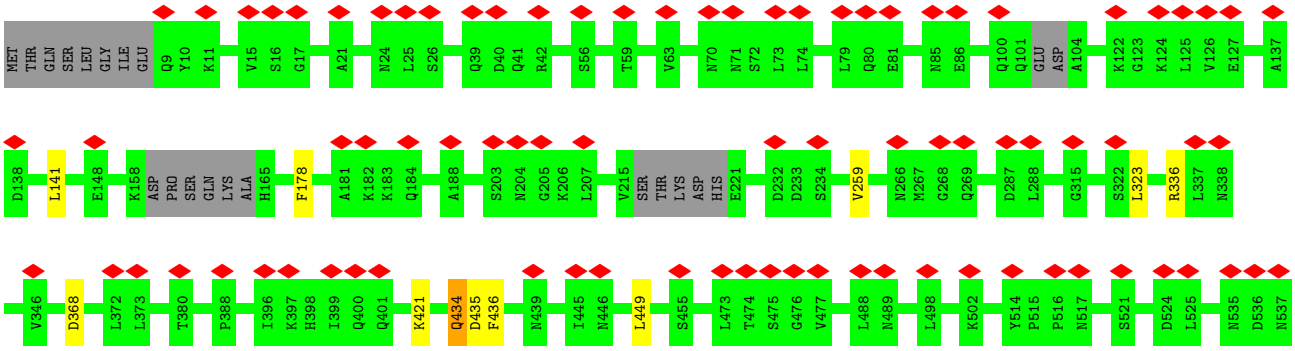


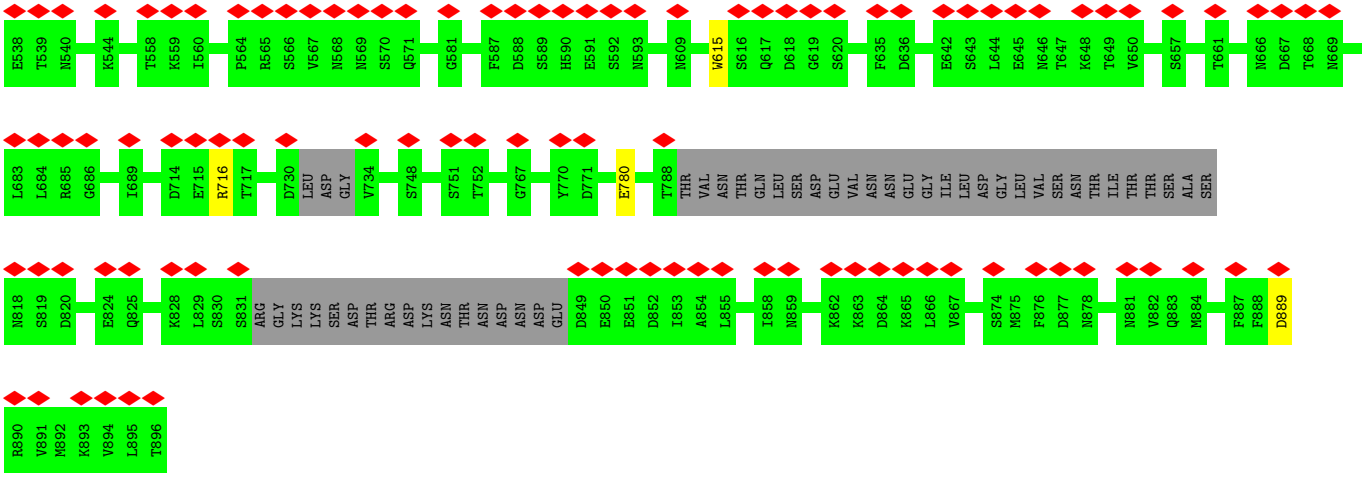


• Molecule 31: NET1-associated nuclear protein 1

Chain AG:

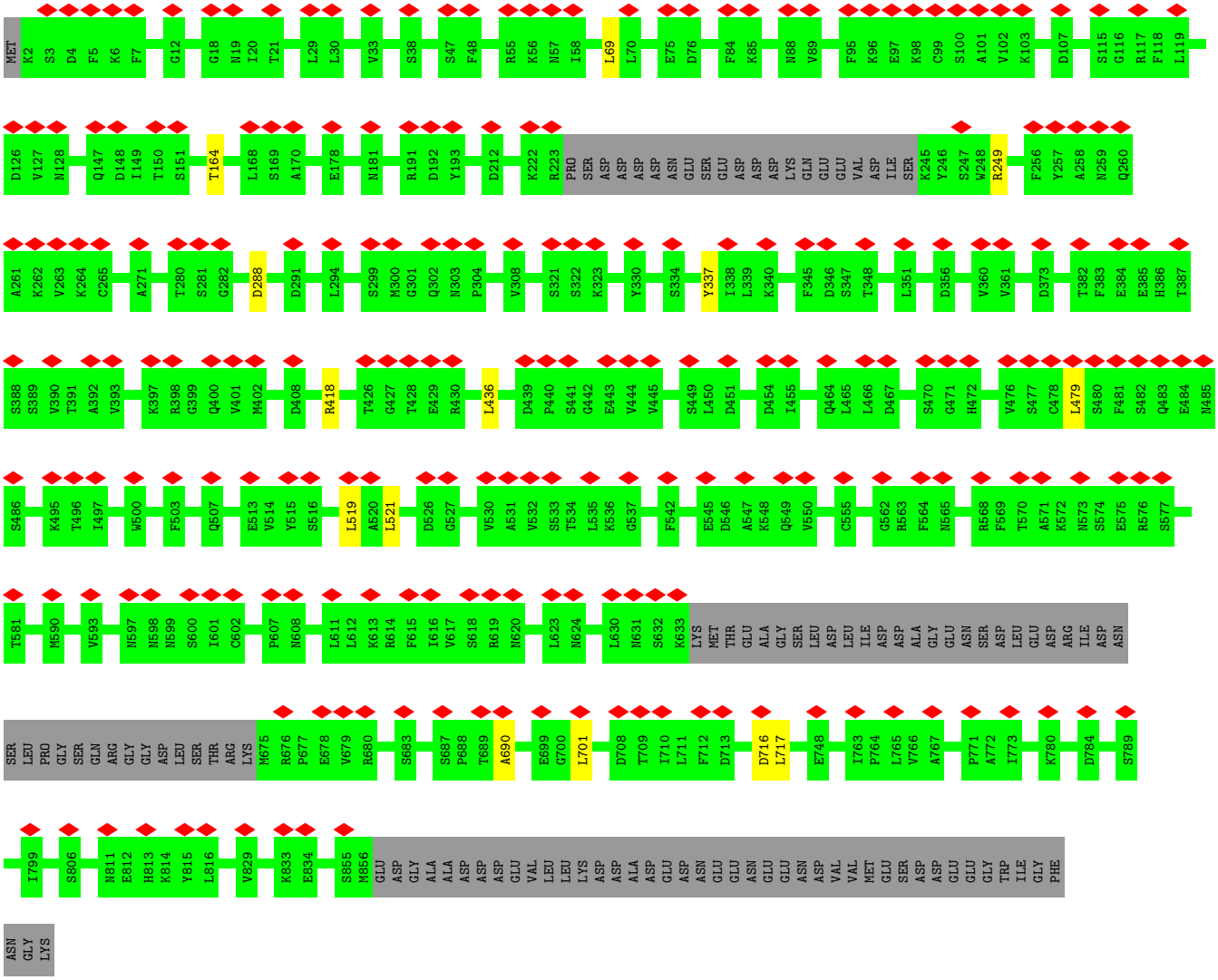






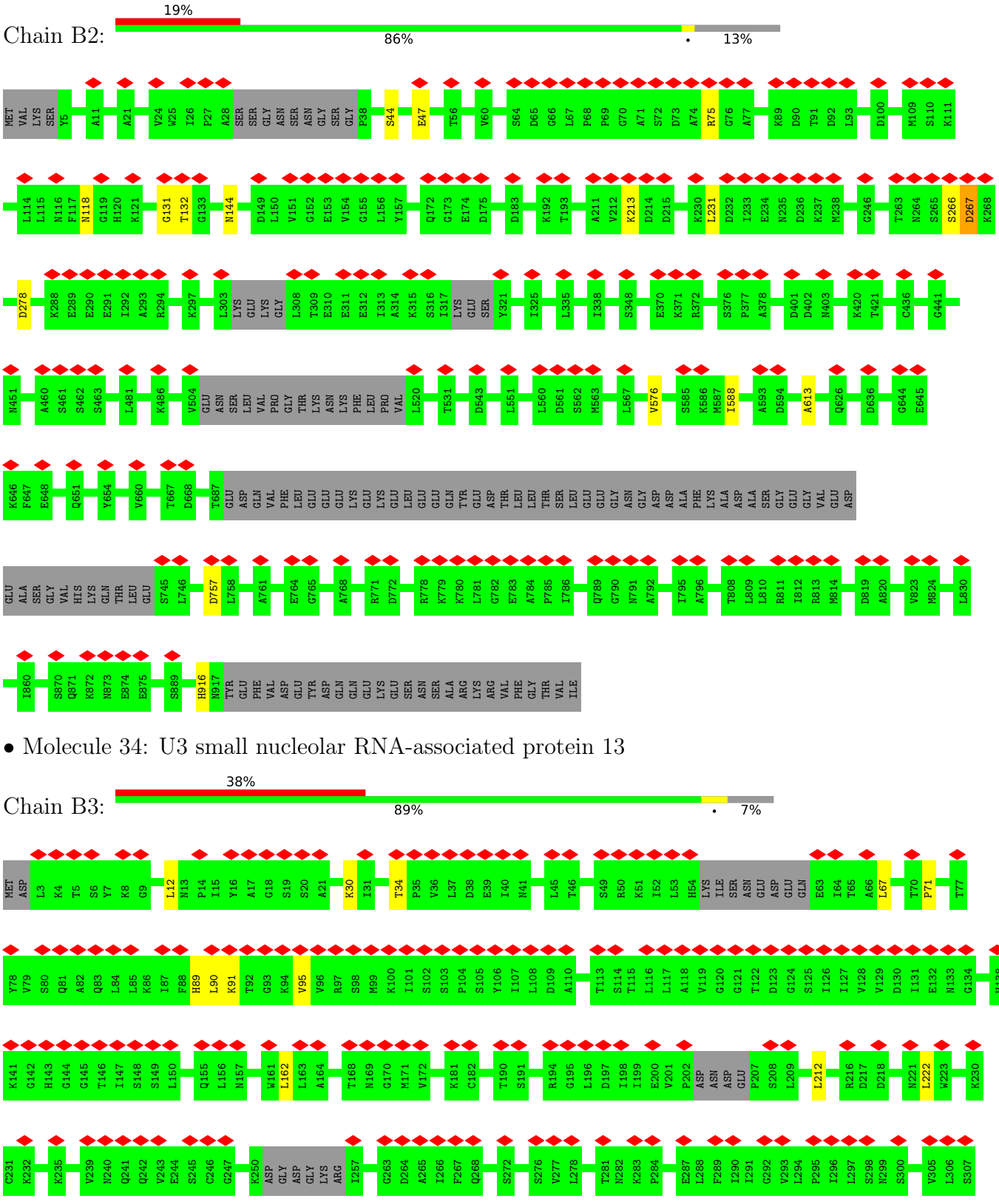
• Molecule 32: Periodic tryptophan protein 2

Chain B1:



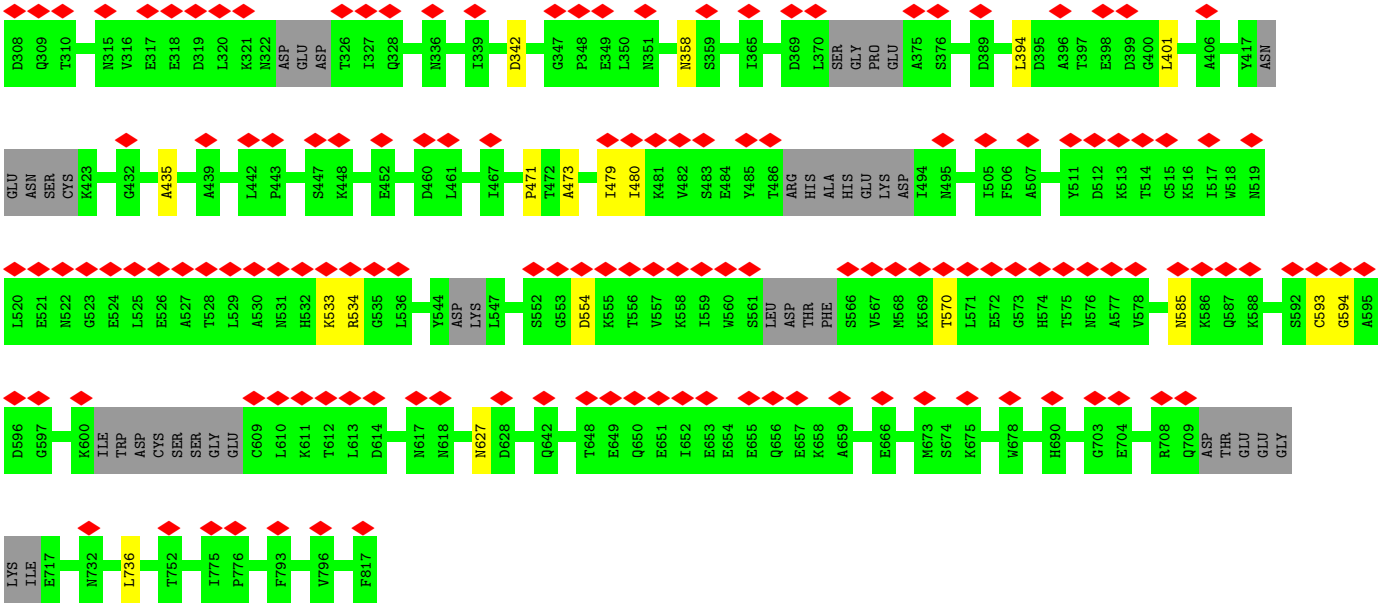
• Molecule 33: U3 small nucleolar RNA-associated protein 12

Chain B2:



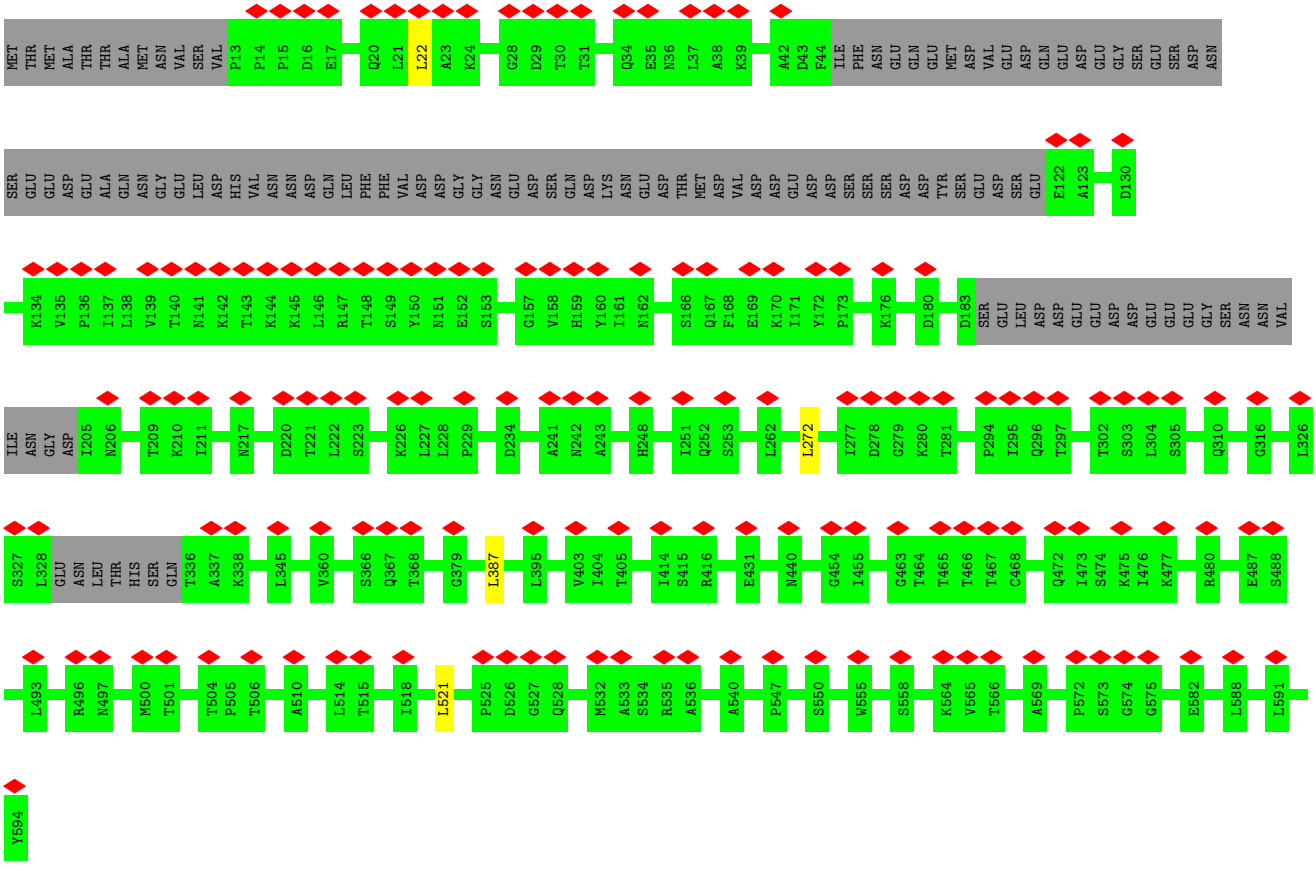
• Molecule 34: U3 small nucleolar RNA-associated protein 13

Chain B3:



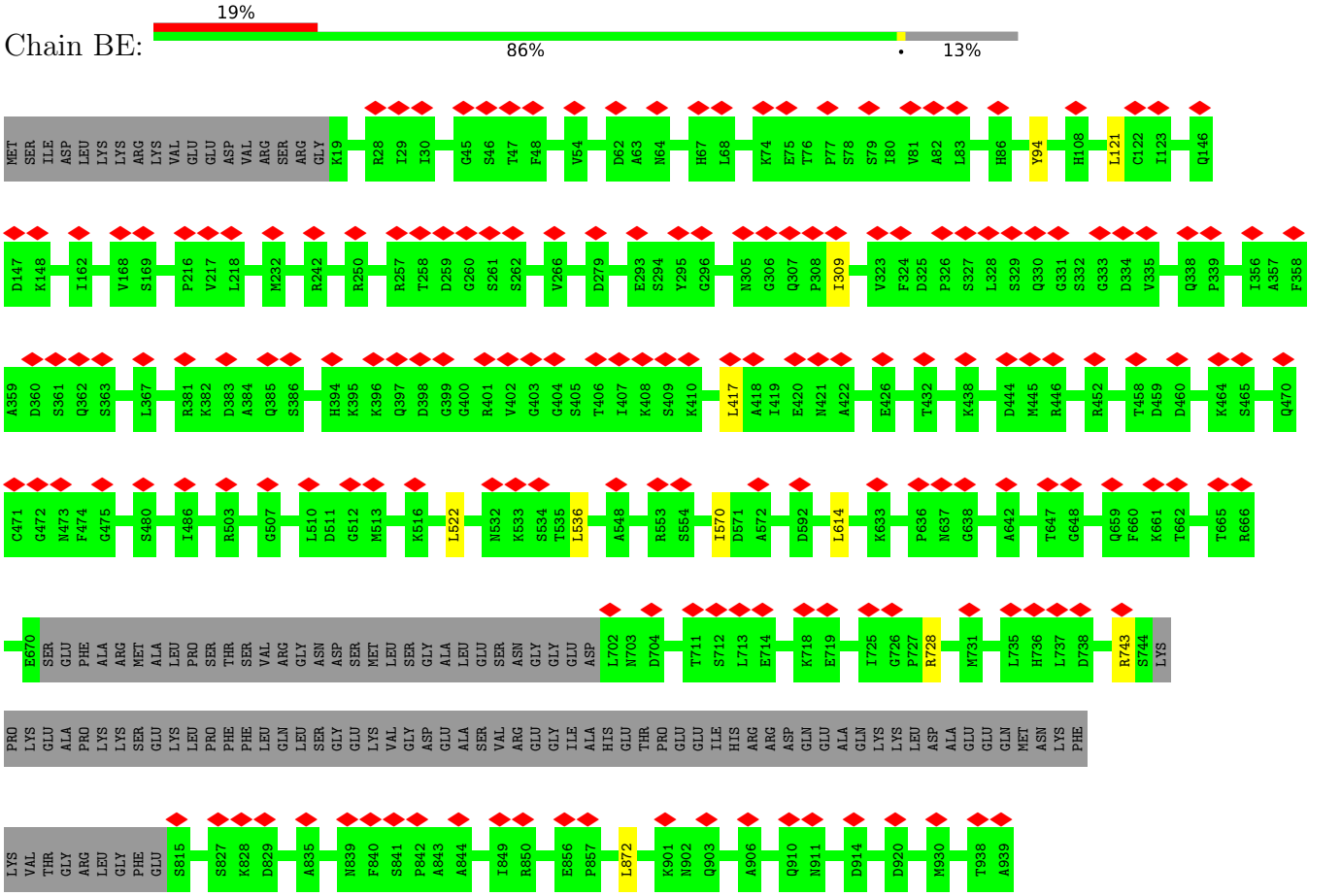
• Molecule 35: U3 small nucleolar RNA-associated protein 18

Chain B8:



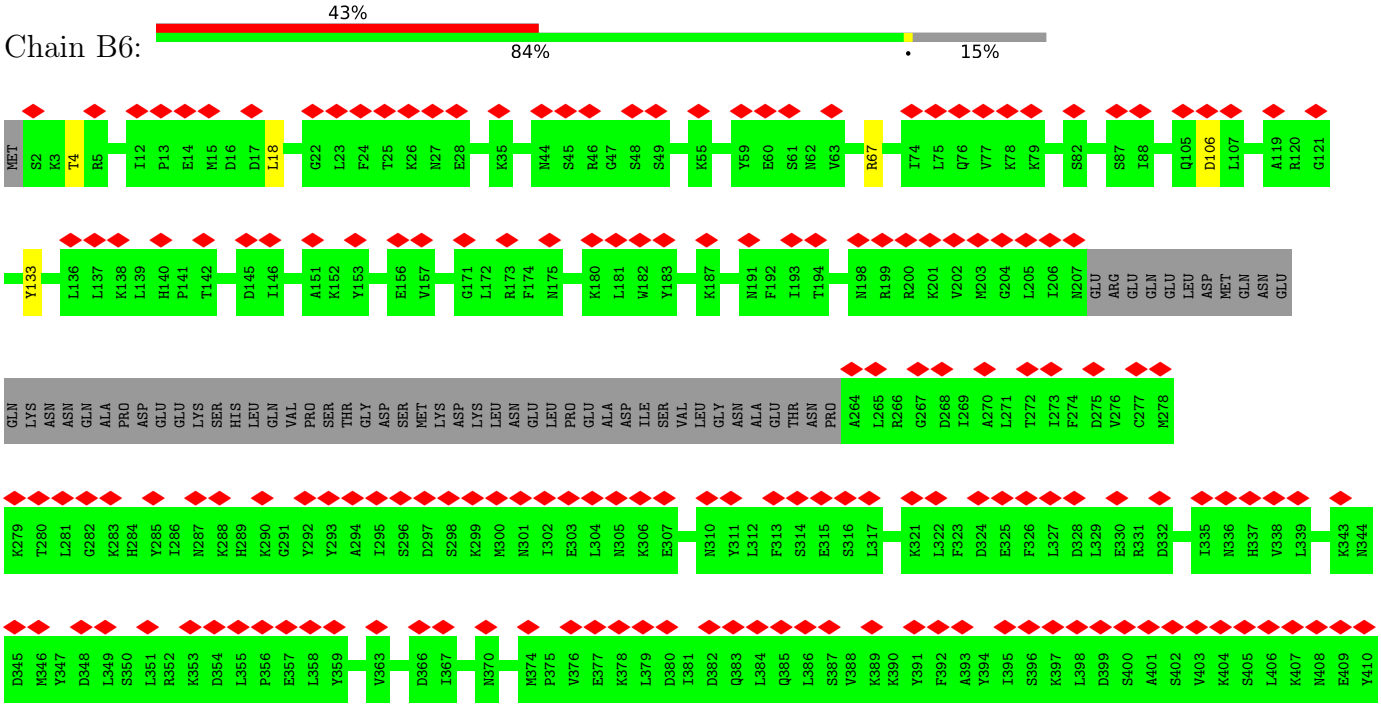
• Molecule 36: U3 small nucleolar RNA-associated protein 21

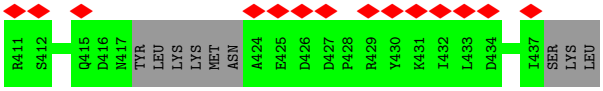
Chain BE:



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

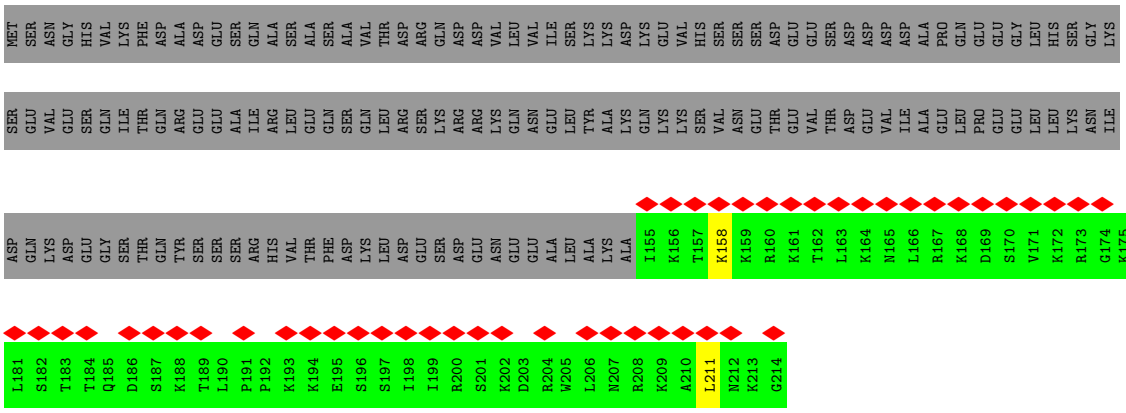
Chain B6:





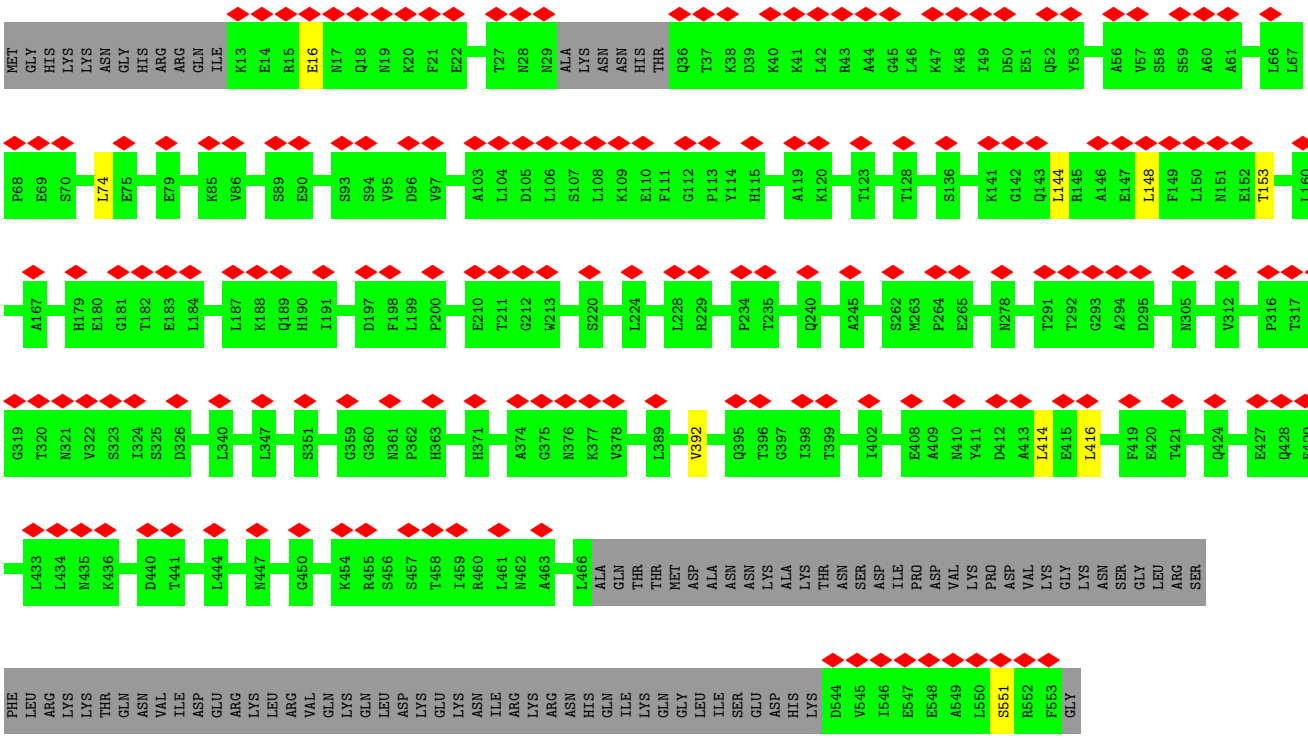
• Molecule 38: Bud site selection protein 21

Chain 5B:



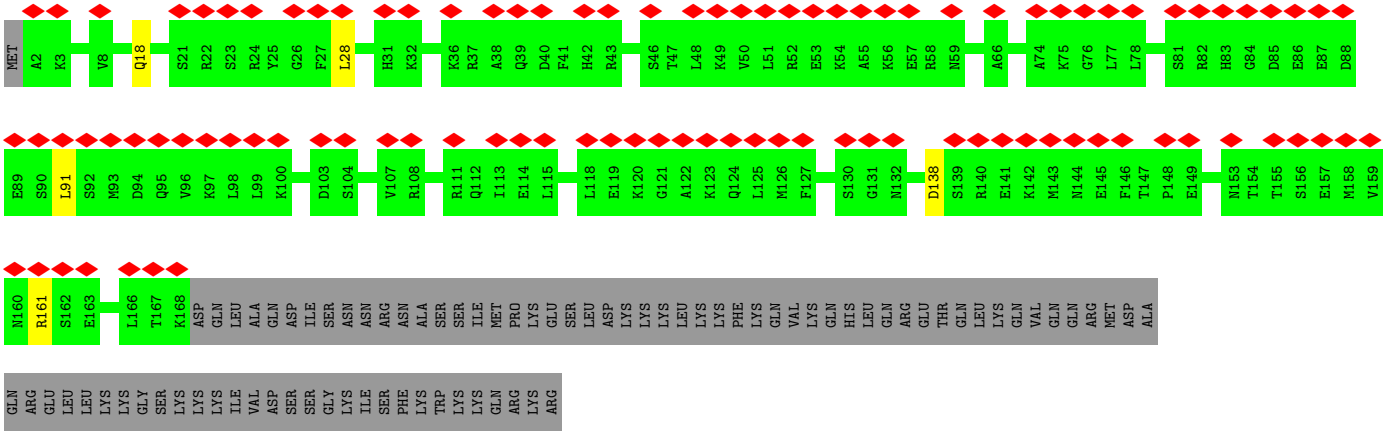
• Molecule 39: U3 small nucleolar RNA-associated protein 7

Chain 5C:



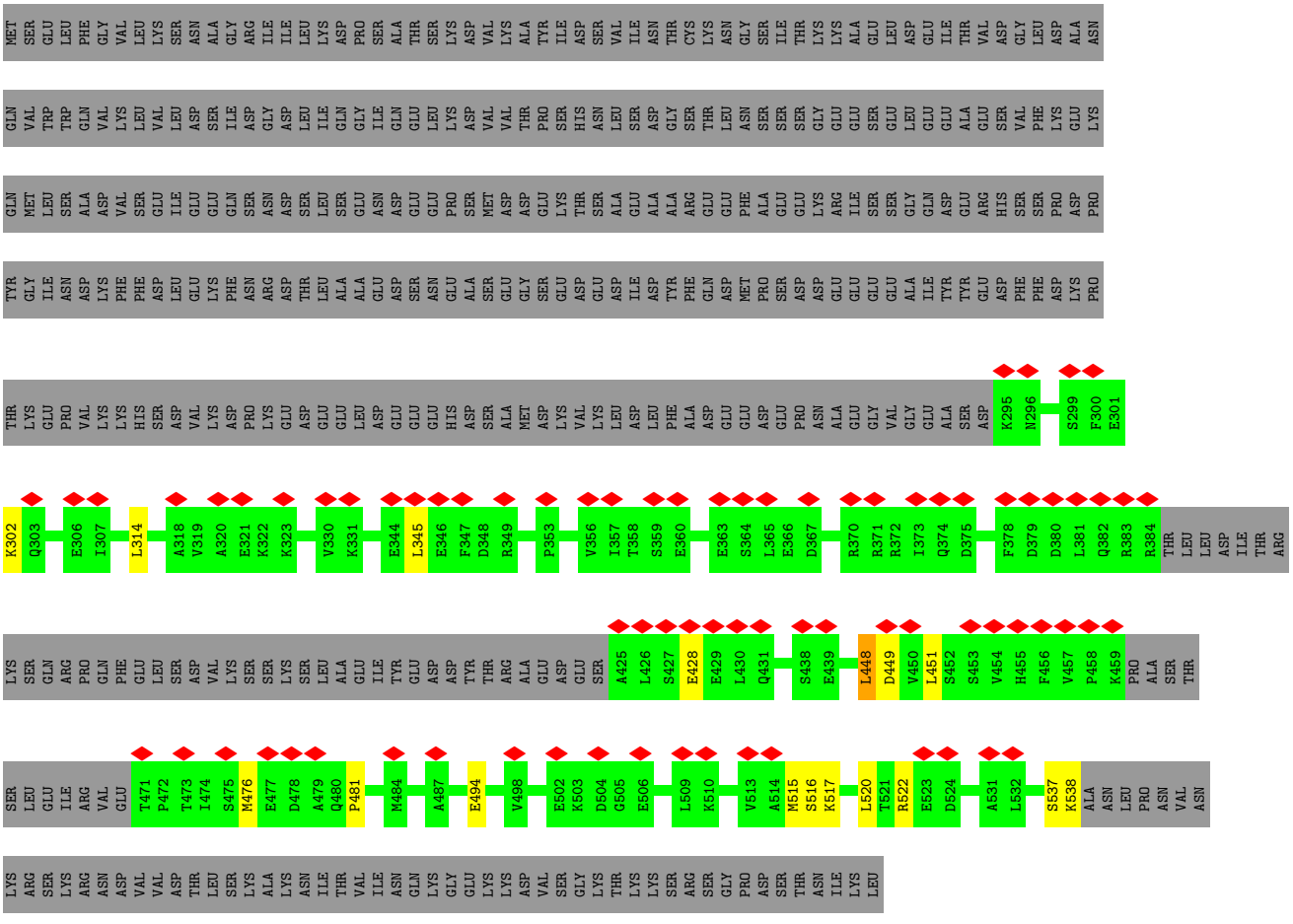
• Molecule 40: U3 small nucleolar RNA-associated protein 11

Chain 5D:



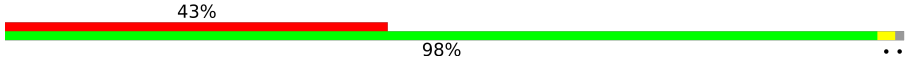
• Molecule 41: U3 small nucleolar RNA-associated protein MPP10

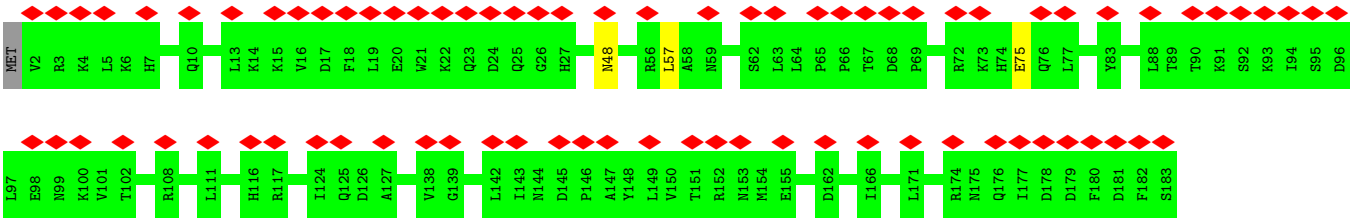
Chain 5E:



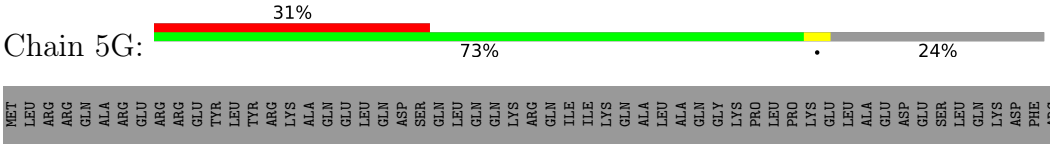
• Molecule 42: U3 small nucleolar ribonucleoprotein protein IMP3

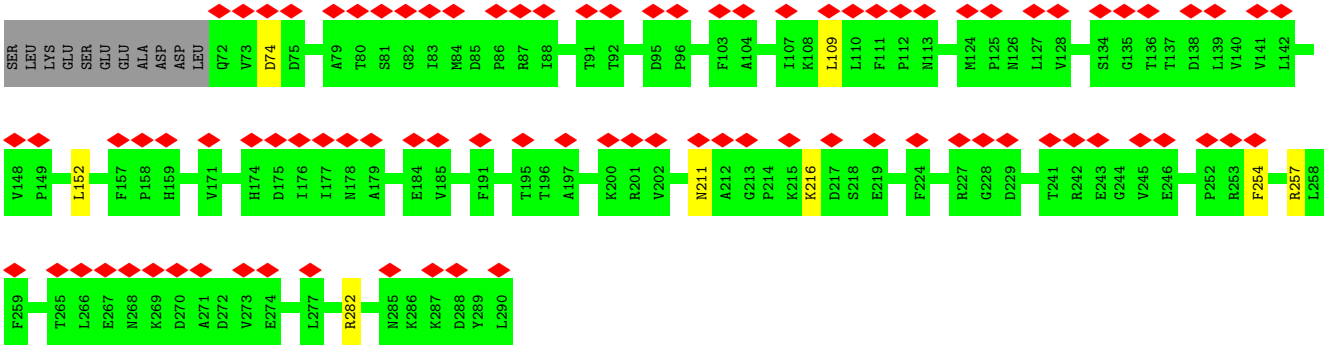
Chain 5F:



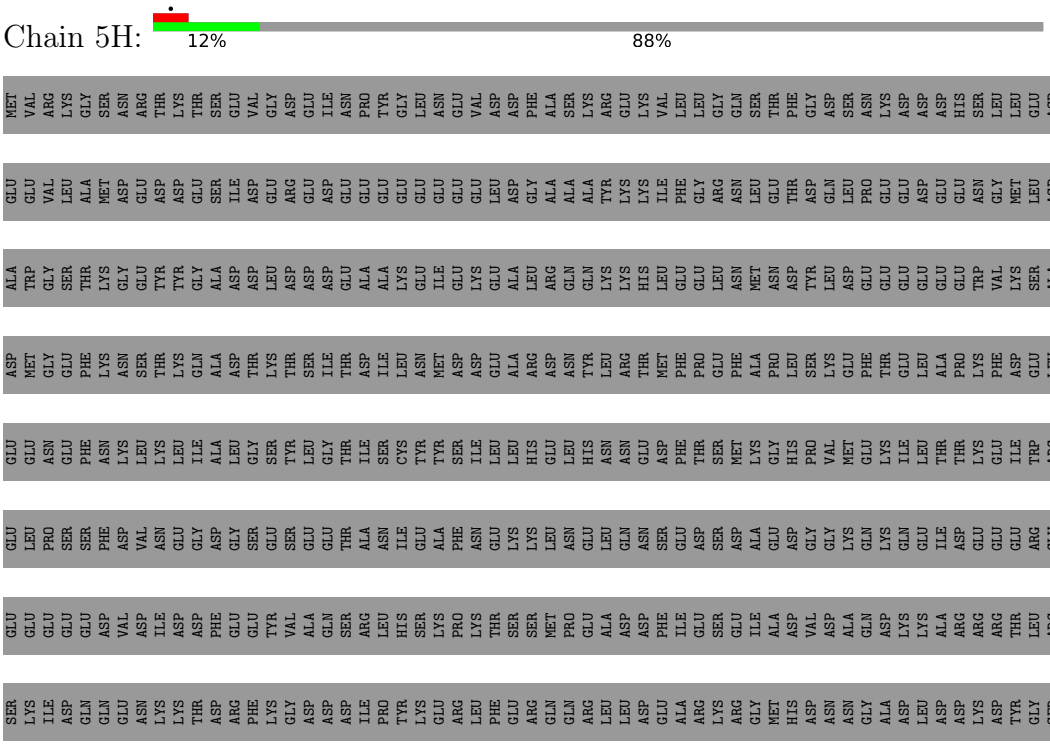


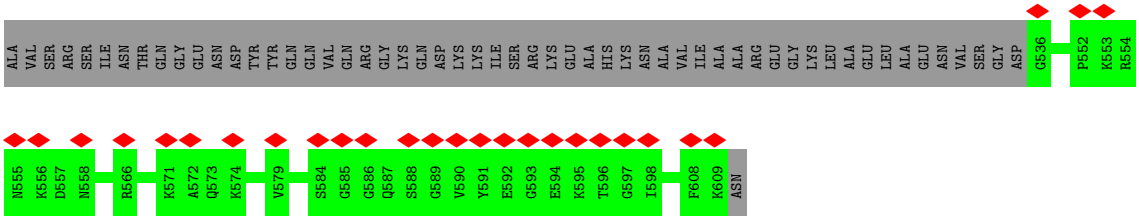
• Molecule 43: U3 small nucleolar ribonucleoprotein protein IMP4



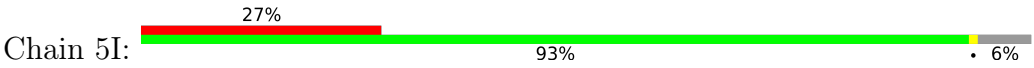


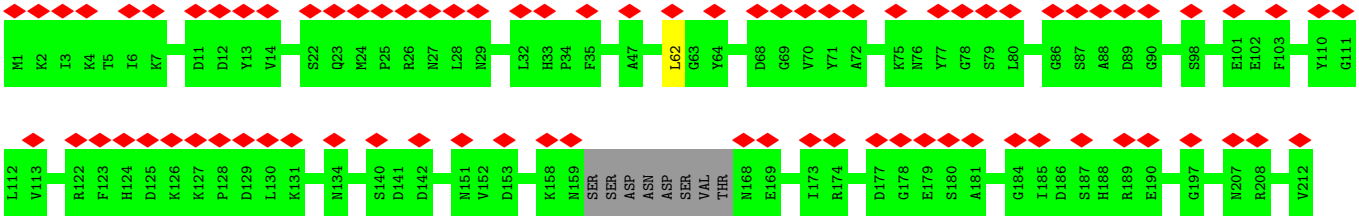
• Molecule 44: Something about silencing protein 10



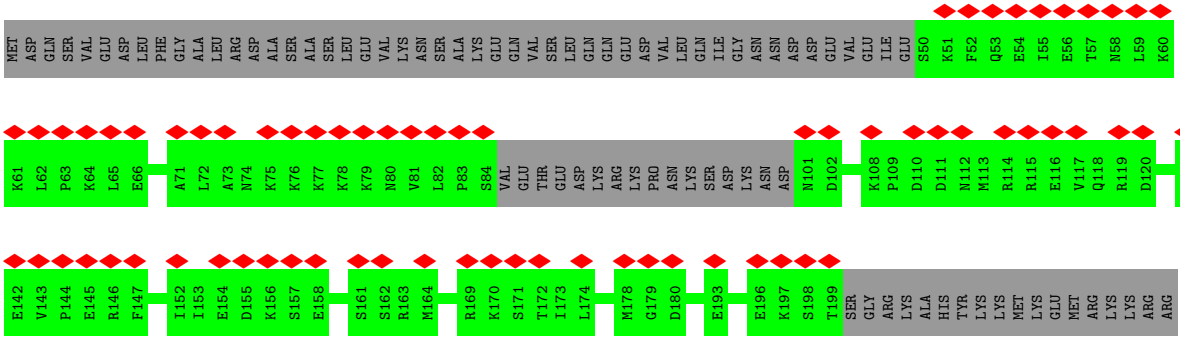


• Molecule 45: Protein SOF1

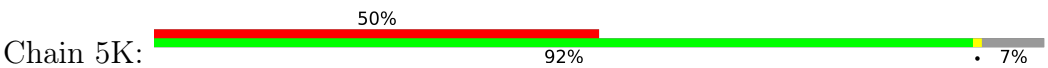


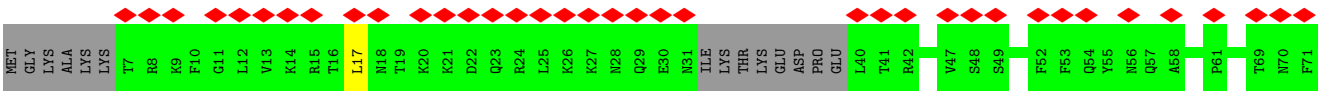


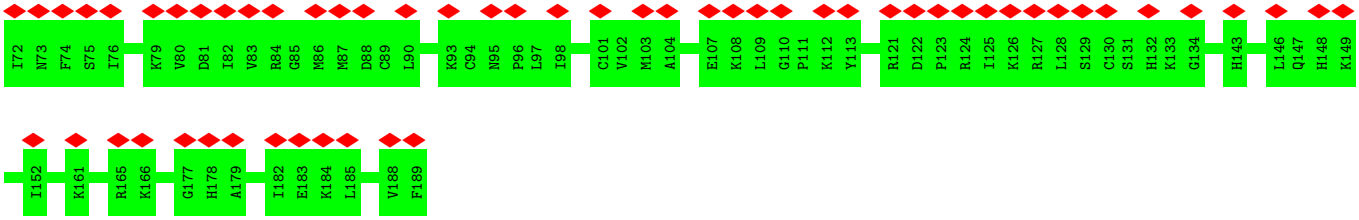
• Molecule 46: rRNA-processing protein FCF2



• Molecule 47: rRNA-processing protein FCF1

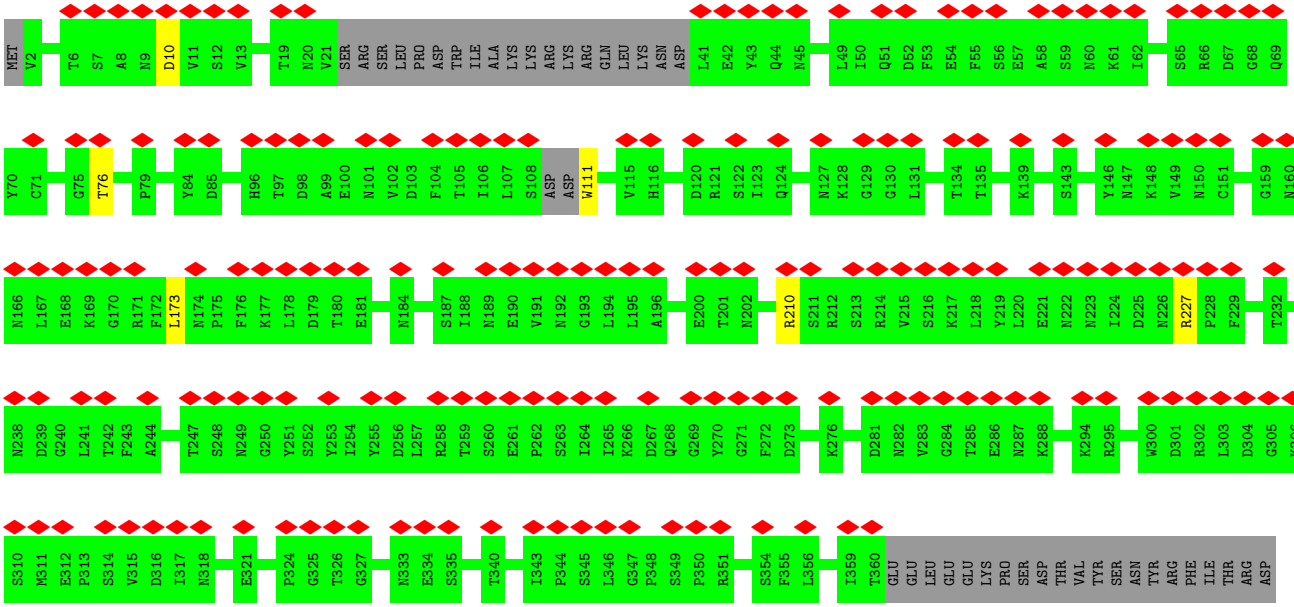






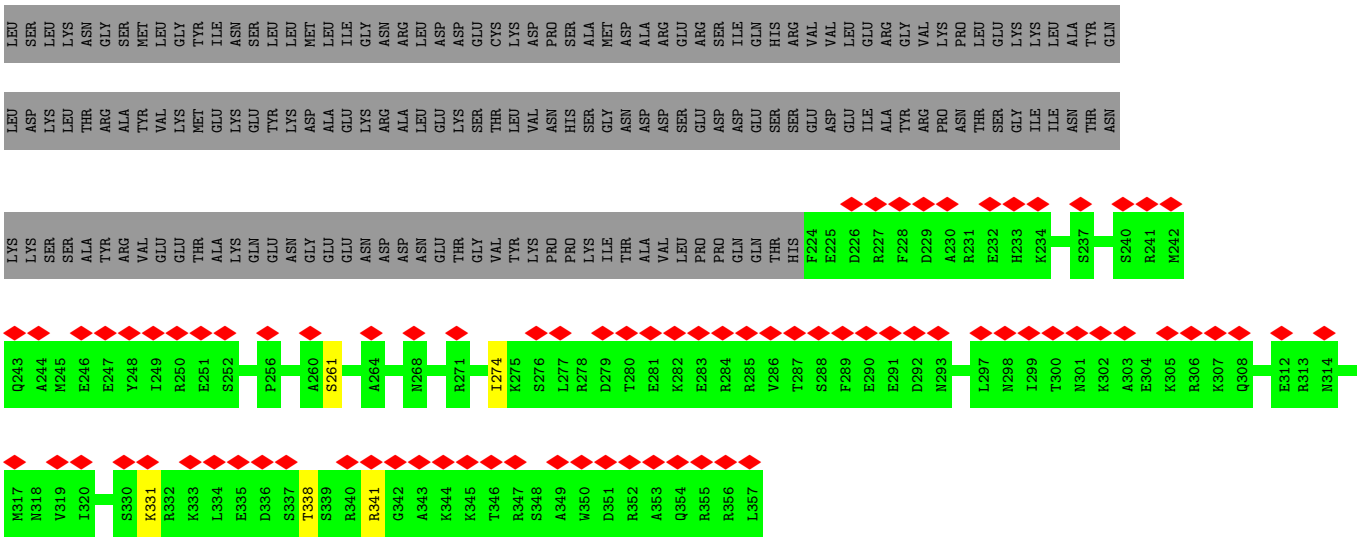
• Molecule 48: Ribosome biogenesis protein ENP2

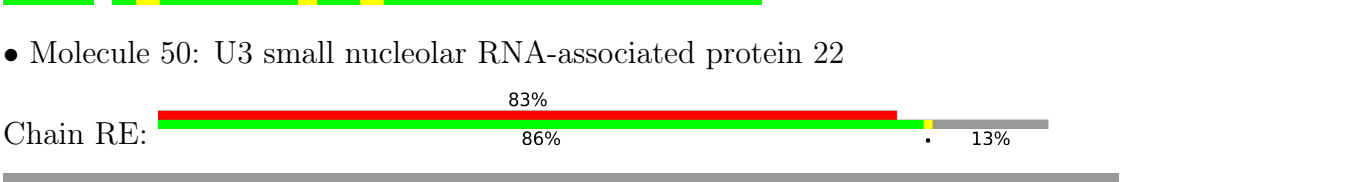
Chain RA:



• Molecule 49: U3 small nucleolar ribonucleoprotein protein LCP5

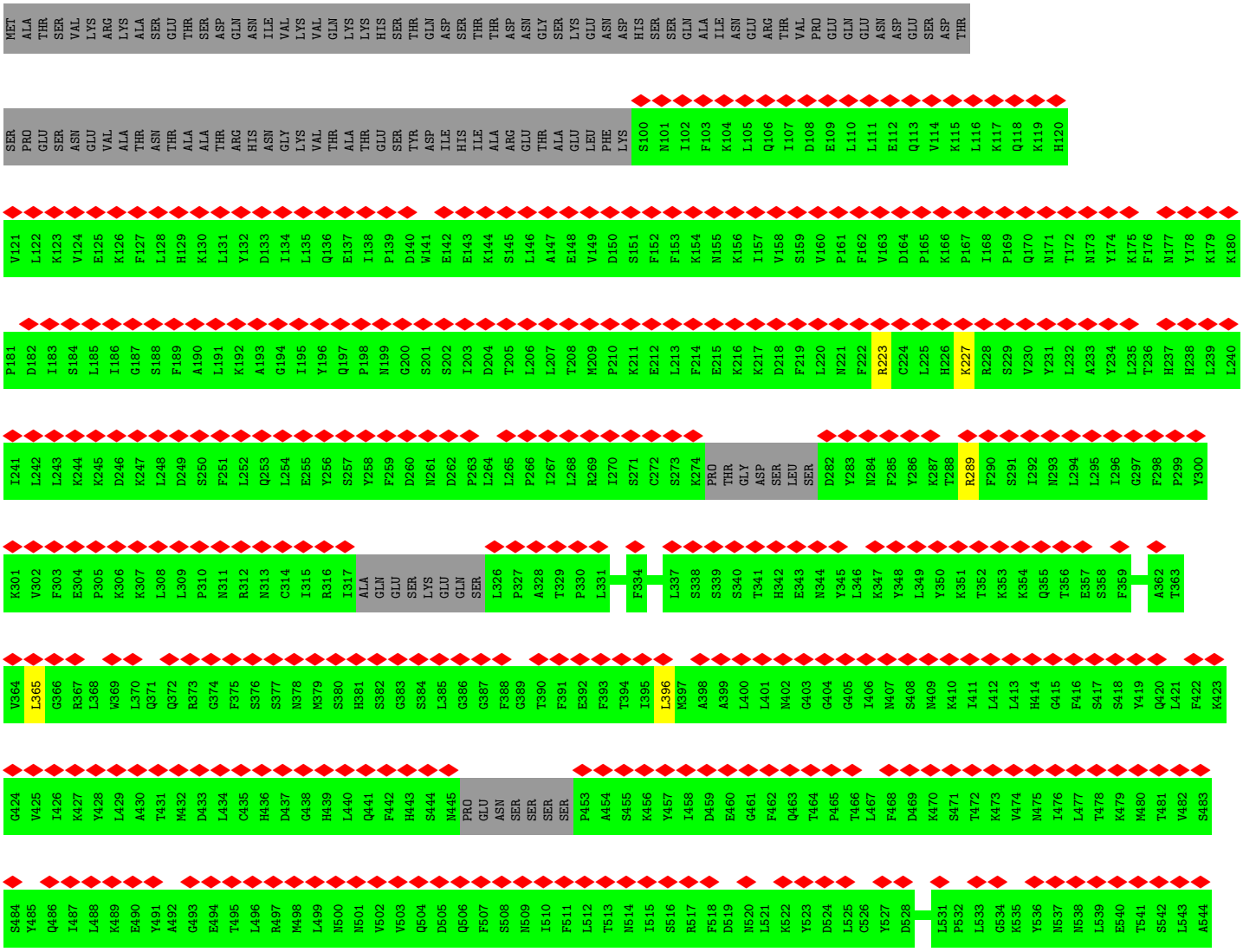
Chain RB:

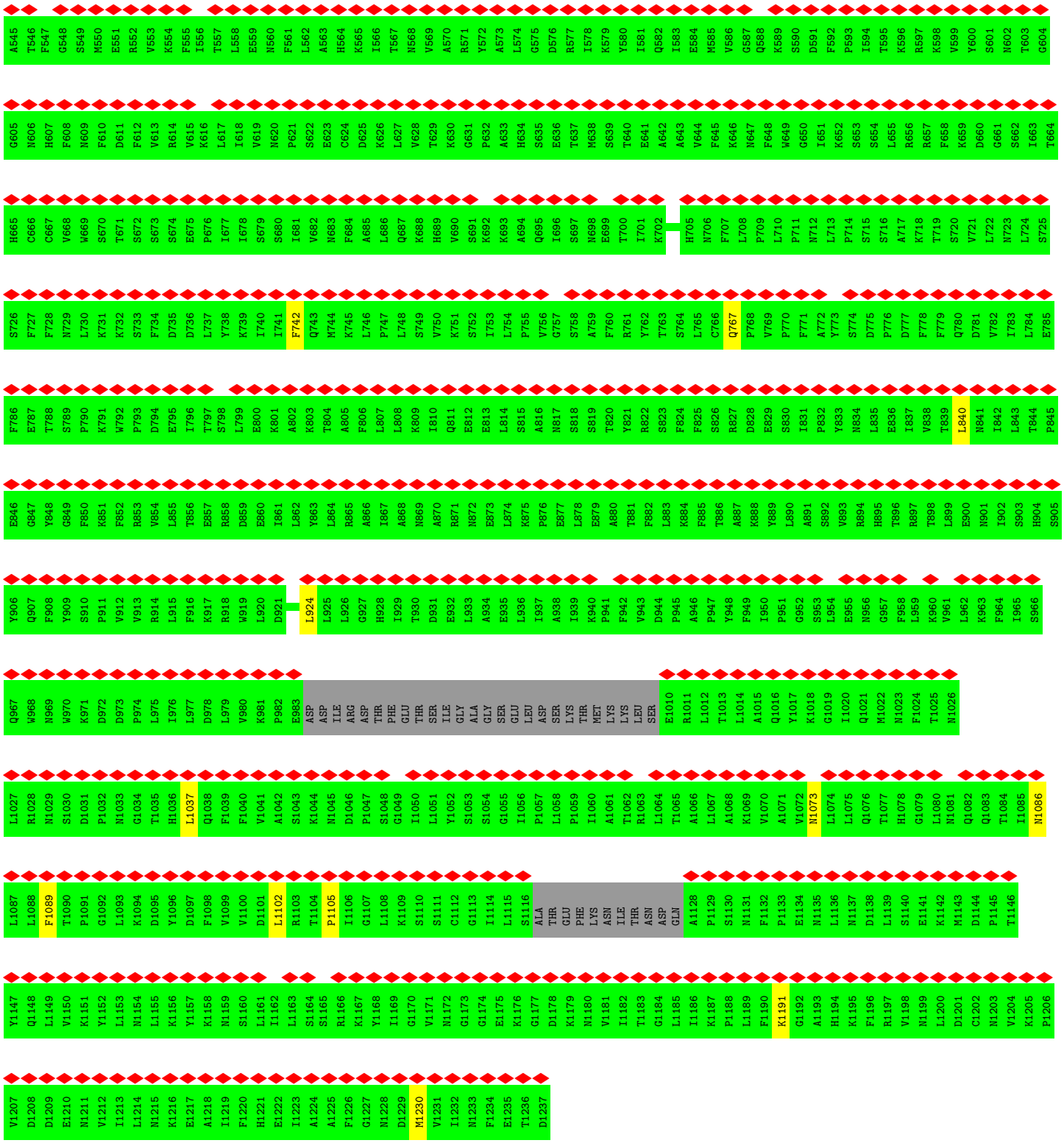




• Molecule 50: U3 small nucleolar RNA-associated protein 22

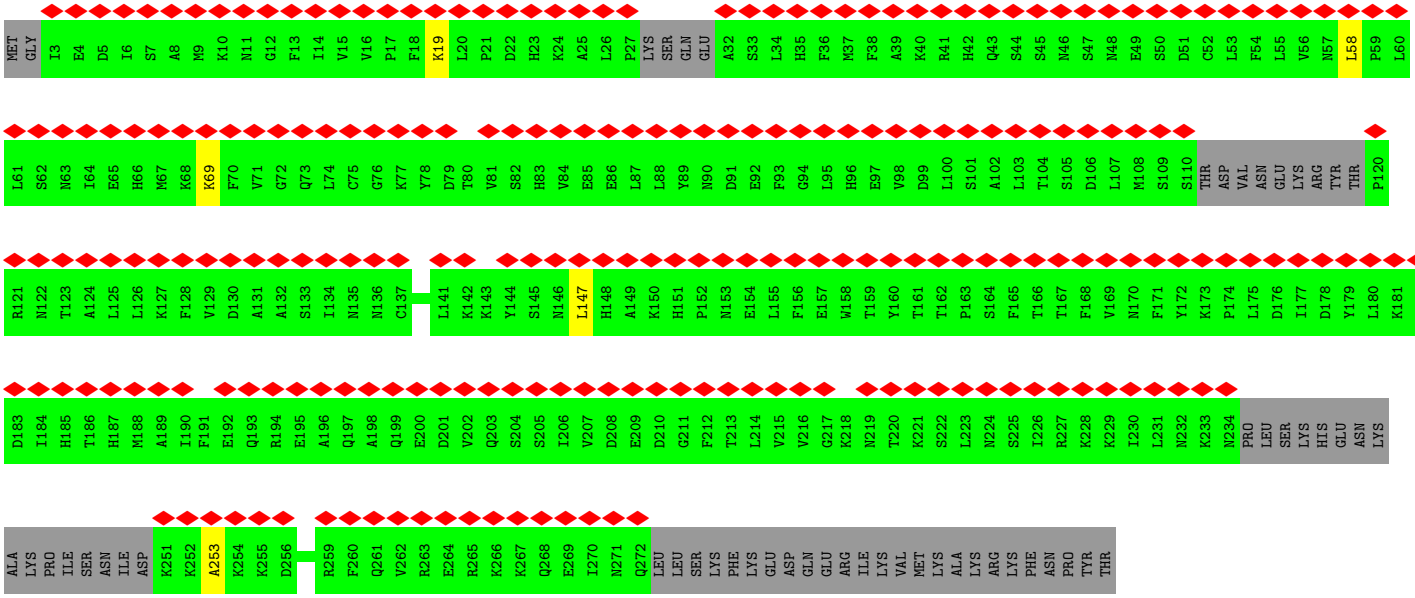
Chain RE:



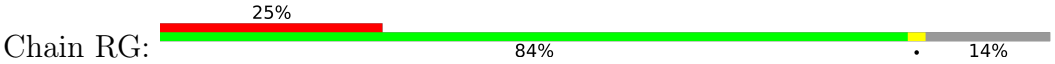


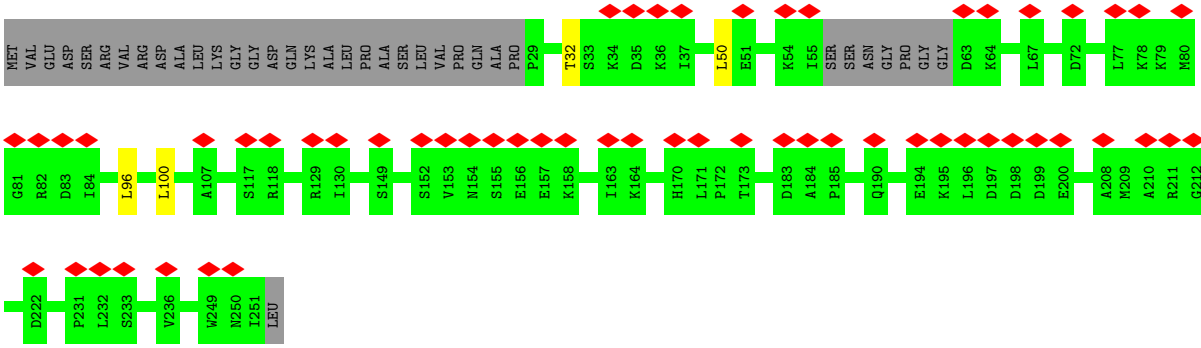
• Molecule 51: Ribosomal RNA-processing protein 7

Chain RF:

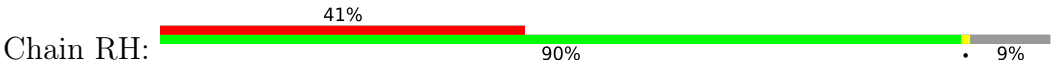


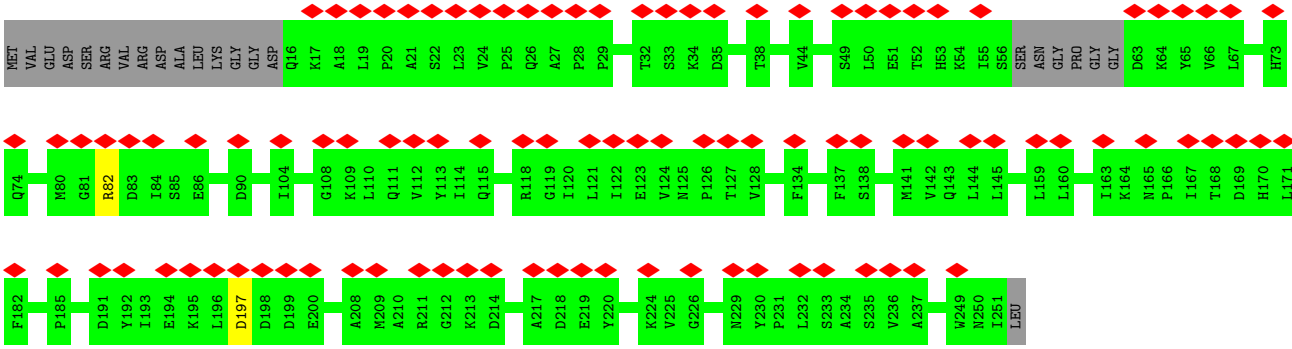
• Molecule 52: Ribosomal RNA small subunit methyltransferase NEP1





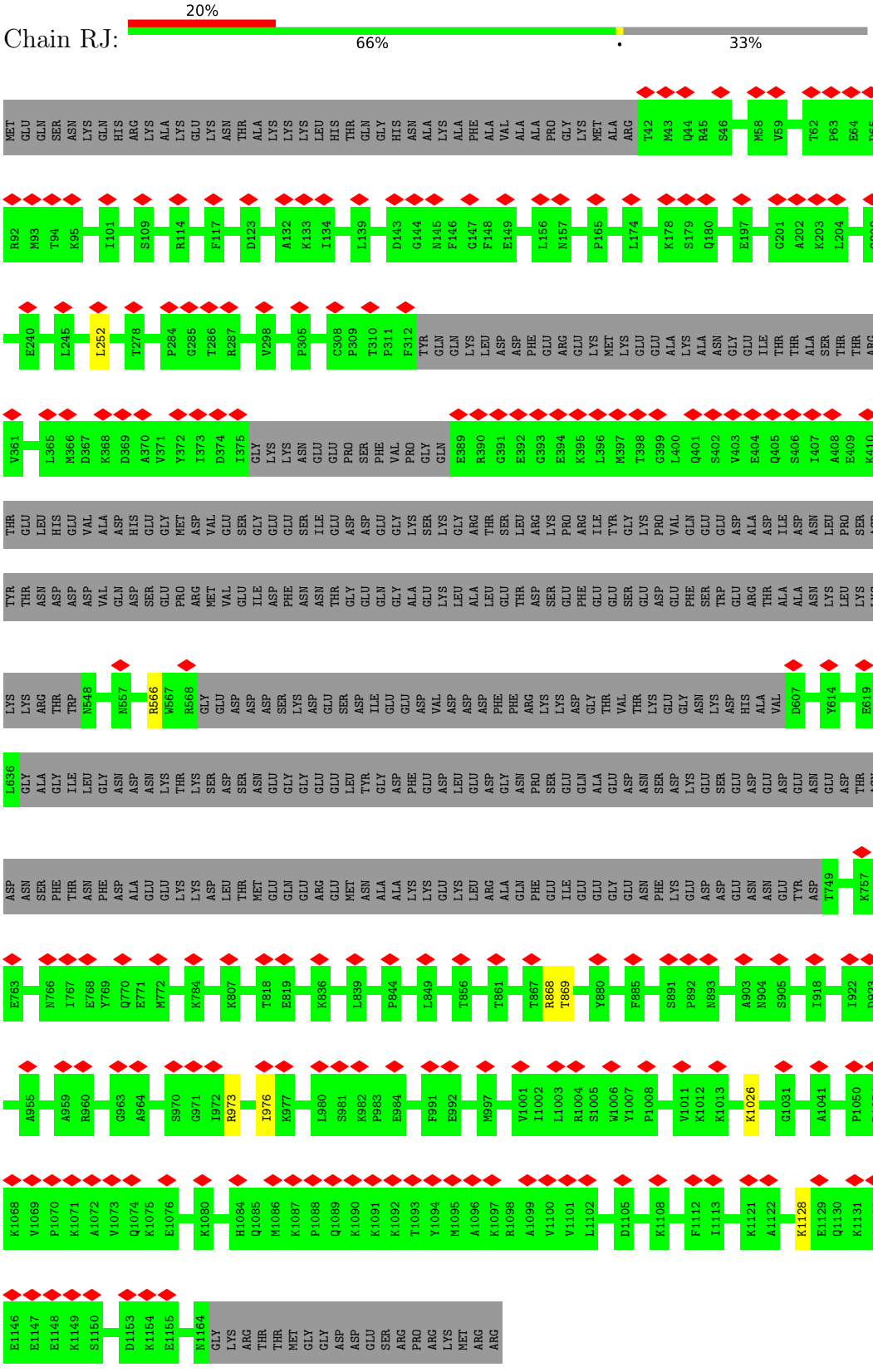
• Molecule 52: Ribosomal RNA small subunit methyltransferase NEP1





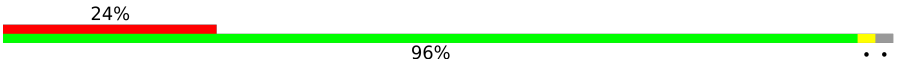
• Molecule 53: Ribosome biogenesis protein BMS1

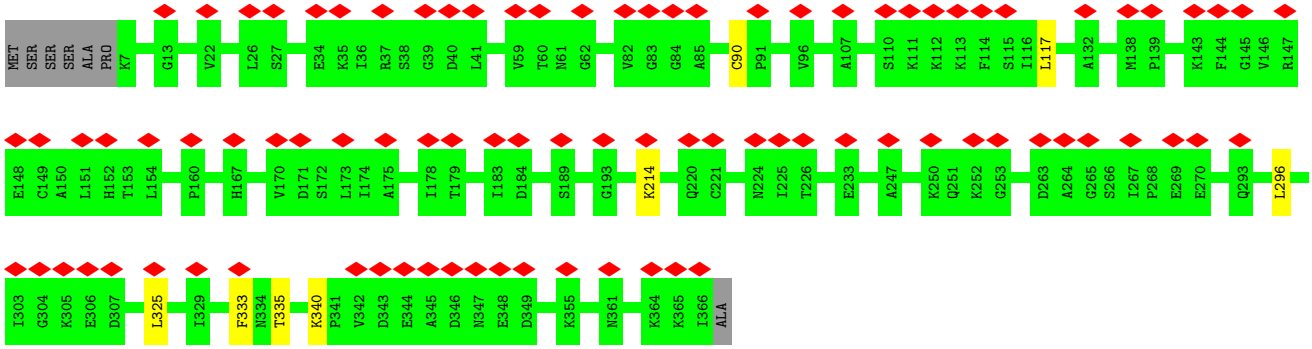
Chain RJ:



• Molecule 54: RNA 3'-terminal phosphate cyclase-like protein

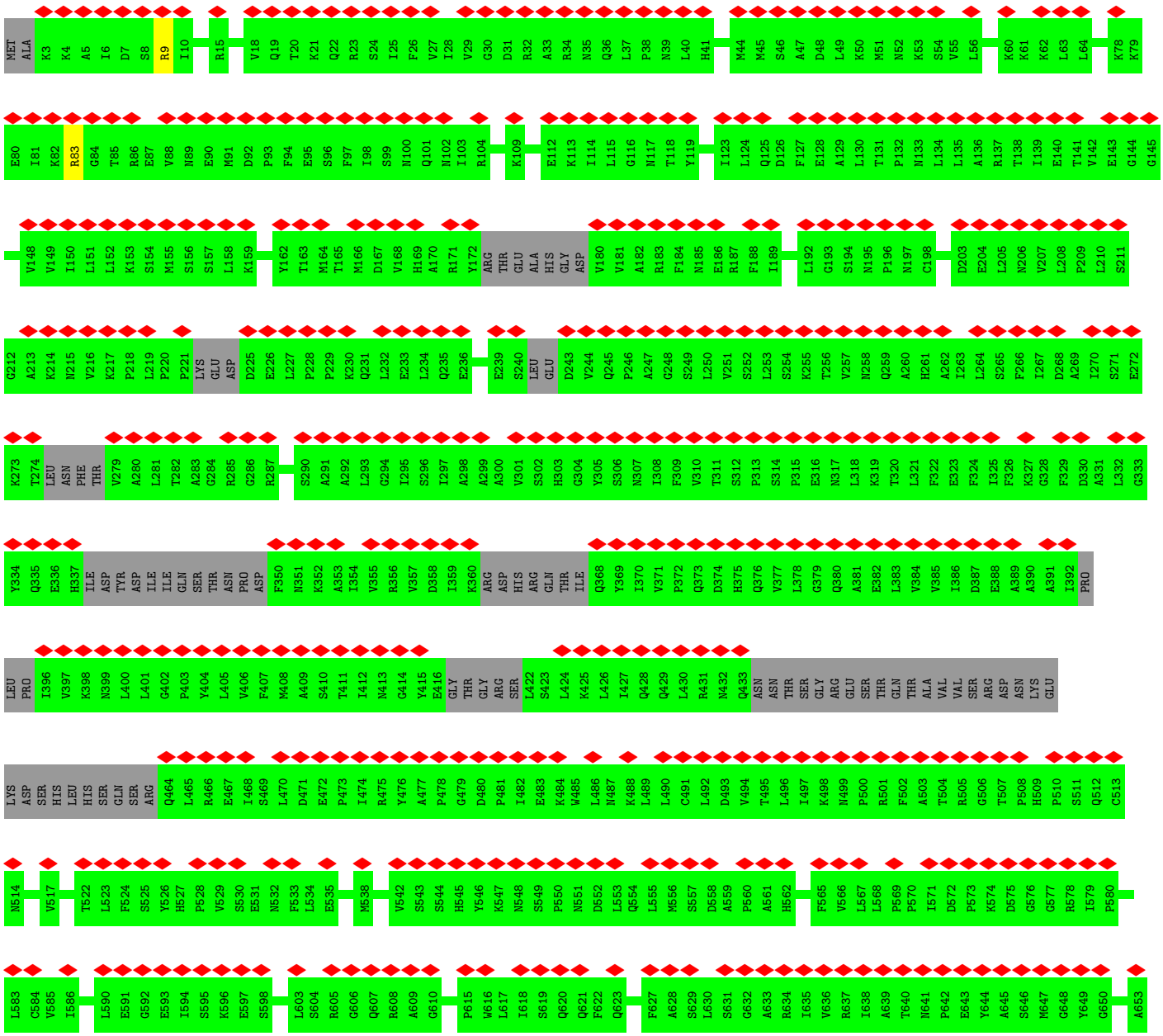
Chain RK:

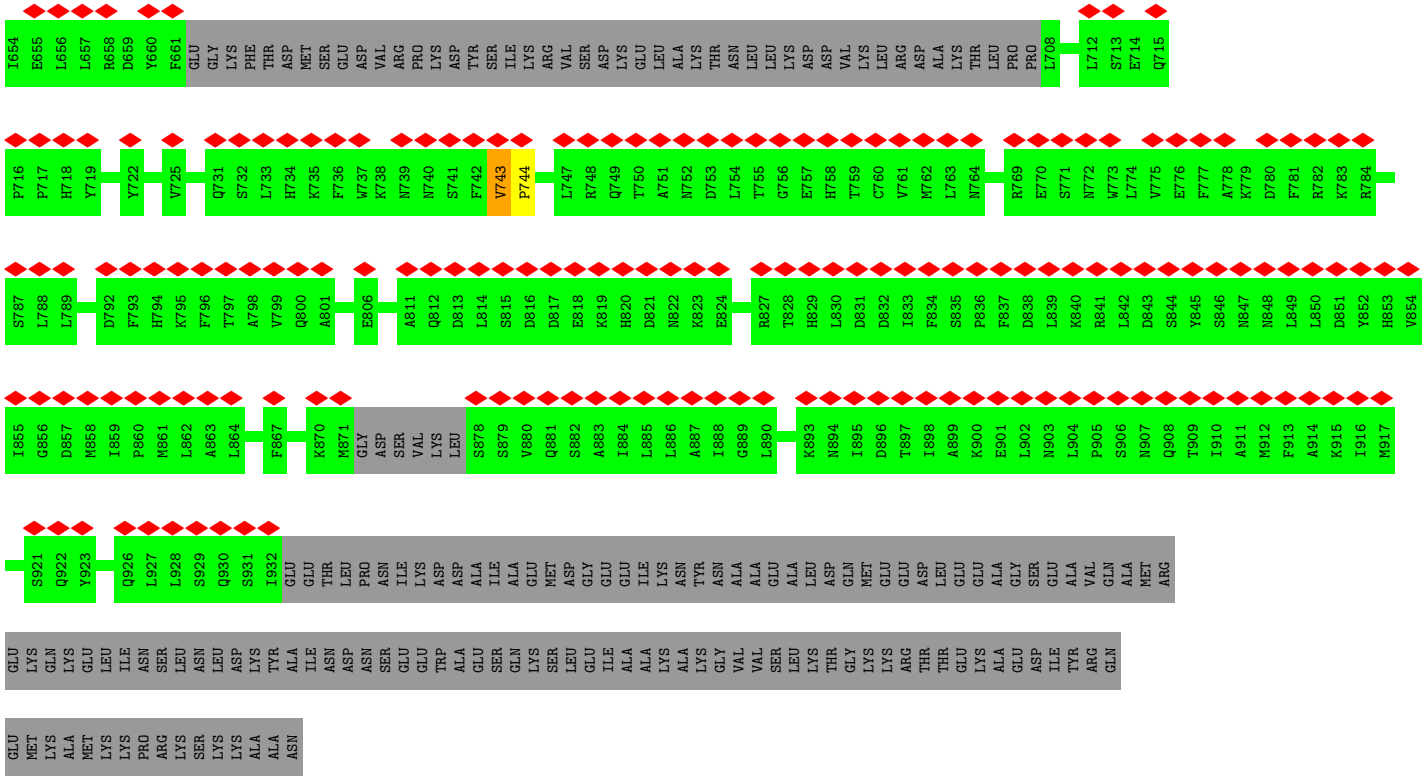




• Molecule 55: RNA cytidine acetyltransferase

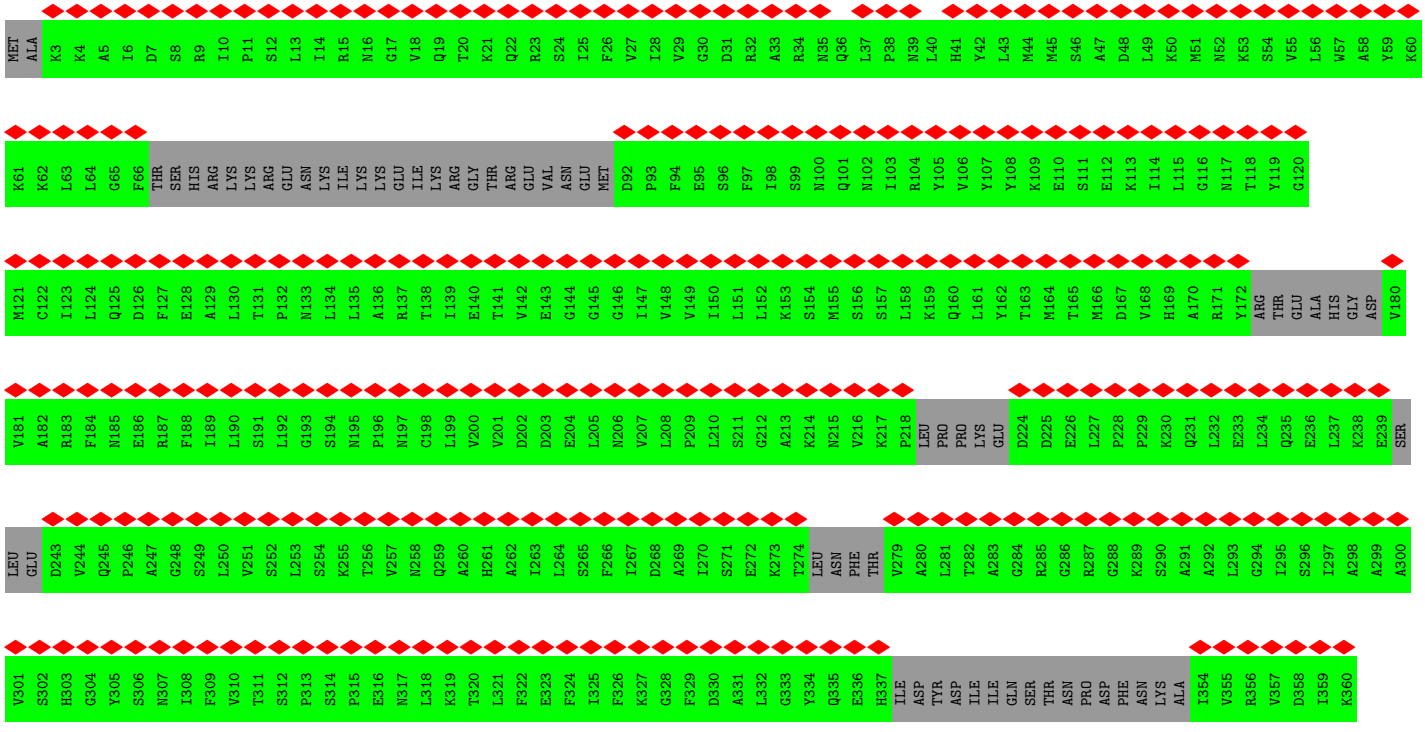
Chain RL:

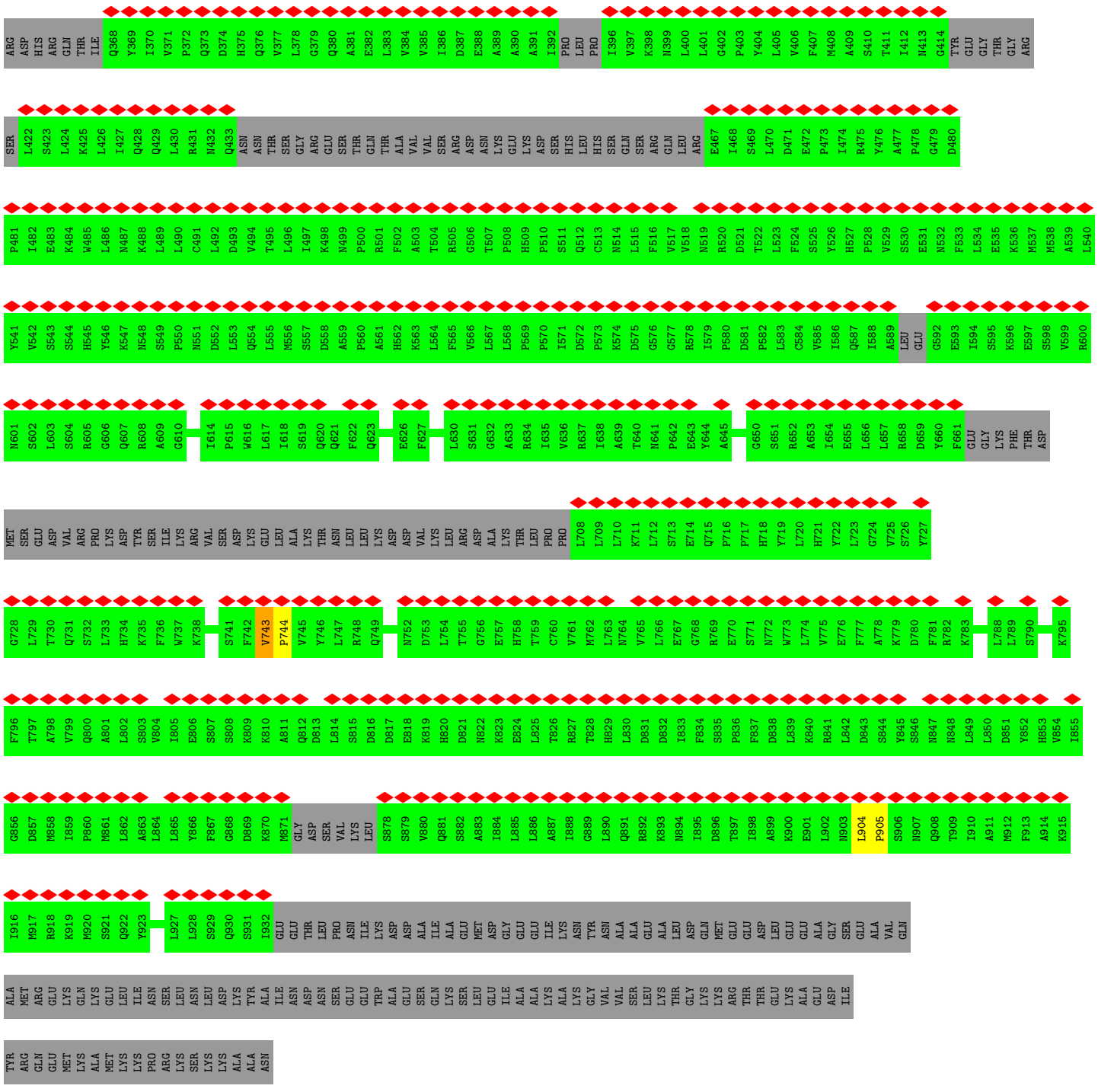




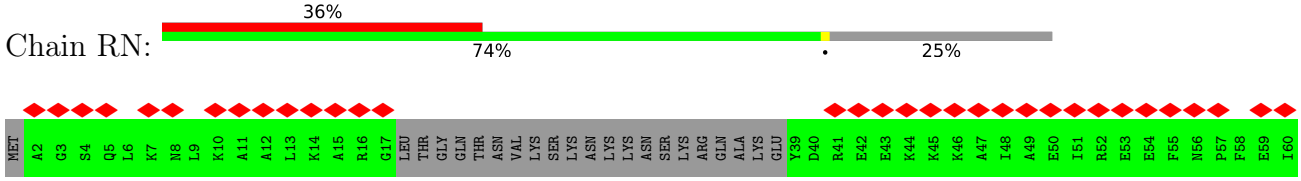
• Molecule 55: RNA cytidine acetyltransferase

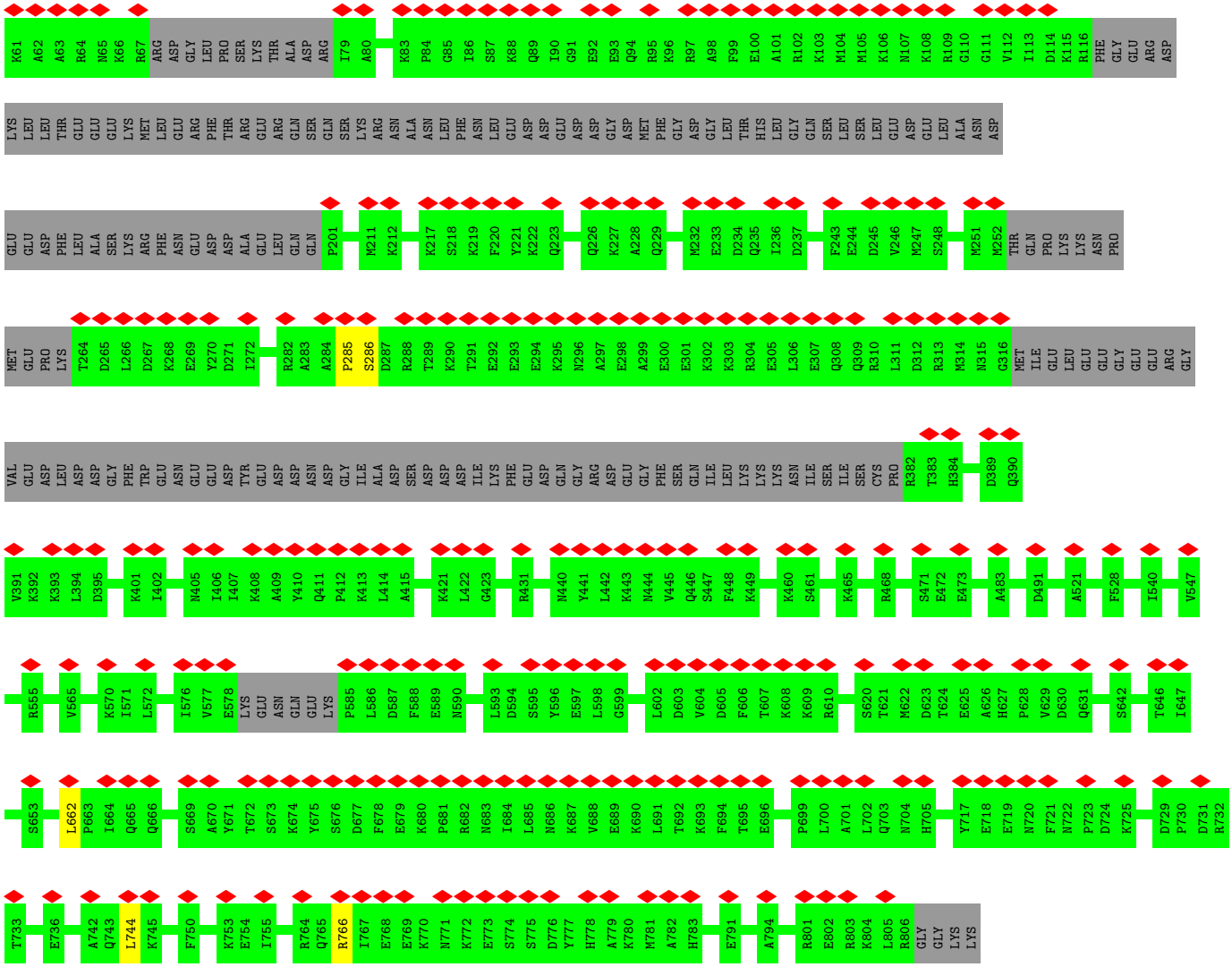
Chain RM:





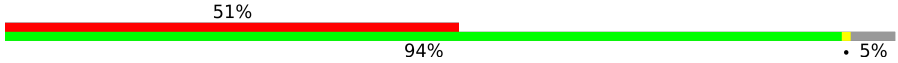
• Molecule 56: Nucleolar complex protein 14

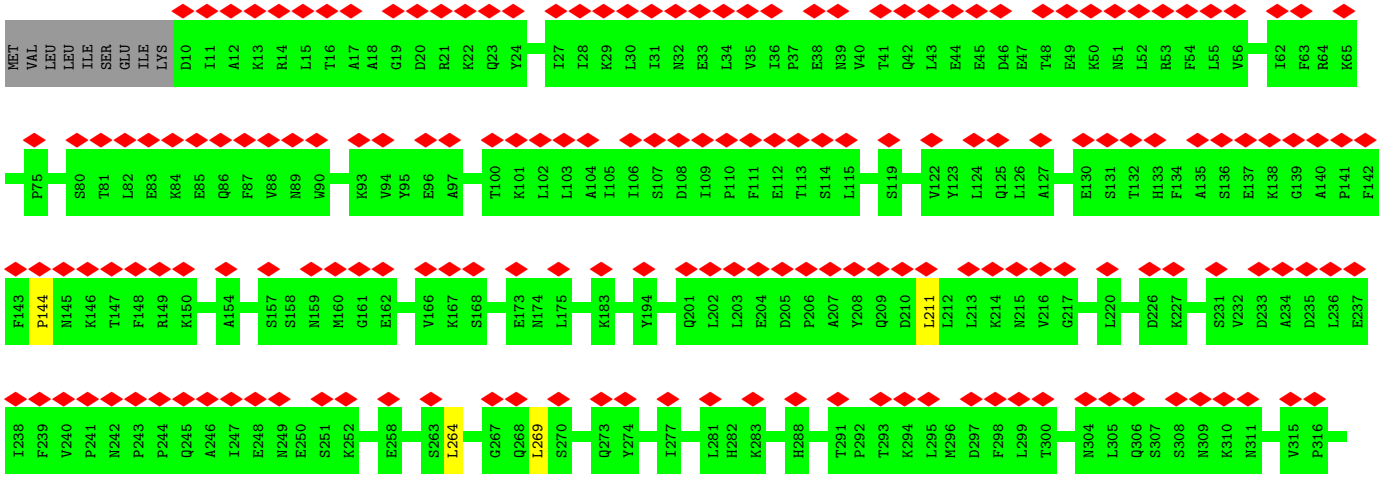


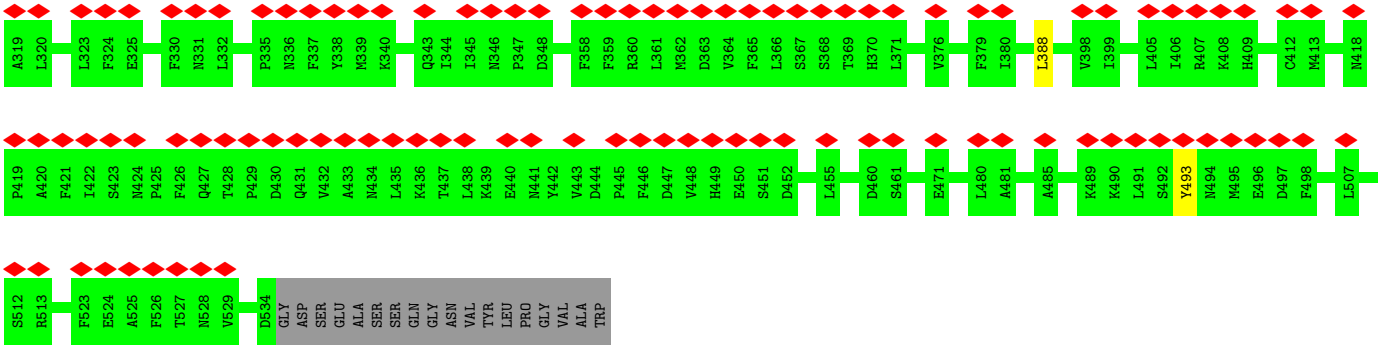


• Molecule 57: Nucleolar complex protein 4

Chain RO:

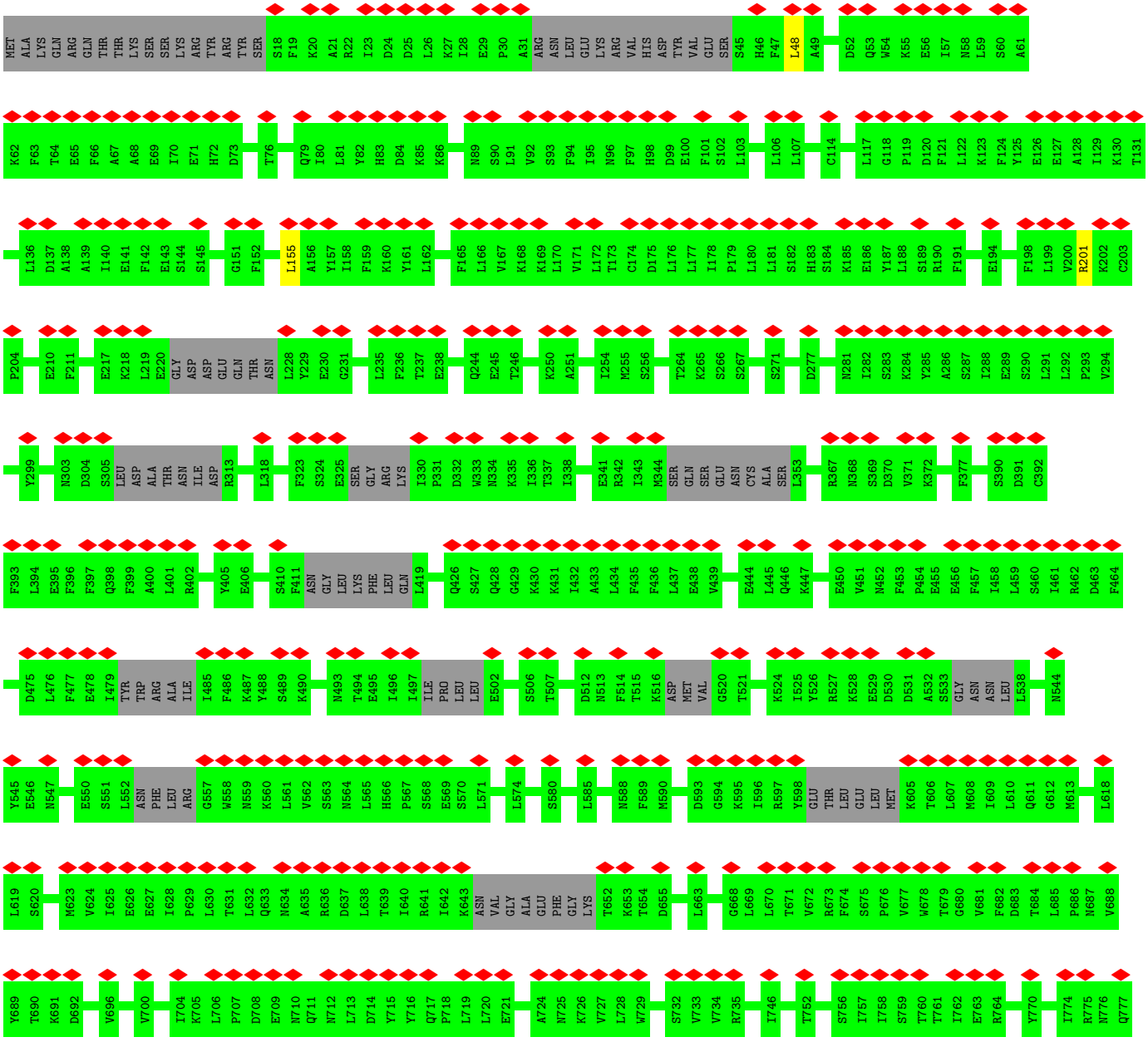


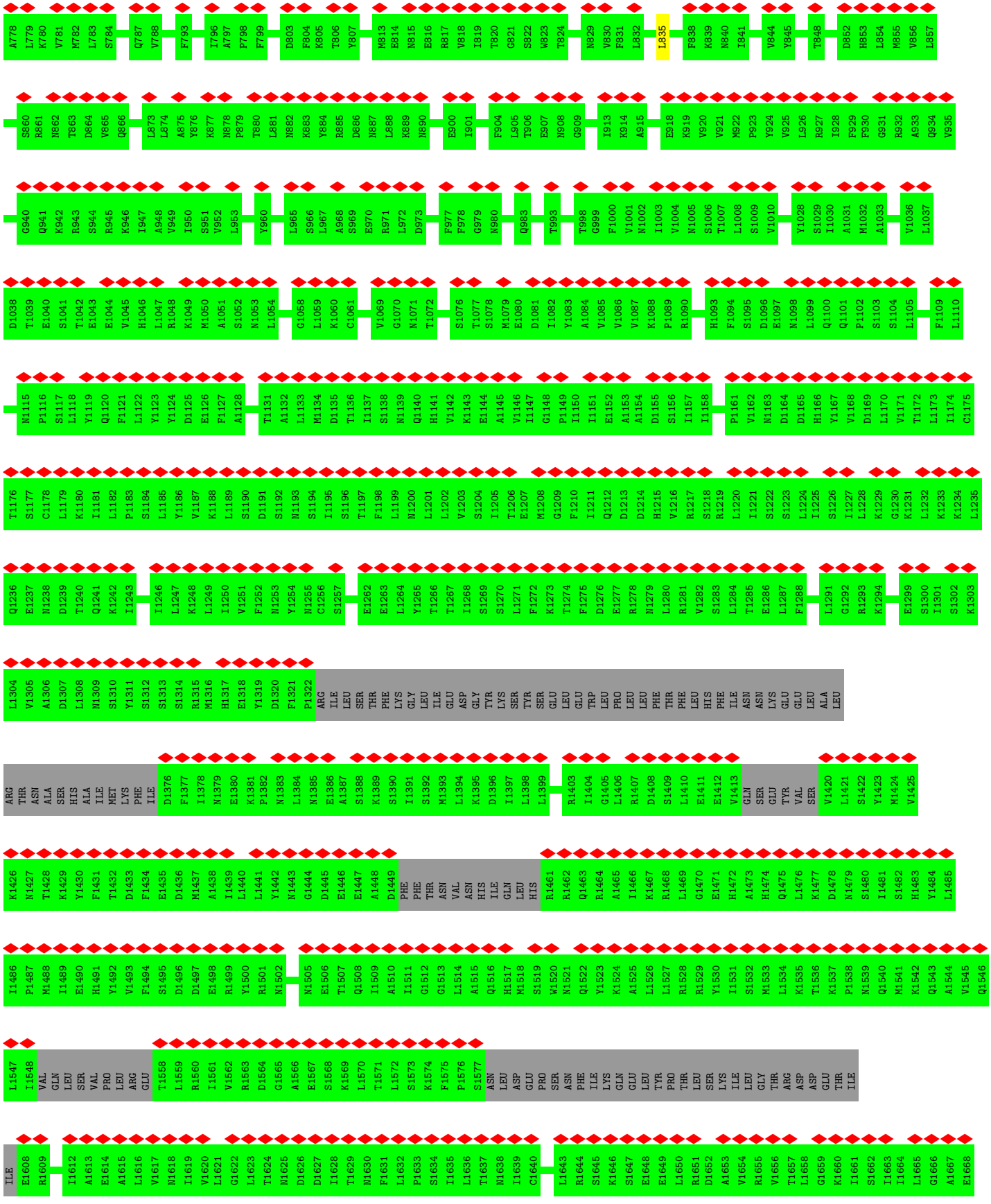




• Molecule 58: U3 small nucleolar RNA-associated protein 20

Chain RP:

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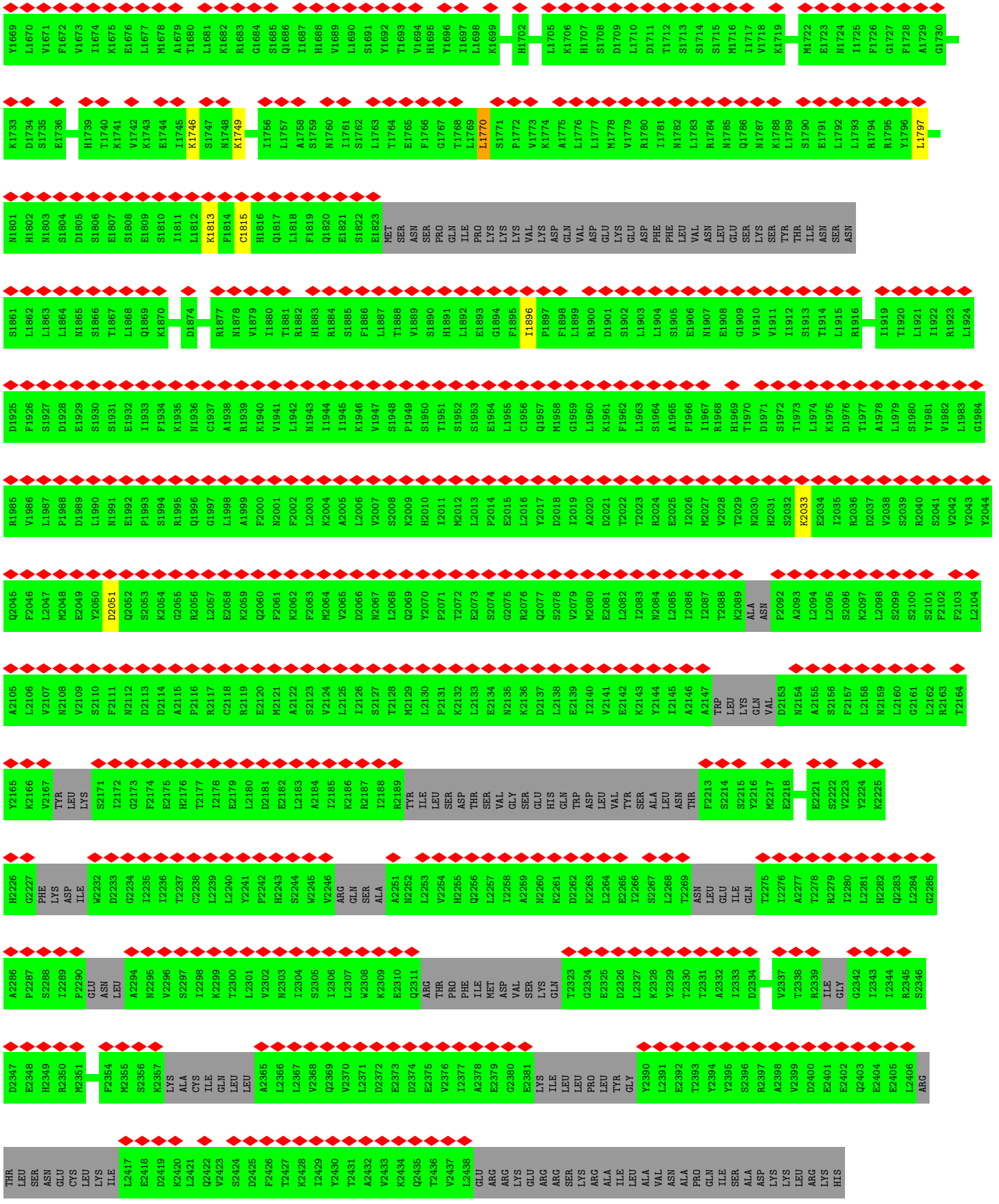
Q787 V788
F793
I796 A797 P798 F799
D803 F804 K805 T806 Y807
M813 E814 N815 E816 R817 V818 I819 T820 G821 S822 W823 T824
N829 V830 F831 L832
L835
F838 K839 N840 I841
V844 Y845
T848
D852 H853 L854 M855 V856 L857
S860 R861 N862 T863 D864 V865 Q866
L873 L874 A875 Y876 K877 N878 P879 T880 L881 N882 K883 Y884 R885 D886 N887 L888 K889 N890
E900 I901
F904 L905 T906 E907 N908 G909
I913 K914 A915
E918 K919 V920 V921 M922 P923 Y924 V925 L926 R927 I928 F929 F930 G931 R932 A933 Q934 V935
G940 Q941 K942 R943 S944 R945 K946 I947 A948 V949 I950 S951 V952 L953
Y960
L965 S966 L967 A968 S969 E970 R971 L972 D973
F977 F978 G979 N980
Q983
T993
T998 G999 F1000 V1001 N1002 I1003 V1004 N1005 S1006 T1007 L1008 S1009 V1010
Y1028 S1029 I1030 A1031 M1032 A1033
V1036 L1037
D1038 T1039 E1040 S1041 T1042 E1043 E1044 V1045 H1046 L1047 R1048 K1049 M1050 A1051 S1052 N1053 L1054
G1058 L1059 K1060 C1061
V1069 G1070 N1071 T1072
S1076 T1077 S1078 M1079 E1080 D1081 I1082 Y1083 A1084 V1085 V1086 V1087 K1088 P1089 R1090
H1093 F1094 S1095 D1096 E1097 N1098 L1099 Q1100 Q1101 P1102 S1103 S1104 L1105
F1109 L1110
N1115 P1116 S1117 L1118 Y1119 Q1120 F1121 L1122 Y1123 Y1124 D1125 E1126 F1127 A1128
T1131 A1132 L1133 M1134 D1135 T1136 I1137 S1138 N1139 Q1140 H1141 V1142 K1143 E1144 A1145 V1146 I1147 G1148 P1149 I1150 I1151 E1152 A1153 A1154 D1155 S1156 I1157 I1158
P1161 V1162 N1163 D1164 D1165 H1166 Y1167 V1168 D1169 L1170 V1171 T1172 L1173 I1174 C1175
T1176 S1177 C1178 L1179 K1180 I1181 L1182 P1183 S1184 L1185 Y1186 V1187 K1188 L1189 S1190 D1191 S1192 N1193 S1194 I1195 S1196 T1197 F1198 L1199 N1200 L1201 L1202 V1203 S1204 I1205 T1206 E1207 M1208 G1209 F1210 I1211 Q1212 D1213 D1214 H1215 V1216 R1217 S1218 R1219 L1220 I1221 S1222 S1223 L1224 I1225 S1226 I1227 L1228 K1229 G1230 K1231 L1232 K1233 K1234 L1235
Q1236 E1237 N1238 D1239 T1240 Q1241 K1242 I1243
I1246 L1247 K1248 L1249 I1250 V1251 F1252 N1253 Y1254 N1255 C1256 S1257
E1262 E1263 L1264 Y1265 T1266 T1267 I1268 S1269 S1270 L1271 F1272 K1273 T1274 F1275 D1276 E1277 R1278 N1279 L1280 R1281 V1282 S1283 L1284 T1285 E1286 L1287 F1288
L1291 G1292 R1293 K1294
E1299 S1300 I1301 S1302 K1303
L1304 V1305 A1306 D1307 L1308 N1309 S1310 Y1311 S1312 S1313 S1314 R1315 M1316 H1317 E1318 Y1319 D1320 F1321 P1322
ARG ILE LEU SER 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 F1377 I1378 N1379 E1380 K1381 P1382 N1383 L1384 N1385 E1386 A1387 S1388 K1389 S1390 I1391 S1392 M1393 L1394 K1395 D1396 I1397 L1398 L1399
R1403 I1404 G1405 L1406 R1407 D1408 S1409 L1410 E1411 E1412 V1413
GLN SER GLU TYR VAL SER
V1420 L1421 S1422 Y1423 M1424 V1425
K1426 N1427 T1428 K1429 Y1430 F1431 T1432 D1433 F1434 E1435 D1436 M1437 A1438 I1439 L1440 L1441 Y1442 N1443 G1444 D1445 E1446 E1447 A1448 D1449
PHE PHE THR ASN VAL ASN HIS ILE GLN LEU HIS
R1461 R1462 Q1463 R1464 A1465 I1466 K1467 R1468 L1469 G1470 E1471 H1472 A1473 H1474 Q1475 L1476 K1477 D1478 N1479 S1480 I1481 S1482 H1483 Y1484 L1485
I1486 P1487 M1488 I1489 E1490 H1491 Y1492 V1493 F1494 S1495 D1496 D1497 E1498 R1499 Y1500 R1501 N1502
N1505 E1506 T1507 Q1508 I1509 A1510 I1511 G1512 G1513 L1514 A1515 Q1516 H1517 M1518 S1519 W1520 N1521 Q1522 Y1523 K1524 A1525 L1526 L1527 R1528 R1529 Y1530 I1531 S1532 M1533 L1534 K1535 T1536 K1537 P1538 N1539 Q1540 M1541 K1542 Q1543 A1544 V1545 Q1546
L1547 I1548
VAL GLN LEU SER VAL PRO LEU ARG GLU
T1558 L1559 R1560 I1561 V1562 R1563 D1564 G1565 A1566 E1567 S1568 K1569 L1570 T1571 L1572 S1573 K1574 F1575 P1576 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 ASP GLU THR ILE
ILE E1608 R1609
I1612 A1613 E1614 A1615 L1616 V1617 N1618 I1619 V1620 L1621 G1622 L1623 T1624 N1625 D1626 D1627 I1628 T1629 N1630 F1631 L1632 P1633 S1634 L1635 L1636 T1637 N1638 I1639 C1640
L1643 R1644 S1645 K1646 S1647 E1648 E1649 L1650 R1651 D1652 A1653 V1654 R1655 V1656 T1657 L1658 G1659 K1660 I1661 S1662 I1663 I1664 L1665 G1666 A1667 E1668


Y1669 L1670 V1671 F1672 V1673 I1674 K1675 E1676 L1677 M1678 A1679 T1680 L1681 K1682 R1683 G1684 S1685 Q1686 I1687 H1688 V1689 L1690 S1691 Y1692 T1693 V1694 H1695 Y1696 I1697 L1698 K1699 H1702 L1705 K1706 H1707 S1708 D1709 L1710 D1711 T1712 S1713 S1714 S1715 M1716 I1717 V1718 K1719 M1722 E1723 N1724 I1725 F1726 G1727 F1728 A1729 G1730
K1733 D1734 S1735 E1736 H1739 T1740 K1741 V1742 K1743 E1744 I1745 K1746 S1747 N1748 K1749 I1756 L1757 A1758 S1759 N1760 I1761 S1762 L1763 T1764 E1765 F1766 G1767 T1768 L1769 L1770 S1771 P1772 V1773 K1774 A1775 L1776 L1777 M1778 V1779 R1780 I1781 N1782 L1783 R1784 N1785 Q1786 N1787 K1788 L1789 S1790 E1791 L1792 L1793 R1794 R1795 Y1796 L1797
N1801 H1802 N1803 S1804 D1805 S1806 E1807 S1808 E1809 S1810 I1811 L1812 K1813 F1814 C1815 H1816 Q1817 L1818 F1819 Q1820 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 L1863 L1864 N1865 S1866 T1867 L1868 Q1869 K1870 D1874 R1877 N1878 V1879 I1880 T1881 R1882 H1883 R1884 S1885 F1886 L1887 T1888 V1889 S1890 H1891 L1892 E1893 G1894 F1895 I1896 P1897 F1898 L1899 R1900 D1901 S1902 L1903 L1904 S1905 E1906 N1907 E1908 G1909 V1910 V1911 I1912 S1913 T1914 L1915 R1916 I1919 T1920 L1921 I1922 R1923 L1924
D1925 F1926 S1927 D1928 E1929 S1930 S1931 E1932 I1933 F1934 K1935 N1936 C1937 A1938 R1939 K1940 V1941 L1942 N1943 I1944 I1945 K1946 V1947 S1948 P1949 S1950 T1951 S1952 S1953 E1954 L1955 C1956 Q1957 M1958 G1959 L1960 K1961 F1962 L1963 S1964 A1965 F1966 I1967 R1968 H1969 T1970 D1971 S1972 T1973 L1974 K1975 D1976 T1977 A1978 L1979 S1980 Y1981 V1982 L1983 G1984
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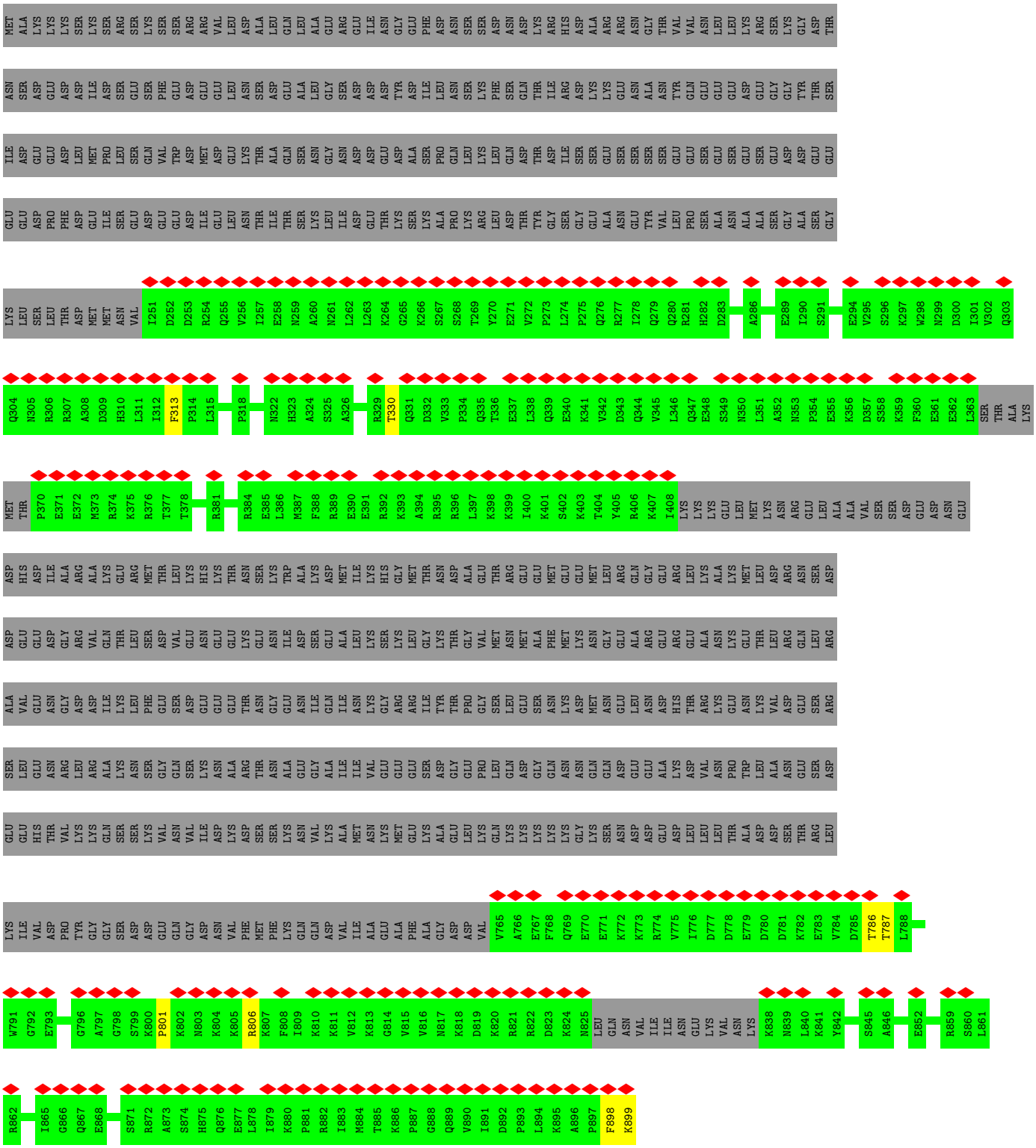
Q2045 F2046 L2047 M2048 E2049 Y2050 D2051 Q2052 S2053 K2054 G2055 R2056 L2057 E2058 K2059 Q2060 F2061 K2062 F2063 M2064 V2065 D2066 N2067 L2068 Q2069 Y2070 P2071 T2072 E2073 S2074 G2075 R2076 Q2077 S2078 V2079 M2080 E2081 L2082 I2083 N2084 L2085 I2086 I2087 T2088 K2089 ALA ASN P2092 A2093 L2094 L2095 S2096 K2097 L2098 S2099 S2100 S2101 F2102 F2103 L2104
A2105 L2106 V2107 N2108 V2109 S2110 F2111 N2112 D2113 D2114 A2115 P2116 R2117 C2118 R2119 E2120 M2121 A2122 S2123 V2124 L2125 I2126 S2127 T2128 M2129 L2130 P2131 K2132 L2133 E2134 N2135 K2136 D2137 L2138 E2139 I2140 V2141 E2142 K2143 Y2144 I2145 A2146 A2147 TRP LEU LYS GLN VAL D2153 N2154 A2155 S2156 F2157 L2158 N2159 L2160 G2161 L2162 R2163 T2164
Y2165 K2166 V2167 TYR LEU LYS S2171 I2172 G2173 F2174 E2175 H2176 T2177 I2178 E2179 L2180 D2181 E2182 L2183 A2184 I2185 K2186 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 S2214 S2215 Y2216 M2217 E2218 E2221 S2222 V2223 Y2224 K2225
H2226 G2227 PHE LYS ASP ILE W2232 D2233 G2234 I2235 I2236 T2237 C2238 L2239 L2240 Y2241 P2242 H2243 S2244 W2245 V2246 ARG GLN SER ALA A2251 N2252 L2253 V2254 H2255 Q2256 L2257 I2258 A2259 N2260 K2261 D2262 K2263 L2264 E2265 I2266 S2267 L2268 T2269 ASN LEU GLU ILE GLN T2275 I2276 A2277 T2278 R2279 I2280 L2281 H2282 Q2283 L2284 G2285
A2286 P2287 S2288 I2289 P2290 GLU ASN LEU A2294 N2295 V2296 S2297 I2298 K2299 T2300 L2301 V2302 N2303 I2304 S2305 I2306 L2307 W2308 K2309 E2310 Q2311 ARG THR PRO PHE ILE MET ASP VAL SER LYS GLN T2323 G2324 E2325 D2326 L2327 K2328 Y2329 T2330 T2331 A2332 I2333 D2334 V2337 T2338 R2339 ILE GLY G2342 I2343 I2344 R2345 S2346
D2347 E2348 H2349 R2350 M2351 F2354 M2355 S2356 K2357 LYS ALA CYS ILE GLN LEU LEU A2365 L2366 L2367 V2368 Q2369 V2370 L2371 D2372 E2373 D2374 E2375 V2376 I2377 A2378 E2379 G2380 E2381 LYS ILE LEU LEU PRO LEU TYR GLY Y2390 L2391 E2392 T2393 Y2394 Y2395 S2396 R2397 A2398 V2399 D2400 E2401 E2402 Q2403 E2404 E2405 L2406 ARG
THR LEU SER ASN GLU CYS LEU LYS ILE L2417 E2418 D2419 K2420 L2421 Q2422 V2423 S2424 D2425 F2426 T2427 K2428 I2429 Y2430 T2431 A2432 V2433 K2434 Q2435 T2436 V2437 L2438 GLU ARG ARG LYS GLU ARG ARG SER LYS ARG ALA ILE LEU ALA VAL ASN ALA PRO GLN ILE SER ALA ASP LYS LYS LEU ARG LYS HIS

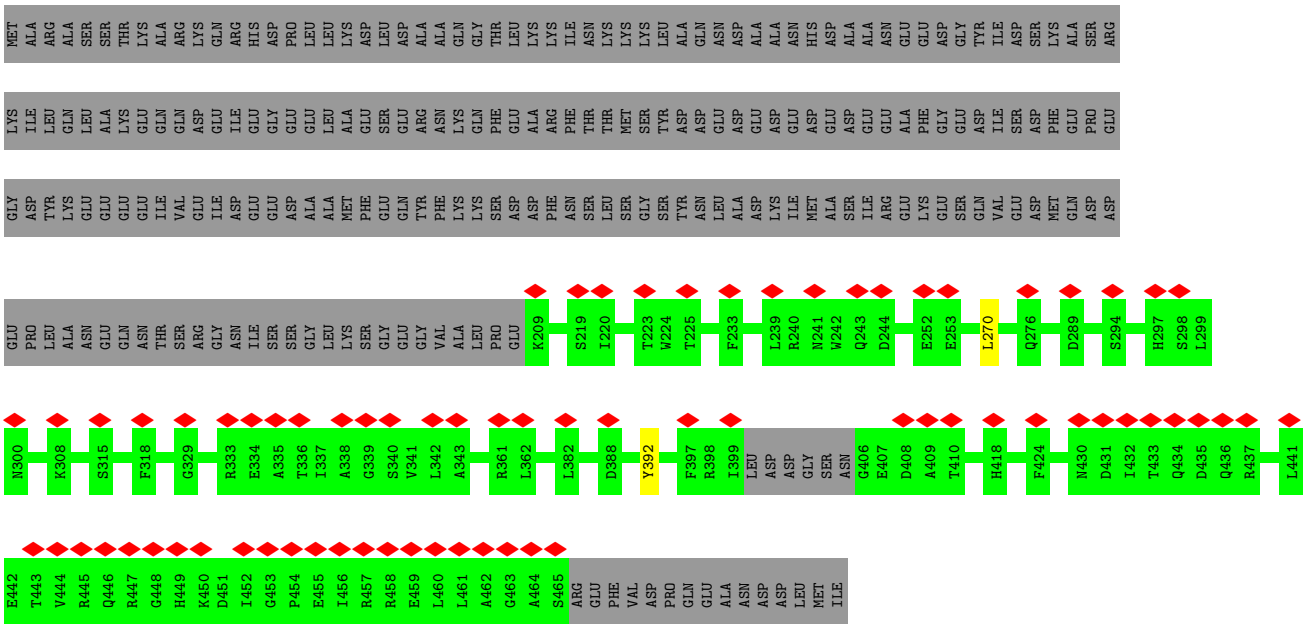
• Molecule 59: U3 small nucleolar RNA-associated protein 14

Chain RQ:



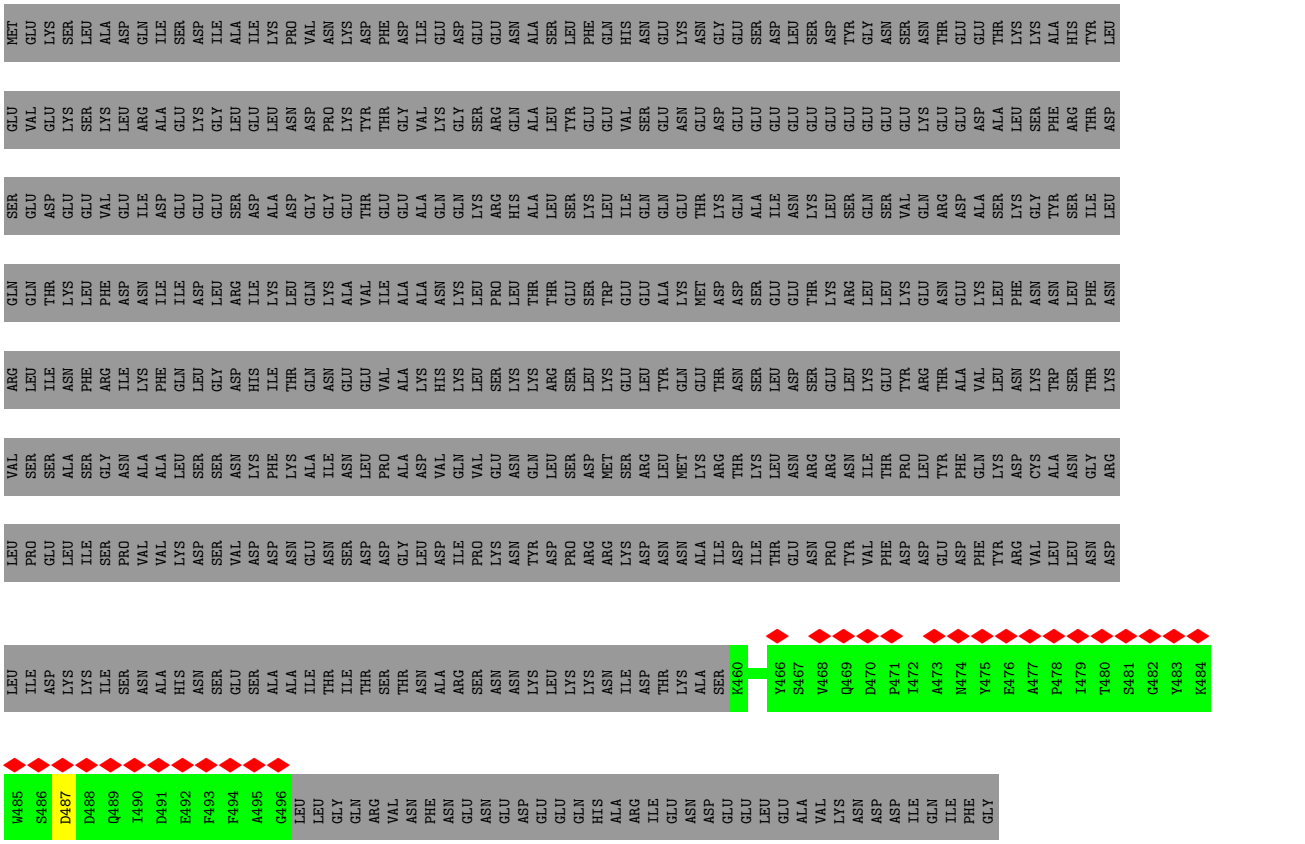
• Molecule 60: Essential nuclear protein 1

Chain RS:



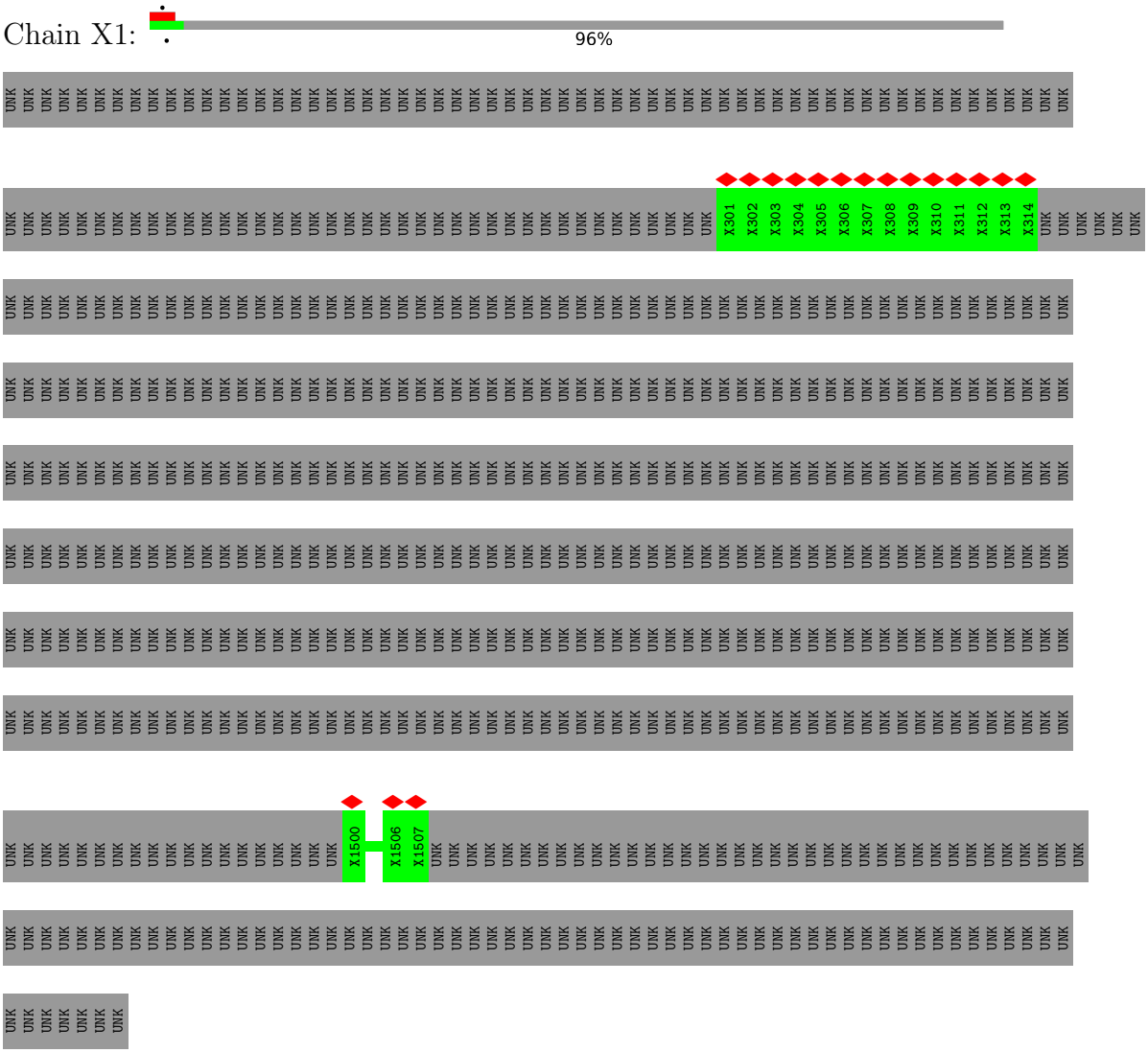
• Molecule 61: Protein BFR2

Chain RY:



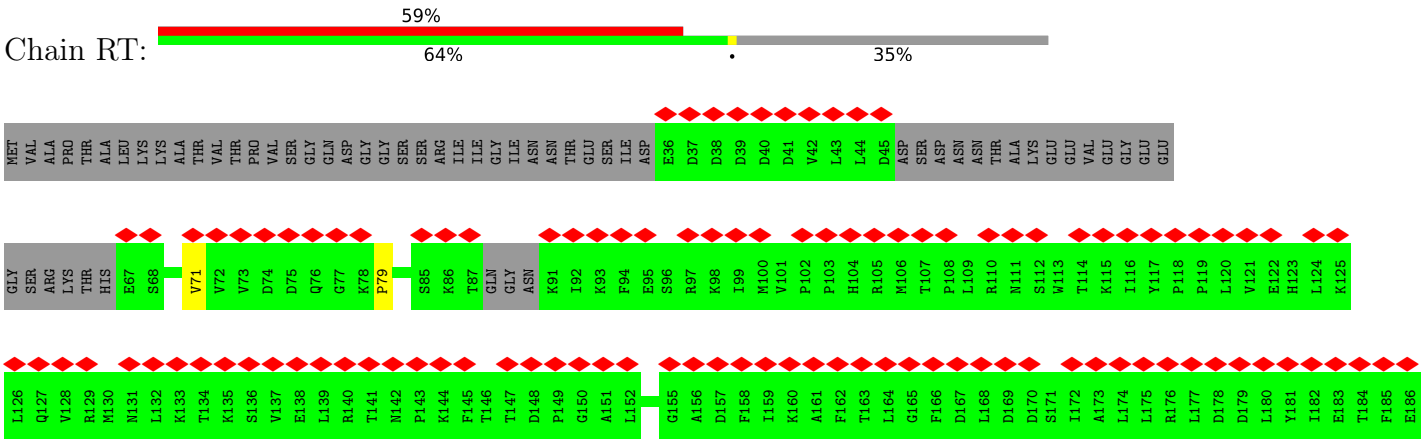
• Molecule 62: Unassigned peptides 1

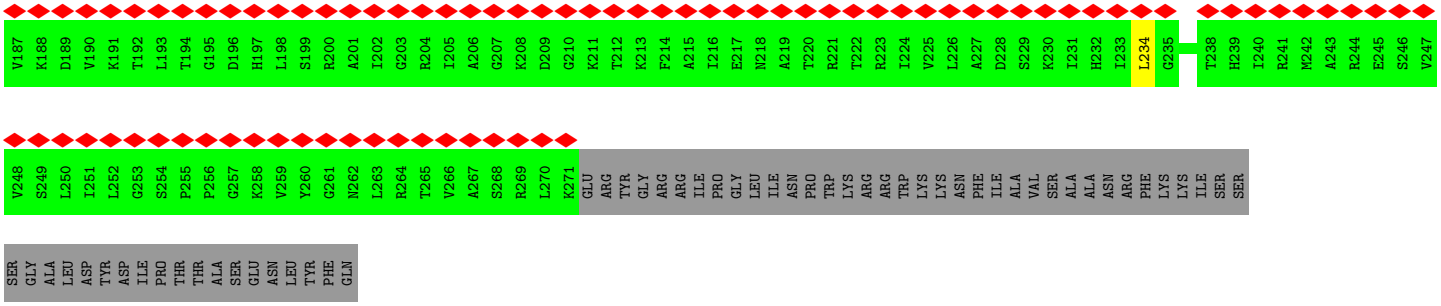
Chain X1:



• Molecule 63: Pno1

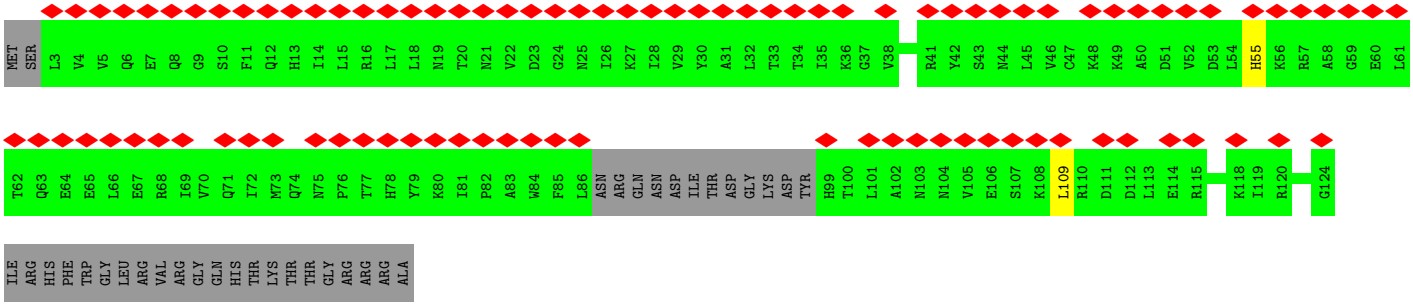
Chain RT:





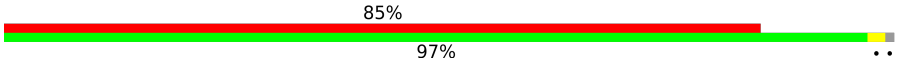
• Molecule 64: 40S ribosomal protein S18-A

Chain ST:



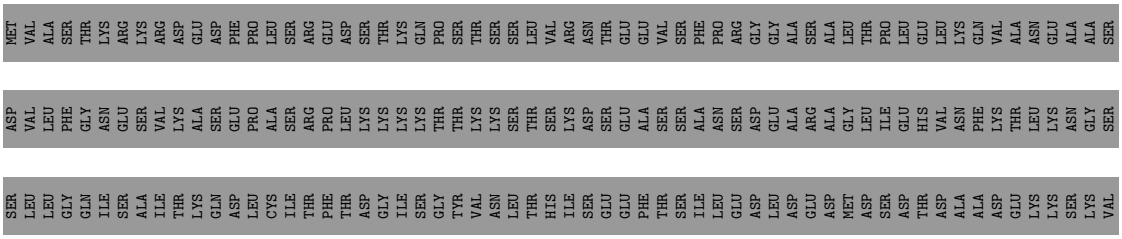
• Molecule 65: 40S ribosomal protein S19-A

Chain SU:



• Molecule 66: rRNA biogenesis protein RRP5

Chain RD:



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 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 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 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

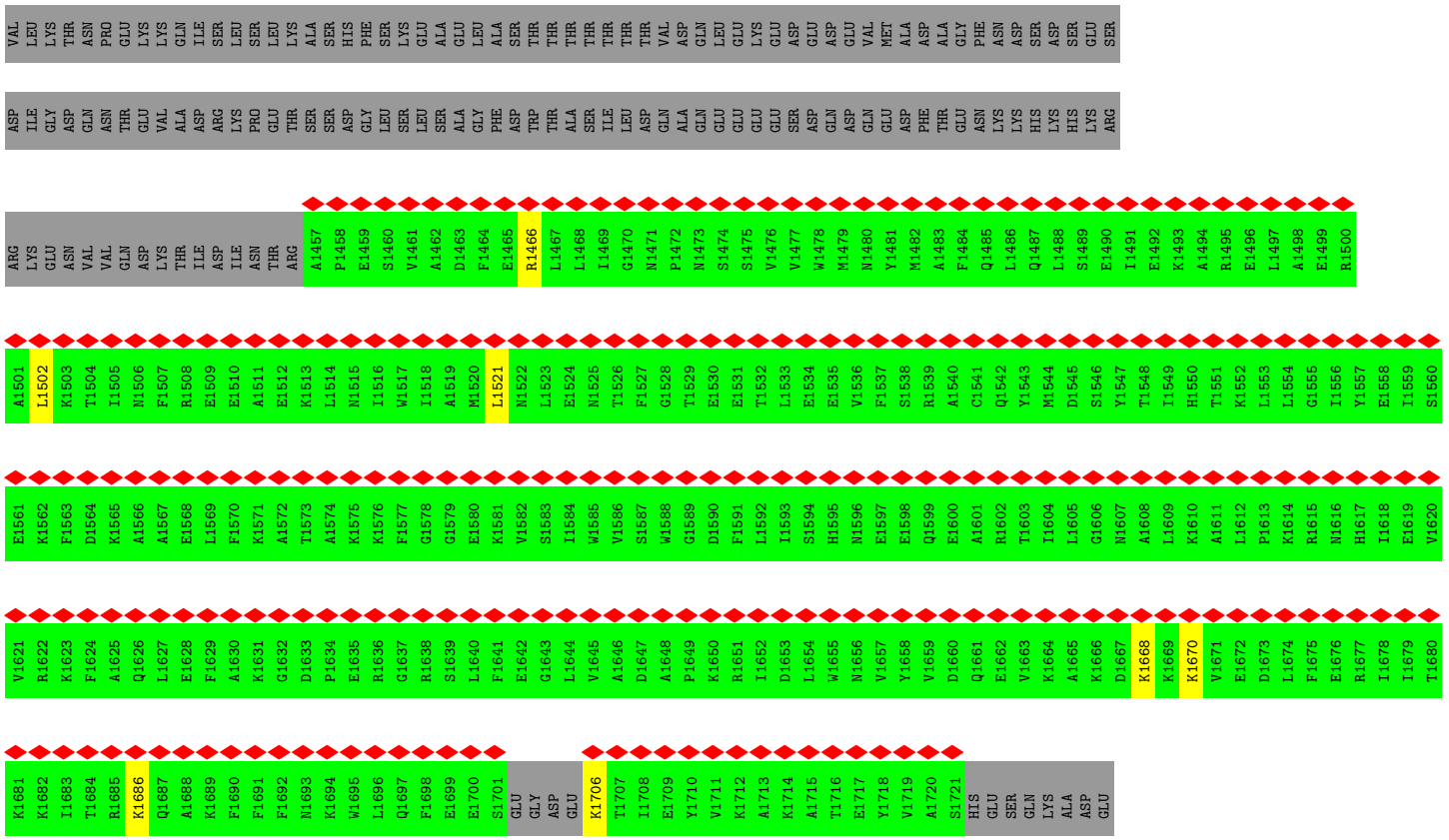
THR ILE SER PRO VAL LEU LYS ALA ARG ILE SER LEU LEU ASP LEU ALA ASP ASN ASP SER ASN PHE SER GLU ASN ILE GLU SER VAL PHE PRO LEU GLY SER ALA LEU GLN VAL LYS VAL ALA SER ILE ASP ARG GLU HIS GLY PHE VAL ASN ALA ILE GLY LYS SER HIS VAL ASP ILE

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

PRO THR THR VAL LEU SER VAL ASP GLU GLN ASN LYS LYS ILE GLU LEU SER LEU ARG PRO ALA THR ALA LYS THR ARG SER ILE LYS S1170 H1171 E1172 D1173 L1174 K1175 Q1176 G1177 E1178 I1179 V1180 D1181 G1182 I1183 V1184 K1185 N1186 V1187 N1188 D1189 K1190 G1191 I1192 F1193 V1194 Y1195 L1196 S1197 R1198 K1199 V1200

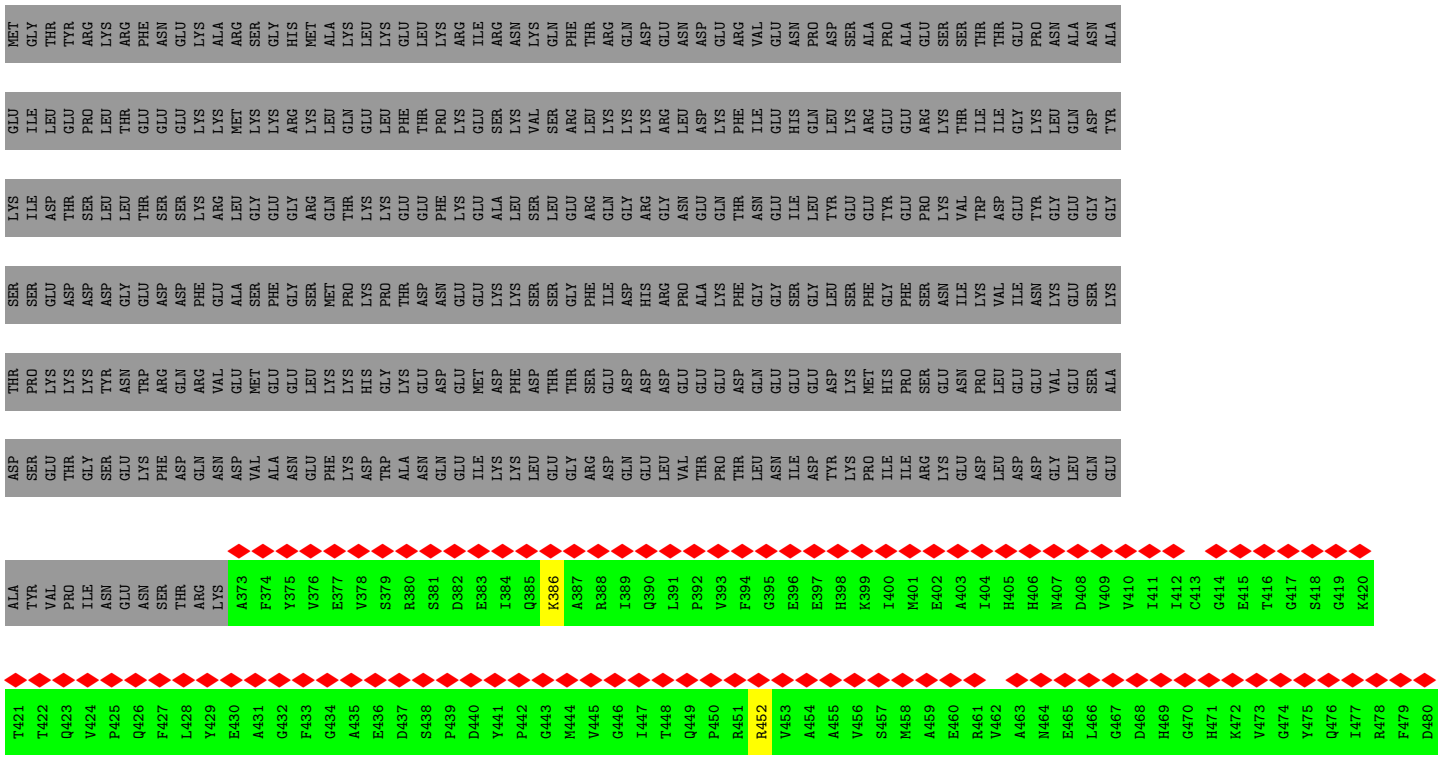
E1201 A1202 F1203 V1204 P1205 V1206 S1207 K1208 L1209 S1210 D1211 S1212 Y1213 L1214 K1215 E1216 W1217 K1218 K1219 F1220 Y1221 K1222 P1223 M1224 GLN TYR VAL LEU GLY LYS VAL VAL THR CYS ASP GLU ASP SER ARG ILE SER LEU THR LEU ARG GLU SER GLU ILE ASN GLY ASP LEU LYS VAL LEU LYS THR TYR SER

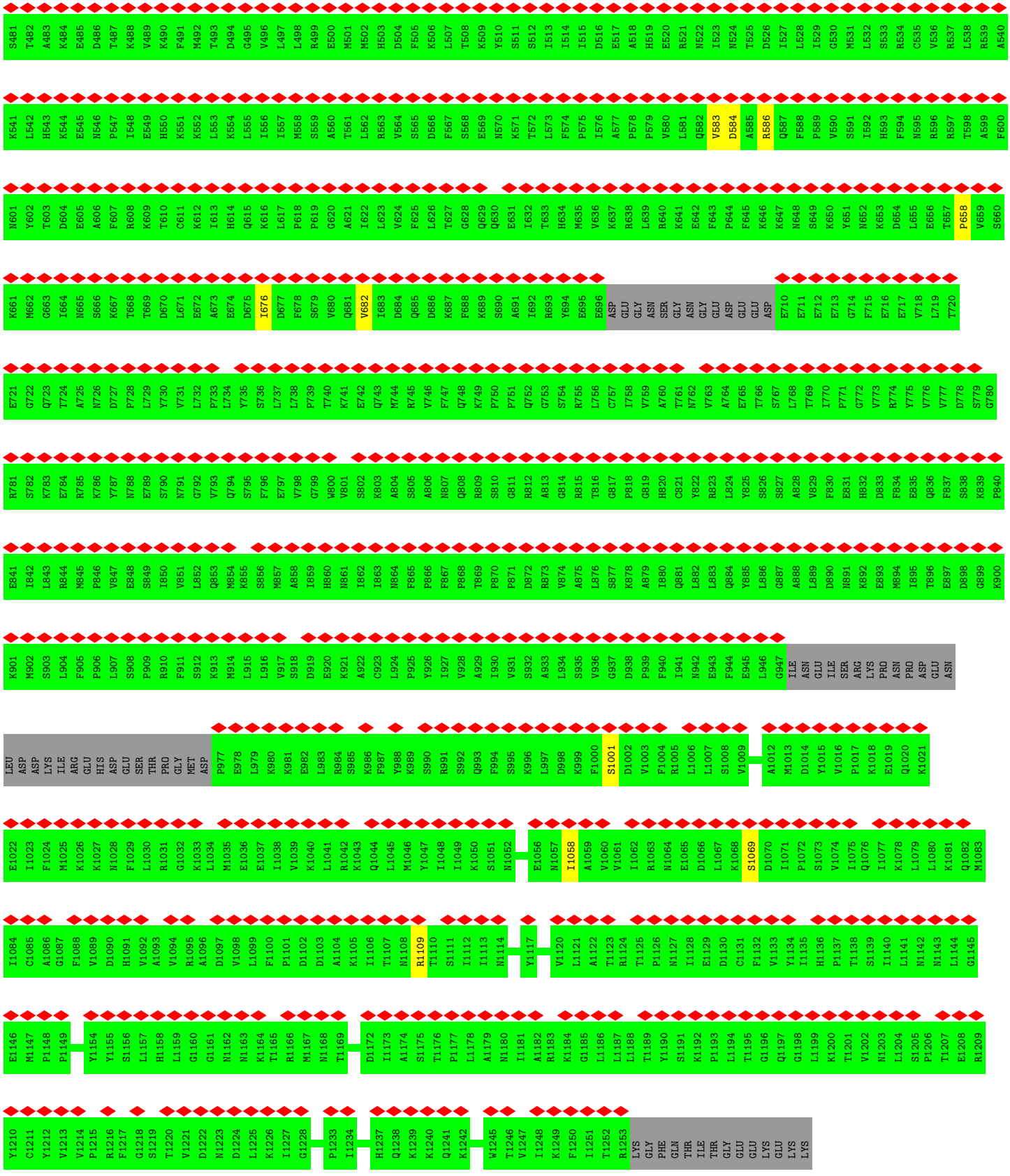
ASP ILE LYS ALA GLY ASP VAL PHE GLU GLY THR ILE LYS SER VAL THR ASP PHE GLY VAL PHE VAL LYS LEU ASP ASN THR VAL ASN VAL THR GLY LEU ALA HIS ILE THR GLU ILE ALA ASP LYS LYS PRO GLU ASP LEU SER ALA LEU PHE GLY VAL GLY ASP ARG VAL LYS ALA ILE



• Molecule 67: Probable ATP-dependent RNA helicase DHR1

Chain RZ:




S481 T482 A483 K484 E485 D486 T487 K488 V489 K490 F491 M492 T493 D494 G495 V496 L497 L498 R499 E500 M501 M502 H503 D504 F505 K506 L507 T508 K509 Y510 S511 S512 I513 I514 I515 D516 E517 A518 H519 E520 R521 N522 I523 N524 T525 D526 I527 L528 I529 G530 M531 L532 S533 R534 C535 V536 R537 L538 R539 A540
K541 L542 H543 K544 E545 N546 P547 I548 E549 H550 K551 K552 L553 K554 L555 I556 I557 M558 S559 A560 T561 L562 R563 V564 S565 D566 F567 S568 E569 N570 K571 T572 L573 F574 P575 I576 A577 P578 P579 V580 L581 Q582 V583 D584 A585 R586 Q587 F588 P589 V590 S591 I592 H593 F594 N595 R596 R597 T598 A599 F600
N601 Y602 T603 D604 E605 A606 F607 R608 K609 T610 C611 K612 I613 H614 Q615 K616 L617 P618 P619 G620 A621 I622 L623 V624 F625 L626 T627 G628 Q629 Q630 E631 I632 T633 H634 M635 V636 K637 R638 L639 R640 K641 E642 F643 P644 F645 K646 K647 N648 S649 K650 Y651 N652 K653 D654 L655 E656 T657 P658 V659 S660
K661 M662 G663 I664 N665 S666 K667 T668 T669 D670 L671 E672 A673 E674 D675 I676 D677 F678 S679 V680 Q681 V682 I683 D684 Q685 D686 K687 F688 K689 S690 A691 I692 R693 Y694 E695 E696 ASP GLU GLY ASN SER GLY ASN GLY GLU ASP GLU GLU ASP E710 E711 E712 E713 G714 F715 E716 E717 V718 L719 T720
E721 G722 Q723 T724 A725 N726 D727 P728 L729 Y730 V731 L732 P733 L734 Y735 S736 L737 L738 P739 T740 K741 E742 Q743 M744 R745 V746 F747 Q748 K749 P750 P751 Q752 G753 S754 R755 L756 C757 I758 V759 A760 T761 N762 V763 A764 E765 T766 S767 L768 T769 I770 P771 G772 V773 R774 Y775 V776 V777 D778 S779 G780
R781 S782 K783 E784 R785 K786 Y787 N788 E789 S790 N791 G792 V793 Q794 S795 F796 E797 V798 G799 W800 V801 S802 K803 A804 S805 A806 N807 Q808 R809 S810 G811 R812 A813 G814 R815 T816 G817 P818 G819 H820 C821 Y822 R823 L824 Y825 S826 S827 A828 V829 F830 E831 H832 D833 F834 E835 Q836 F837 S838 K839 P840
E841 I842 L843 R844 M845 P846 V847 E848 S849 I850 V851 L852 Q853 M854 K855 S856 M857 A858 I859 H860 N861 I862 I863 N864 F865 P866 F867 P868 T869 P870 P871 D872 R873 V874 A875 L876 S877 K878 A879 I880 Q881 L882 L883 Q884 Y885 L886 G887 A888 L889 D890 N891 K892 E893 M894 I895 T896 E897 D898 G899 K900
K901 M902 S903 L904 F905 P906 L907 S908 P909 R910 F911 S912 K913 M914 L915 L916 V917 S918 D919 E920 K921 A922 C923 L924 P925 Y926 I927 V928 A929 I930 V931 S932 A933 L934 S935 V936 G937 D938 P939 F940 I941 N942 E943 F944 E945 L946 G947 ILE ASN GLU ILE SER ARG LYS PRO ASN PRO ASP GLU ASN
LEU ASP ASP LYS ILE ARG GLU HIS ASP GLU SER THR PRO GLY MET ASP P977 E978 L979 K980 K981 E982 L983 R984 S985 K986 F987 Y988 K989 S990 R991 S992 Q993 F994 S995 K996 L997 D998 K999 F1000 S1001 D1002 V1003 F1004 R1005 L1006 L1007 S1008 V1009 A1012 M1013 D1014 Y1015 V1016 P1017 K1018 E1019 Q1020 K1021
E1022 I1023 F1024 M1025 K1026 K1027 N1028 F1029 L1030 R1031 G1032 K1033 L1034 M1035 E1036 E1037 I1038 V1039 K1040 L1041 R1042 K1043 Q1044 L1045 M1046 Y1047 I1048 I1049 K1050 S1051 N1052 E1056 N1057 I1058 A1059 V1060 V1061 I1062 R1063 N1064 E1065 D1066 L1067 K1068 S1069 D1070 I1071 P1072 S1073 V1074 I1075 Q1076 I1077 K1078 L1079 L1080 K1081 Q1082 M1083
I1084 C1085 A1086 G1087 F1088 V1089 D1090 H1091 V1092 A1093 V1094 R1095 A1096 D1097 V1098 L1099 F1100 P1101 D1102 D1103 A1104 K1105 I1106 T1107 N1108 R1109 T1110 S1111 I1112 I1113 N1114 Y1117 V1120 L1121 A1122 T1123 R1124 T1125 P1126 N1127 I1128 E1129 D1130 C1131 F1132 V1133 Y1134 I1135 H1136 P1137 T1138 S1139 I1140 L1141 N1142 N1143 L1144 G1145
E1146 M1147 P1148 P1149 Y1154 Y1155 S1156 L1157 H1158 L1159 G1160 G1161 N1162 N1163 K1164 T1165 R1166 M1167 N1168 T1169 D1172 I1173 A1174 S1175 T1176 P1177 L1178 A1179 N1180 I1181 A1182 R1183 K1184 G1185 L1186 L1187 L1188 T1189 Y1190 S1191 K1192 P1193 L1194 T1195 G1196 Q1197 G1198 L1199 K1200 T1201 V1202 N1203 L1204 S1205 P1206 T1207 E1208 R1209
Y1210 C1211 Y1212 V1213 V1214 P1215 R1216 F1217 G1218 S1219 T1220 V1221 D1222 N1223 D1224 L1225 K1226 I1227 G1228 P1233 I1234 H1237 Q1238 K1239 K1240 Q1241 K1242 W1245 T1246 V1247 I1248 K1249 F1250 I1251 T1252 R1253 LYS GLY PHE GLN THR ILE THR GLY GLU GLU LYS GLU LYS LYS

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	3841	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	0.037	Depositor
Minimum map value	-0.015	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.002	Depositor
Recommended contour level	0.01	Depositor
Map size (Å)	531.19995, 531.19995, 531.19995	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.3279998, 1.3279998, 1.3279998	Depositor

5 Model quality

5.1 Standard geometry

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

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	39/6433 (0.6%)
2	5A	0.80	0/4605	1.08	13/7168 (0.2%)
3	SA	0.70	3/31727 (0.0%)	1.17	255/49393 (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	0.69	0/1186
14	SR	0.58	0/990	0.73	1/1335 (0.1%)
15	SX	0.51	0/1020	0.65	1/1371 (0.1%)
16	SY	0.55	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	0.38	0/1580	0.74	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	0.41	0/1151	0.54	0/1535
47	5K	0.57	0/1426	0.67	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	RE	0.38	0/8924	0.63	8/12070 (0.1%)
51	RF	0.34	0/2004	0.63	2/2697 (0.1%)
52	RG	0.39	0/1727	0.68	2/2329 (0.1%)
52	RH	0.42	0/1828	0.61	0/2470
53	RJ	0.50	0/6514	0.61	1/8768 (0.0%)
54	RK	0.44	0/2832	0.65	3/3825 (0.1%)
55	RL	0.29	0/4549	0.50	0/6241
55	RM	0.25	0/3765	0.47	0/5218
56	RN	0.36	0/4591	0.58	2/6187 (0.0%)
57	RO	0.38	0/3849	0.62	4/5261 (0.1%)
58	RP	0.28	0/12225	0.51	5/16812 (0.0%)
59	RQ	0.46	0/1879	0.62	1/2564 (0.0%)
60	RS	0.33	0/2104	0.67	2/2854 (0.1%)
61	RY	0.29	0/307	0.51	0/415
63	RT	0.42	0/1611	0.69	1/2174 (0.0%)
64	ST	0.37	0/908	0.67	1/1221 (0.1%)
65	SU	0.49	1/1130 (0.1%)	0.65	0/1517
66	RD	0.31	0/2453	0.63	3/3308 (0.1%)
67	RZ	0.32	0/6737	0.58	1/9099 (0.0%)
All	All	0.50	4/232365 (0.0%)	0.77	447/322899 (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
50	RE	0	1
51	RF	0	1
53	RJ	0	2
54	RK	0	1
55	RL	0	1
55	RM	0	1
56	RN	0	1
57	RO	0	1
58	RP	0	3
59	RQ	0	4
67	RZ	0	2
All	All	0	75

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
65	SU	46	PRO	C-N	8.58	1.50	1.34
3	SA	1572	G	O3'-P	-6.56	1.53	1.61
3	SA	1538	U	O3'-P	-5.78	1.54	1.61
3	SA	1541	G	O3'-P	5.54	1.67	1.61

All (447) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	3A	321	C	N1-C1'-C2'	-10.83	99.92	114.00
3	SA	861	U	C2-N1-C1'	10.61	130.44	117.70
3	SA	376	C	N1-C2-O2	10.38	125.13	118.90
3	SA	1174	C	N1-C2-O2	10.36	125.12	118.90
3	SA	1034	C	C5-C6-N1	10.05	126.02	121.00
3	SA	1541	G	P-O5'-C5'	-10.04	104.84	120.90
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	9.37	136.85	115.30
3	SA	1743	U	N1-C2-O2	8.98	129.09	122.80
3	SA	1274	C	C6-N1-C2	-8.98	116.71	120.30
3	SA	1784	C	N3-C2-O2	-8.96	115.63	121.90
2	5A	312	U	P-O3'-C3'	8.95	130.44	119.70
4	SC	54	LEU	CA-CB-CG	8.94	135.87	115.30
3	SA	1451	C	N3-C2-O2	-8.88	115.68	121.90
50	RE	924	LEU	CA-CB-CG	8.79	135.51	115.30
3	SA	1274	C	C2-N1-C1'	8.73	128.40	118.80
3	SA	1174	C	N3-C2-O2	-8.67	115.83	121.90
3	SA	1254	U	N1-C2-O2	8.65	128.85	122.80
2	5A	310	U	N3-C2-O2	-8.64	116.15	122.20
1	3A	104	C	C6-N1-C2	-8.63	116.85	120.30
1	3A	200	C	C2-N1-C1'	8.62	128.29	118.80
3	SA	376	C	C2-N1-C1'	8.45	128.09	118.80
29	AE	95	ASP	CB-CG-OD1	8.43	125.89	118.30
1	3A	89	C	C2-N1-C1'	8.38	128.02	118.80
3	SA	258	C	N1-C2-O2	8.36	123.91	118.90
3	SA	1174	C	C2-N1-C1'	8.27	127.89	118.80
3	SA	1451	C	C6-N1-C2	-8.22	117.01	120.30
3	SA	1743	U	C2-N1-C1'	8.22	127.57	117.70
1	3A	200	C	N1-C2-O2	8.21	123.83	118.90
3	SA	1274	C	C5-C6-N1	8.20	125.10	121.00
41	5E	448	LEU	CA-CB-CG	8.18	134.11	115.30
3	SA	607	G	N3-C4-C5	-8.14	124.53	128.60
20	3B	306	LEU	CA-CB-CG	8.04	133.80	115.30
3	SA	275	C	N1-C2-O2	8.04	123.72	118.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	SA	607	G	C2-N3-C4	8.00	115.90	111.90
3	SA	1254	U	N3-C2-O2	-7.96	116.63	122.20
3	SA	1053	G	O5'-P-OP1	-7.94	98.56	105.70
3	SA	1484	G	OP2-P-O3'	7.94	122.66	105.20
3	SA	166	C	N1-C2-O2	7.91	123.65	118.90
1	3A	89	C	C6-N1-C2	-7.90	117.14	120.30
35	B8	521	LEU	CA-CB-CG	7.90	133.47	115.30
3	SA	1274	C	N1-C2-O2	7.85	123.61	118.90
3	SA	258	C	C2-N1-C1'	7.82	127.41	118.80
3	SA	374	U	C2-N1-C1'	7.82	127.08	117.70
3	SA	1541	G	O5'-P-OP2	7.82	120.08	110.70
3	SA	607	G	C4-N9-C1'	7.79	136.63	126.50
3	SA	376	C	N3-C2-O2	-7.75	116.47	121.90
48	RA	10	ASP	CB-CG-OD1	7.75	125.28	118.30
1	3A	201	C	N1-C2-O2	7.72	123.53	118.90
3	SA	1703	C	N3-C2-O2	-7.70	116.51	121.90
1	3A	89	C	N1-C2-O2	7.66	123.50	118.90
3	SA	374	U	N1-C2-O2	7.66	128.16	122.80
3	SA	1574	G	N9-C1'-C2'	-7.61	103.63	112.00
1	3A	89	C	C5-C6-N1	7.60	124.80	121.00
3	SA	861	U	C6-N1-C1'	-7.59	110.58	121.20
3	SA	1254	U	C2-N1-C1'	7.55	126.76	117.70
2	5A	91	U	C5-C6-N1	7.54	126.47	122.70
25	A4	225	LEU	CA-CB-CG	7.45	132.44	115.30
3	SA	1493	C	N1-C2-O2	7.45	123.37	118.90
36	BE	536	LEU	CA-CB-CG	7.36	132.23	115.30
60	RS	270	LEU	CA-CB-CG	7.35	132.22	115.30
3	SA	275	C	C2-N1-C1'	7.29	126.82	118.80
2	5A	310	U	N1-C2-O2	7.27	127.89	122.80
3	SA	1258	U	C2-N1-C1'	7.27	126.42	117.70
2	5A	90	G	O4'-C1'-N9	7.26	114.01	108.20
1	3A	308	U	N3-C2-O2	-7.25	117.12	122.20
27	A8	258	PRO	N-CA-CB	7.24	111.99	103.30
3	SA	1228	G	N3-C4-C5	-7.22	124.99	128.60
3	SA	1541	G	C5'-C4'-O4'	7.20	117.74	109.10
3	SA	1493	C	C2-N1-C1'	7.18	126.70	118.80
30	AF	469	LEU	CA-CB-CG	7.15	131.74	115.30
56	RN	662	LEU	CA-CB-CG	7.14	131.73	115.30
3	SA	579	A	P-O3'-C3'	7.14	128.26	119.70
3	SA	1484	G	P-O3'-C3'	-7.12	111.16	119.70
3	SA	1451	C	N1-C2-O2	7.11	123.17	118.90
26	A5	24	LEU	CA-CB-CG	7.11	131.66	115.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	5A	312	U	C5-C6-N1	-7.10	119.15	122.70
3	SA	272	U	P-O3'-C3'	7.04	128.15	119.70
3	SA	1541	G	O5'-C5'-C4'	7.04	125.08	111.70
39	5C	144	LEU	CA-CB-CG	7.04	131.48	115.30
3	SA	311	U	N1-C2-O2	7.02	127.72	122.80
66	RD	1223	PRO	N-CA-CB	7.00	111.70	103.30
21	3D	292	LEU	CA-CB-CG	6.99	131.38	115.30
3	SA	1258	U	N1-C2-O2	6.99	127.69	122.80
3	SA	1803	G	P-O3'-C3'	6.96	128.05	119.70
24	3H	65	LEU	CB-CG-CD1	-6.95	99.19	111.00
3	SA	1056	U	N1-C2-O2	6.94	127.66	122.80
1	3A	248	G	O4'-C1'-N9	6.90	113.72	108.20
3	SA	1784	C	N1-C2-O2	6.88	123.03	118.90
3	SA	280	U	N3-C2-O2	-6.87	117.39	122.20
27	A8	325	PRO	N-CA-CB	6.87	111.55	103.30
3	SA	374	U	N3-C2-O2	-6.87	117.39	122.20
3	SA	381	C	N3-C2-O2	-6.85	117.10	121.90
3	SA	1743	U	C6-N1-C1'	-6.85	111.61	121.20
3	SA	1034	C	C6-N1-C2	-6.83	117.57	120.30
1	3A	104	C	C2-N1-C1'	6.83	126.32	118.80
3	SA	1704	U	N1-C2-O2	6.83	127.58	122.80
3	SA	258	C	N3-C2-O2	-6.83	117.12	121.90
3	SA	1566	U	N3-C2-O2	-6.80	117.44	122.20
2	5A	312	U	OP1-P-O3'	6.80	120.15	105.20
3	SA	209	U	N3-C2-O2	-6.79	117.45	122.20
1	3A	72	C	C6-N1-C2	-6.77	117.59	120.30
16	SY	132	LEU	CA-CB-CG	6.76	130.85	115.30
33	B2	757	ASP	CB-CG-OD1	6.75	124.37	118.30
3	SA	311	U	C2-N1-C1'	6.74	125.79	117.70
3	SA	56	U	P-O3'-C3'	6.73	127.78	119.70
3	SA	1541	G	C2'-C3'-O3'	6.72	124.46	113.70
3	SA	1661	U	C5-C6-N1	6.70	126.05	122.70
3	SA	648	G	N3-C4-N9	6.68	130.01	126.00
50	RE	1105	PRO	O-C-N	-6.68	112.02	122.70
3	SA	1174	C	C6-N1-C2	-6.66	117.64	120.30
3	SA	1258	U	N3-C2-O2	-6.66	117.54	122.20
3	SA	1527	C	N1-C2-O2	6.66	122.90	118.90
3	SA	607	G	N3-C4-N9	6.66	130.00	126.00
3	SA	545	A	O4'-C1'-N9	6.64	113.51	108.20
3	SA	608	U	C2-N1-C1'	6.63	125.66	117.70
1	3A	99	U	C4'-C3'-O3'	6.63	126.26	113.00
3	SA	1052	U	O4'-C1'-N1	6.63	113.50	108.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
21	3D	142	LEU	CA-CB-CG	6.60	130.48	115.30
27	A8	392	PRO	N-CA-CB	6.59	111.21	103.30
37	B6	18	LEU	CA-CB-CG	6.59	130.45	115.30
24	3H	65	LEU	CA-CB-CG	6.53	130.31	115.30
3	SA	280	U	C2-N1-C1'	6.53	125.53	117.70
30	AF	327	LEU	CA-CB-CG	6.50	130.26	115.30
3	SA	864	U	C2-N1-C1'	6.50	125.50	117.70
53	RJ	252	LEU	CA-CB-CG	6.50	130.25	115.30
3	SA	401	A	P-O3'-C3'	6.49	127.49	119.70
3	SA	1175	U	N3-C2-O2	-6.47	117.67	122.20
3	SA	1274	C	N3-C2-O2	-6.47	117.37	121.90
1	3A	318	U	O5'-P-OP2	-6.47	99.88	105.70
3	SA	302	U	N3-C2-O2	-6.46	117.67	122.20
26	A5	452	LEU	CA-CB-CG	6.46	130.15	115.30
3	SA	280	U	N1-C2-O2	6.45	127.31	122.80
32	B1	717	LEU	CA-CB-CG	6.45	130.13	115.30
45	5I	368	ASP	CB-CG-OD1	6.44	124.10	118.30
4	SC	120	LEU	CA-CB-CG	6.42	130.07	115.30
41	5E	314	LEU	CA-CB-CG	6.41	130.04	115.30
3	SA	965	U	C2-N1-C1'	6.41	125.39	117.70
3	SA	1232	U	N1-C2-O2	6.40	127.28	122.80
1	3A	250	C	N1-C2-O2	6.38	122.73	118.90
3	SA	1228	G	C2-N3-C4	6.38	115.09	111.90
3	SA	166	C	N3-C2-O2	-6.37	117.44	121.90
1	3A	200	C	C6-N1-C1'	-6.36	113.16	120.80
3	SA	1175	U	N1-C2-O2	6.36	127.25	122.80
3	SA	275	C	N3-C2-O2	-6.35	117.46	121.90
3	SA	864	U	N3-C2-O2	-6.34	117.76	122.20
3	SA	1594	G	P-O3'-C3'	6.34	127.31	119.70
3	SA	648	G	C4-N9-C1'	6.33	134.73	126.50
3	SA	1440	C	C6-N1-C2	-6.33	117.77	120.30
1	3A	317	A	C4'-C3'-O3'	6.33	125.66	113.00
3	SA	1704	U	N3-C2-O2	-6.32	117.78	122.20
58	RP	48	LEU	CA-CB-CG	6.30	129.78	115.30
30	AF	95	LEU	CA-CB-CG	6.29	129.78	115.30
3	SA	1703	C	N1-C2-O2	6.29	122.67	118.90
3	SA	38	C	N1-C2-O2	6.28	122.67	118.90
1	3A	312	U	P-O3'-C3'	6.26	127.21	119.70
3	SA	1496	U	C2-N1-C1'	6.24	125.19	117.70
26	A5	457	LEU	CA-CB-CG	6.24	129.64	115.30
3	SA	861	U	N1-C2-O2	6.23	127.16	122.80
3	SA	1056	U	N3-C2-O2	-6.19	117.86	122.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	SA	1228	G	C4-N9-C1'	6.18	134.53	126.50
27	A8	309	PRO	N-CA-CB	6.18	110.72	103.30
2	5A	312	U	C2-N1-C1'	-6.18	110.29	117.70
3	SA	826	U	O4'-C1'-N1	6.17	113.13	108.20
3	SA	1527	C	C2-N1-C1'	6.14	125.55	118.80
1	3A	198	U	P-O3'-C3'	6.13	127.05	119.70
3	SA	864	U	N1-C2-O2	6.12	127.09	122.80
3	SA	1496	U	N1-C2-O2	6.12	127.09	122.80
3	SA	514	G	N7-C8-N9	6.11	116.15	113.10
3	SA	376	C	C6-N1-C2	-6.10	117.86	120.30
3	SA	1055	U	N3-C2-O2	-6.10	117.93	122.20
3	SA	273	G	C4-N9-C1'	6.10	134.43	126.50
3	SA	935	U	N1-C2-O2	6.09	127.07	122.80
57	RO	269	LEU	CA-CB-CG	6.09	129.31	115.30
1	3A	308	U	N1-C2-O2	6.09	127.06	122.80
3	SA	648	G	C8-N9-C1'	-6.09	119.09	127.00
3	SA	1441	C	N3-C2-O2	-6.09	117.64	121.90
3	SA	607	G	C8-N9-C1'	-6.08	119.09	127.00
66	RD	1205	PRO	N-CA-CB	6.08	110.59	103.30
1	3A	200	C	C5-C6-N1	6.07	124.03	121.00
3	SA	209	U	N1-C2-O2	6.07	127.05	122.80
3	SA	575	C	N1-C2-O2	6.05	122.53	118.90
3	SA	1440	C	C5-C6-N1	6.05	124.03	121.00
3	SA	1533	C	P-O3'-C3'	6.05	126.96	119.70
54	RK	117	LEU	CA-CB-CG	6.05	129.21	115.30
3	SA	1566	U	N1-C2-O2	6.03	127.02	122.80
3	SA	1439	C	N3-C2-O2	-6.02	117.68	121.90
3	SA	1784	C	C6-N1-C2	-6.02	117.89	120.30
32	B1	521	LEU	CA-CB-CG	6.01	129.12	115.30
3	SA	1620	C	N1-C2-O2	6.00	122.50	118.90
2	5A	492	G	P-O3'-C3'	6.00	126.90	119.70
42	5F	57	LEU	CA-CB-CG	6.00	129.10	115.30
3	SA	-7	A	P-O3'-C3'	6.00	126.89	119.70
3	SA	1259	U	C5-C6-N1	5.98	125.69	122.70
3	SA	311	U	N3-C2-O2	-5.97	118.02	122.20
3	SA	275	C	C6-N1-C2	-5.96	117.91	120.30
27	A8	453	PRO	N-CA-CB	5.96	110.46	103.30
3	SA	645	C	N1-C2-O2	5.96	122.48	118.90
3	SA	1485	C	N1-C2-O2	5.95	122.47	118.90
9	SJ	29	LEU	CA-CB-CG	5.94	128.97	115.30
1	3A	72	C	C5-C6-N1	5.93	123.96	121.00
3	SA	381	C	N1-C2-O2	5.92	122.45	118.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	SA	1084	A	OP1-P-O3'	5.92	118.21	105.20
3	SA	1490	C	N1-C2-O2	5.91	122.44	118.90
3	SA	1232	U	N3-C2-O2	-5.90	118.07	122.20
3	SA	1254	U	C5-C6-N1	5.90	125.65	122.70
3	SA	1679	G	O4'-C1'-N9	5.90	112.92	108.20
32	B1	479	LEU	CA-CB-CG	5.90	128.87	115.30
58	RP	1797	LEU	CA-CB-CG	5.90	128.87	115.30
3	SA	1228	G	N3-C4-N9	5.89	129.53	126.00
3	SA	1216	C	N3-C2-O2	-5.89	117.78	121.90
3	SA	1232	U	C2-N1-C1'	5.89	124.76	117.70
3	SA	1493	C	N3-C2-O2	-5.88	117.78	121.90
43	5G	109	LEU	CA-CB-CG	5.88	128.83	115.30
3	SA	0	U	P-O3'-C3'	5.88	126.76	119.70
3	SA	1034	C	C2-N1-C1'	5.88	125.27	118.80
40	5D	28	LEU	CA-CB-CG	5.87	128.81	115.30
67	RZ	658	PRO	N-CA-CB	5.87	110.35	103.30
3	SA	1084	A	P-O3'-C3'	5.87	126.75	119.70
63	RT	79	PRO	N-CA-CB	5.86	110.33	103.30
3	SA	608	U	N1-C2-O2	5.86	126.90	122.80
3	SA	1055	U	N1-C2-O2	5.85	126.90	122.80
43	5G	152	LEU	CA-CB-CG	5.84	128.74	115.30
52	RG	96	LEU	CA-CB-CG	5.84	128.74	115.30
3	SA	562	G	O4'-C1'-N9	5.84	112.87	108.20
3	SA	1534	G	N9-C1'-C2'	-5.84	105.58	112.00
3	SA	542	A	P-O3'-C3'	5.83	126.70	119.70
34	B3	401	LEU	CA-CB-CG	5.83	128.70	115.30
32	B1	69	LEU	CA-CB-CG	5.82	128.69	115.30
27	A8	429	PRO	N-CA-CB	5.81	110.27	103.30
27	A8	298	PRO	N-CA-CB	5.80	110.26	103.30
27	A8	390	PRO	N-CA-CB	5.79	110.25	103.30
3	SA	417	A	P-O3'-C3'	5.79	126.65	119.70
39	5C	74	LEU	CA-CB-CG	5.78	128.60	115.30
3	SA	1734	U	N3-C2-O2	-5.78	118.16	122.20
3	SA	87	C	C6-N1-C2	-5.77	117.99	120.30
36	BE	522	LEU	CA-CB-CG	5.77	128.56	115.30
3	SA	612	U	C2-N1-C1'	5.75	124.60	117.70
1	3A	201	C	N3-C2-O2	-5.75	117.88	121.90
34	B3	342	ASP	CB-CG-OD1	5.75	123.47	118.30
36	BE	872	LEU	CA-CB-CG	5.75	128.52	115.30
3	SA	194	U	C2-N1-C1'	5.74	124.59	117.70
36	BE	121	LEU	CA-CB-CG	5.73	128.48	115.30
3	SA	1448	G	C5-C6-O6	5.72	132.03	128.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
30	AF	195	LEU	CA-CB-CG	5.72	128.47	115.30
3	SA	310	C	C6-N1-C2	-5.71	118.01	120.30
27	A8	235	PRO	N-CA-CB	5.71	110.15	103.30
3	SA	373	G	N3-C4-C5	-5.71	125.75	128.60
3	SA	1496	U	N3-C2-O2	-5.71	118.21	122.20
3	SA	1521	G	P-O3'-C3'	5.70	126.55	119.70
3	SA	894	U	N1-C2-O2	5.70	126.79	122.80
8	SI	38	LEU	CA-CB-CG	5.70	128.41	115.30
3	SA	885	G	C8-N9-C4	-5.69	104.12	106.40
3	SA	376	C	C6-N1-C1'	-5.69	113.97	120.80
3	SA	411	C	N1-C2-O2	5.69	122.31	118.90
3	SA	1199	G	N3-C4-N9	5.69	129.41	126.00
3	SA	569	C	C6-N1-C2	-5.69	118.03	120.30
3	SA	1743	U	N3-C2-O2	-5.69	118.22	122.20
45	5I	62	LEU	CA-CB-CG	5.67	128.35	115.30
29	AE	604	LEU	CA-CB-CG	5.67	128.33	115.30
35	B8	387	LEU	CA-CB-CG	5.66	128.32	115.30
25	A4	422	LEU	CA-CB-CG	5.65	128.30	115.30
3	SA	1034	C	N1-C2-O2	5.63	122.28	118.90
3	SA	376	C	C5-C6-N1	5.63	123.81	121.00
32	B1	716	ASP	CB-CG-OD1	5.62	123.36	118.30
3	SA	1705	C	C6-N1-C2	-5.62	118.05	120.30
3	SA	273	G	N3-C4-N9	5.62	129.37	126.00
3	SA	273	G	N3-C4-C5	-5.61	125.80	128.60
31	AG	449	LEU	CA-CB-CG	5.61	128.20	115.30
59	RQ	801	PRO	N-CA-CB	5.61	110.03	103.30
3	SA	1174	C	C5-C6-N1	5.58	123.79	121.00
1	3A	313	A	C4-C5-C6	-5.58	114.21	117.00
3	SA	1585	U	N1-C2-O2	5.58	126.70	122.80
25	A4	534	LEU	CA-CB-CG	5.58	128.13	115.30
3	SA	1056	U	C2-N1-C1'	5.55	124.36	117.70
3	SA	1554	U	N1-C2-O2	5.55	126.69	122.80
3	SA	1441	C	N1-C2-O2	5.55	122.23	118.90
28	A9	516	LEU	CA-CB-CG	5.55	128.06	115.30
1	3A	106	C	C5-C6-N1	5.55	123.77	121.00
3	SA	1161	C	C5-C6-N1	5.54	123.77	121.00
39	5C	414	LEU	CA-CB-CG	5.54	128.05	115.30
36	BE	417	LEU	CA-CB-CG	5.54	128.03	115.30
3	SA	894	U	N3-C2-O2	-5.53	118.33	122.20
3	SA	1585	U	N3-C2-O2	-5.52	118.34	122.20
35	B8	272	LEU	CA-CB-CG	5.52	127.99	115.30
2	5A	90	G	C8-N9-C1'	5.51	134.16	127.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	SA	87	C	C5-C6-N1	5.51	123.75	121.00
3	SA	411	C	N3-C2-O2	-5.51	118.05	121.90
1	3A	313	A	N3-C4-N9	-5.50	123.00	127.40
52	RG	50	LEU	CA-CB-CG	5.49	127.93	115.30
3	SA	514	G	C8-N9-C4	-5.49	104.20	106.40
5	SF	42	LEU	CA-CB-CG	5.49	127.92	115.30
29	AE	526	LEU	CA-CB-CG	5.49	127.92	115.30
47	5K	17	LEU	CA-CB-CG	5.49	127.92	115.30
3	SA	1734	U	N1-C2-O2	5.48	126.63	122.80
29	AE	370	LEU	CA-CB-CG	5.46	127.86	115.30
39	5C	416	LEU	CA-CB-CG	5.46	127.85	115.30
27	A8	316	PRO	N-CA-CB	5.45	109.84	103.30
3	SA	38	C	C6-N1-C2	-5.45	118.12	120.30
3	SA	607	G	C8-N9-C4	-5.45	104.22	106.40
36	BE	614	LEU	CA-CB-CG	5.45	127.83	115.30
20	3C	306	LEU	CA-CB-CG	5.44	127.82	115.30
3	SA	50	C	C2-N1-C1'	5.44	124.79	118.80
3	SA	258	C	C6-N1-C2	-5.44	118.12	120.30
34	B3	471	PRO	C-N-CA	5.44	135.30	121.70
3	SA	530	C	N1-C2-O2	5.43	122.16	118.90
3	SA	373	G	C4-N9-C1'	5.43	133.56	126.50
3	SA	1568	C	P-O3'-C3'	5.43	126.22	119.70
1	3A	248	G	P-O3'-C3'	5.43	126.22	119.70
3	SA	894	U	C2-N1-C1'	5.43	124.22	117.70
3	SA	965	U	N1-C2-O2	5.42	126.59	122.80
3	SA	258	C	C6-N1-C1'	-5.42	114.30	120.80
4	SC	172	LEU	CA-CB-CG	5.42	127.76	115.30
54	RK	296	LEU	CA-CB-CG	5.42	127.76	115.30
31	AG	323	LEU	CA-CB-CG	5.41	127.75	115.30
34	B3	736	LEU	CA-CB-CG	5.41	127.74	115.30
3	SA	38	C	C2-N1-C1'	5.41	124.75	118.80
3	SA	1505	A	C8-N9-C4	-5.40	103.64	105.80
3	SA	916	U	N3-C2-O2	-5.40	118.42	122.20
3	SA	275	C	C5-C6-N1	5.40	123.70	121.00
3	SA	608	U	N3-C2-O2	-5.40	118.42	122.20
3	SA	1448	G	N1-C6-O6	-5.39	116.66	119.90
3	SA	648	G	C6-C5-N7	-5.39	127.16	130.40
3	SA	128	U	C2-N1-C1'	5.39	124.17	117.70
3	SA	908	U	N1-C2-O2	5.39	126.57	122.80
1	3A	89	C	N3-C2-O2	-5.39	118.13	121.90
3	SA	1484	G	O3'-P-O5'	-5.39	93.77	104.00
29	AE	547	ILE	CG1-CB-CG2	-5.38	99.55	111.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
23	3F	315	LEU	CA-CB-CG	5.38	127.67	115.30
3	SA	79	C	N1-C2-O2	5.37	122.12	118.90
3	SA	311	U	C5-C6-N1	5.37	125.39	122.70
3	SA	680	U	C5-C6-N1	5.37	125.38	122.70
2	5A	312	U	O4'-C1'-N1	5.36	112.49	108.20
3	SA	75	U	C2-N1-C1'	5.36	124.13	117.70
3	SA	1174	C	C6-N1-C1'	-5.36	114.37	120.80
21	3D	152	LEU	CA-CB-CG	5.36	127.63	115.30
3	SA	908	U	N3-C2-O2	-5.36	118.45	122.20
3	SA	1064	G	C4-N9-C1'	5.35	133.46	126.50
3	SA	935	U	N3-C2-O2	-5.35	118.46	122.20
58	RP	155	LEU	CA-CB-CG	5.35	127.60	115.30
3	SA	1717	G	C4-N9-C1'	5.34	133.44	126.50
2	5A	90	G	C4-N9-C1'	-5.34	119.56	126.50
3	SA	937	C	C6-N1-C2	-5.34	118.17	120.30
3	SA	1269	U	N3-C2-O2	-5.33	118.47	122.20
50	RE	1037	LEU	CA-CB-CG	-5.33	103.04	115.30
50	RE	365	LEU	CA-CB-CG	5.33	127.56	115.30
22	3E	401	LEU	CA-CB-CG	5.33	127.56	115.30
31	AG	889	ASP	CB-CG-OD1	5.33	123.09	118.30
3	SA	1783	C	C6-N1-C2	-5.33	118.17	120.30
3	SA	935	U	C5-C6-N1	5.33	125.36	122.70
34	B3	162	LEU	CB-CG-CD2	-5.33	101.94	111.00
3	SA	680	U	N1-C2-O2	5.32	126.53	122.80
3	SA	380	U	N1-C2-O2	5.31	126.52	122.80
1	3A	104	C	C2-N3-C4	5.30	122.55	119.90
50	RE	840	LEU	CA-CB-CG	5.30	127.48	115.30
3	SA	443	C	C5-C6-N1	5.29	123.64	121.00
3	SA	916	U	N1-C2-O2	5.28	126.50	122.80
3	SA	960	U	N3-C2-O2	-5.28	118.50	122.20
3	SA	1646	C	N1-C2-O2	5.28	122.07	118.90
3	SA	1708	U	C2-N1-C1'	5.28	124.04	117.70
3	SA	25	C	C2-N1-C1'	5.28	124.60	118.80
3	SA	1269	U	N1-C2-O2	5.28	126.49	122.80
3	SA	1664	C	N3-C2-O2	-5.28	118.21	121.90
3	SA	38	C	N3-C2-O2	-5.27	118.21	121.90
39	5C	148	LEU	CA-CB-CG	5.27	127.42	115.30
36	BE	536	LEU	CB-CG-CD2	-5.26	102.06	111.00
22	3E	227	LEU	CA-CB-CG	5.26	127.39	115.30
3	SA	1439	C	N1-C2-O2	5.25	122.05	118.90
3	SA	279	G	N3-C4-N9	-5.25	122.85	126.00
15	SX	93	LEU	CA-CB-CG	5.24	127.34	115.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
57	RO	388	LEU	CA-CB-CG	5.24	127.34	115.30
23	3F	348	LEU	CA-CB-CG	5.23	127.33	115.30
3	SA	49	C	C5-C6-N1	5.23	123.61	121.00
3	SA	827	C	C2-N1-C1'	5.23	124.55	118.80
58	RP	1770	LEU	CA-CB-CG	5.23	127.33	115.30
3	SA	1493	C	C6-N1-C2	-5.23	118.21	120.30
3	SA	-7	A	OP1-P-O3'	5.22	116.69	105.20
29	AE	94	LEU	CA-CB-CG	5.22	127.31	115.30
51	RF	147	LEU	CA-CB-CG	5.22	127.31	115.30
34	B3	12	LEU	CA-CB-CG	5.22	127.31	115.30
3	SA	677	G	N3-C4-N9	-5.22	122.87	126.00
3	SA	373	G	N3-C4-N9	5.22	129.13	126.00
3	SA	380	U	N3-C2-O2	-5.22	118.55	122.20
26	A5	151	LEU	CA-CB-CG	5.22	127.30	115.30
3	SA	443	C	C6-N1-C2	-5.21	118.22	120.30
3	SA	861	U	N3-C2-O2	-5.21	118.55	122.20
3	SA	8	U	N3-C2-O2	-5.21	118.56	122.20
50	RE	1105	PRO	CA-C-N	5.21	128.66	117.20
3	SA	1554	U	N3-C2-O2	-5.20	118.56	122.20
3	SA	612	U	N1-C2-O2	5.20	126.44	122.80
34	B3	394	LEU	CA-CB-CG	5.20	127.25	115.30
3	SA	411	C	C6-N1-C2	-5.19	118.22	120.30
35	B8	521	LEU	CB-CG-CD1	-5.19	102.17	111.00
3	SA	50	C	C6-N1-C2	-5.19	118.22	120.30
22	3E	141	LEU	CA-CB-CG	5.18	127.21	115.30
33	B2	267	ASP	C-N-CA	5.17	134.64	121.70
41	5E	449	ASP	CB-CG-OD1	5.17	122.95	118.30
1	3A	39	C	C2-N1-C1'	5.17	124.48	118.80
1	3A	205	G	P-O3'-C3'	5.15	125.88	119.70
4	SC	110	LEU	CA-CB-CG	5.15	127.14	115.30
3	SA	1533	C	C2'-C3'-O3'	5.15	121.94	113.70
3	SA	1704	U	C2-N1-C1'	5.15	123.88	117.70
3	SA	273	G	C8-N9-C1'	-5.14	120.31	127.00
1	3A	39	C	C6-N1-C2	-5.14	118.25	120.30
54	RK	325	LEU	CA-CB-CG	5.13	127.11	115.30
57	RO	211	LEU	CA-CB-CG	5.13	127.11	115.30
3	SA	885	G	N1-C6-O6	-5.12	116.83	119.90
3	SA	569	C	C5-C6-N1	5.12	123.56	121.00
3	SA	1053	G	C8-N9-C4	-5.11	104.36	106.40
25	A4	465	LEU	CA-CB-CG	5.09	127.01	115.30
3	SA	1568	C	C6-N1-C2	-5.09	118.26	120.30
3	SA	75	U	N3-C2-O2	-5.08	118.64	122.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	5A	310	U	C6-N1-C2	-5.08	117.95	121.00
1	3A	249	G	O5'-P-OP1	-5.08	101.13	105.70
51	RF	58	LEU	CA-CB-CG	5.07	126.96	115.30
3	SA	1664	C	C2-N1-C1'	5.07	124.38	118.80
1	3A	198	U	OP1-P-O3'	5.07	116.35	105.20
40	5D	91	LEU	CA-CB-CG	5.06	126.94	115.30
57	RO	264	LEU	CA-CB-CG	5.06	126.94	115.30
14	SR	123	ARG	C-N-CD	-5.06	109.47	120.60
4	SC	147	ALA	C-N-CA	5.06	134.34	121.70
50	RE	396	LEU	CA-CB-CG	5.05	126.92	115.30
1	3A	89	C	C6-N1-C1'	-5.05	114.74	120.80
3	SA	414	C	C5-C6-N1	5.05	123.53	121.00
25	A4	435	PRO	C-N-CA	5.05	134.33	121.70
3	SA	1717	G	N3-C4-N9	5.05	129.03	126.00
1	3A	200	C	C6-N1-C2	-5.04	118.28	120.30
50	RE	1102	LEU	CA-CB-CG	5.04	126.90	115.30
3	SA	861	U	C5-C6-N1	5.04	125.22	122.70
3	SA	130	C	C2-N1-C1'	5.04	124.34	118.80
3	SA	1664	C	C6-N1-C2	-5.04	118.29	120.30
32	B1	701	LEU	CA-CB-CG	5.03	126.88	115.30
33	B2	231	LEU	CA-CB-CG	5.03	126.87	115.30
66	RD	1502	LEU	CA-CB-CG	5.03	126.87	115.30
1	3A	199	G	N3-C4-N9	5.03	129.02	126.00
32	B1	436	LEU	CA-CB-CG	5.02	126.85	115.30
64	ST	109	LEU	CA-CB-CG	5.02	126.85	115.30
3	SA	1222	C	C5-C6-N1	5.02	123.51	121.00
3	SA	1258	U	C5-C6-N1	5.02	125.21	122.70
56	RN	744	LEU	CA-CB-CG	5.02	126.84	115.30
60	RS	392	TYR	CA-CB-CG	5.02	122.93	113.40
3	SA	532	U	N3-C2-O2	-5.01	118.69	122.20
3	SA	1083	G	C4-C5-N7	5.01	112.80	110.80
3	SA	1664	C	N1-C2-O2	5.01	121.91	118.90
3	SA	35	U	N1-C2-O2	5.01	126.30	122.80
58	RP	2033	LYS	C-N-CA	5.00	134.21	121.70

There are no chirality outliers.

All (75) 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

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Mol	Chain	Res	Type	Group
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
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

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Mol	Chain	Res	Type	Group
50	RE	767	GLN	Peptide
51	RF	253	ALA	Peptide
53	RJ	1026	LYS	Peptide
53	RJ	868	ARG	Peptide
54	RK	333	PHE	Peptide
55	RL	743	VAL	Peptide
55	RM	743	VAL	Peptide
56	RN	286	SER	Peptide
57	RO	144	PRO	Peptide
58	RP	1746	LYS	Peptide
58	RP	2051	ASP	Peptide
58	RP	835	LEU	Peptide
59	RQ	313	PHE	Peptide
59	RQ	786	THR	Peptide
59	RQ	787	THR	Peptide
59	RQ	806	ARG	Peptide
67	RZ	1001	SER	Peptide
67	RZ	1069	SER	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

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

5.3 Torsion angles

5.3.1 Protein backbone

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
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	119/155 (77%)	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
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%)	443 (91%)	46 (9%)	0	100	100
31	AG	812/896 (91%)	732 (90%)	79 (10%)	1 (0%)	51	86

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
32	B1	787/900 (87%)	732 (93%)	55 (7%)	0	100	100
33	B2	813/943 (86%)	723 (89%)	88 (11%)	2 (0%)	47	81
34	B3	733/817 (90%)	605 (82%)	126 (17%)	2 (0%)	41	77
35	B8	469/594 (79%)	440 (94%)	29 (6%)	0	100	100
36	BE	814/939 (87%)	764 (94%)	50 (6%)	0	100	100
37	B6	368/440 (84%)	342 (93%)	26 (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%)	146 (88%)	19 (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	130/217 (60%)	121 (93%)	9 (7%)	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	RE	1067/1237 (86%)	998 (94%)	69 (6%)	0	100	100
51	RF	233/297 (78%)	203 (87%)	30 (13%)	0	100	100
52	RG	212/252 (84%)	182 (86%)	30 (14%)	0	100	100
52	RH	226/252 (90%)	219 (97%)	7 (3%)	0	100	100
53	RJ	784/1183 (66%)	722 (92%)	61 (8%)	1 (0%)	51	86
54	RK	358/367 (98%)	341 (95%)	17 (5%)	0	100	100
55	RL	781/1056 (74%)	664 (85%)	115 (15%)	2 (0%)	41	77
55	RM	738/1056 (70%)	626 (85%)	108 (15%)	4 (0%)	29	69
56	RN	593/810 (73%)	546 (92%)	46 (8%)	1 (0%)	47	81
57	RO	523/552 (95%)	455 (87%)	68 (13%)	0	100	100
58	RP	2042/2493 (82%)	1816 (89%)	226 (11%)	0	100	100
59	RQ	267/899 (30%)	227 (85%)	40 (15%)	0	100	100
60	RS	247/480 (52%)	225 (91%)	22 (9%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
61	RY	35/534 (7%)	29 (83%)	6 (17%)	0	100	100
63	RT	206/326 (63%)	178 (86%)	27 (13%)	1 (0%)	29	69
64	ST	106/146 (73%)	89 (84%)	17 (16%)	0	100	100
65	SU	141/144 (98%)	124 (88%)	16 (11%)	1 (1%)	22	63
66	RD	310/1729 (18%)	284 (92%)	23 (7%)	3 (1%)	15	55
67	RZ	834/1267 (66%)	739 (89%)	91 (11%)	4 (0%)	29	69
All	All	25032/35454 (71%)	22530 (90%)	2459 (10%)	43 (0%)	50	81

All (43) 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
55	RL	744	PRO
55	RM	744	PRO
55	RM	905	PRO
66	RD	1223	PRO
67	RZ	583	VAL
67	RZ	676	ILE
67	RZ	682	VAL
17	SZ	51	GLU
53	RJ	82	LYS
67	RZ	1058	ILE
27	A8	235	PRO
31	AG	434	GLN
33	B2	132	THR
34	B3	91	LYS
55	RM	904	LEU
56	RN	285	PRO
65	SU	44	GLU
23	3F	552	TRP
27	A8	369	ILE
41	5E	476	MET
33	B2	118	ASN
41	5E	481	PRO

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Mol	Chain	Res	Type
49	RB	274	ILE
55	RL	743	VAL
55	RM	743	VAL
66	RD	1204	VAL
66	RD	1222	LYS
5	SF	194	THR
13	SP	123	SER
27	A8	439	LYS
34	B3	71	PRO
39	5C	16	GLU
63	RT	71	VAL
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	110/136 (81%)	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

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
17	SZ	85/113 (75%)	85 (100%)	0	100	100
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	696/789 (88%)	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

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
46	5J	125/200 (62%)	125 (100%)	0	100	100
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	RE	984/1125 (88%)	975 (99%)	9 (1%)	78	87
51	RF	221/274 (81%)	219 (99%)	2 (1%)	78	87
52	RG	195/222 (88%)	193 (99%)	2 (1%)	76	86
52	RH	206/222 (93%)	204 (99%)	2 (1%)	76	86
53	RJ	683/1039 (66%)	676 (99%)	7 (1%)	76	86
54	RK	307/312 (98%)	303 (99%)	4 (1%)	69	81
55	RL	164/934 (18%)	162 (99%)	2 (1%)	71	83
56	RN	422/732 (58%)	421 (100%)	1 (0%)	93	96
57	RO	329/506 (65%)	328 (100%)	1 (0%)	92	95
58	RP	499/2307 (22%)	493 (99%)	6 (1%)	71	83
59	RQ	136/808 (17%)	133 (98%)	3 (2%)	52	71
60	RS	225/421 (53%)	225 (100%)	0	100	100
61	RY	31/482 (6%)	30 (97%)	1 (3%)	39	61
63	RT	158/282 (56%)	157 (99%)	1 (1%)	86	92
64	ST	98/129 (76%)	97 (99%)	1 (1%)	76	86
65	SU	115/116 (99%)	114 (99%)	1 (1%)	78	87
66	RD	226/1544 (15%)	220 (97%)	6 (3%)	44	65
67	RZ	718/1140 (63%)	713 (99%)	5 (1%)	84	90
All	All	18207/30620 (60%)	18026 (99%)	181 (1%)	77	86

All (181) 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

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Mol	Chain	Res	Type
5	SF	240	LYS
7	SH	71	THR
7	SH	92	ARG
8	SI	189	THR
9	SJ	165	LEU
9	SJ	195	ARG
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

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Mol	Chain	Res	Type
29	AE	645	ARG
29	AE	699	ARG
30	AF	199	ARG
30	AF	261	VAL
30	AF	432	TYR
30	AF	508	LEU
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

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Mol	Chain	Res	Type
37	B6	67	ARG
37	B6	106	ASP
37	B6	133	TYR
38	5B	158	LYS
38	5B	211	LEU
39	5C	153	THR
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	RE	223	ARG
50	RE	227	LYS
50	RE	289	ARG
50	RE	742	PHE
50	RE	1073	ASN
50	RE	1086	ASN

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Mol	Chain	Res	Type
50	RE	1089	PHE
50	RE	1191	LYS
50	RE	1230	MET
51	RF	19	LYS
51	RF	69	LYS
52	RG	32	THR
52	RG	100	LEU
52	RH	82	ARG
52	RH	197	ASP
53	RJ	214	ARG
53	RJ	566	ARG
53	RJ	869	THR
53	RJ	973	ARG
53	RJ	976	ILE
53	RJ	1128	LYS
53	RJ	1141	LYS
54	RK	90	CYS
54	RK	214	LYS
54	RK	335	THR
54	RK	340	LYS
55	RL	9	ARG
55	RL	83	ARG
56	RN	766	ARG
57	RO	493	TYR
58	RP	201	ARG
58	RP	1749	LYS
58	RP	1770	LEU
58	RP	1813	LYS
58	RP	1815	CYS
58	RP	1896	ILE
59	RQ	330	THR
59	RQ	898	PHE
59	RQ	899	LYS
61	RY	487	ASP
63	RT	234	LEU
64	ST	55	HIS
65	SU	108	LEU
66	RD	1466	ARG
66	RD	1521	LEU
66	RD	1668	LYS
66	RD	1670	LYS
66	RD	1686	LYS

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Mol	Chain	Res	Type
66	RD	1706	LYS
67	RZ	386	LYS
67	RZ	452	ARG
67	RZ	584	ASP
67	RZ	586	ARG
67	RZ	1109	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (305) such sidechains are listed below:

Mol	Chain	Res	Type
4	SC	74	GLN
4	SC	92	GLN
4	SC	101	HIS
4	SC	194	ASN
6	SG	63	GLN
6	SG	104	ASN
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

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Mol	Chain	Res	Type
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
24	3H	45	ASN
25	A4	53	HIS
25	A4	179	HIS
25	A4	274	GLN
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

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Mol	Chain	Res	Type
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
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

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Mol	Chain	Res	Type
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
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	157	ASN
34	B3	241	GLN
34	B3	337	HIS
34	B3	387	HIS
34	B3	519	ASN
34	B3	667	GLN
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

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Mol	Chain	Res	Type
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
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	18	GLN
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
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

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Mol	Chain	Res	Type
45	5I	134	ASN
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
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	RE	170	GLN
50	RE	293	ASN
50	RE	409	ASN
50	RE	506	GLN
50	RE	520	ASN
50	RE	537	ASN
50	RE	568	ASN
50	RE	602	ASN
50	RE	834	ASN
50	RE	841	ASN
50	RE	872	ASN
50	RE	969	ASN
50	RE	1029	ASN
50	RE	1033	ASN
50	RE	1073	ASN
50	RE	1078	HIS
50	RE	1086	ASN
50	RE	1194	HIS
50	RE	1203	ASN
50	RE	1228	ASN
51	RF	23	HIS

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Mol	Chain	Res	Type
51	RF	73	GLN
51	RF	90	ASN
51	RF	135	ASN
51	RF	136	ASN
51	RF	187	HIS
51	RF	197	GLN
52	RG	105	ASN
52	RG	125	ASN
52	RH	69	ASN
52	RH	125	ASN
52	RH	250	ASN
53	RJ	157	ASN
53	RJ	254	HIS
53	RJ	276	HIS
53	RJ	289	HIS
53	RJ	778	GLN
53	RJ	1082	GLN
54	RK	16	ASN
54	RK	334	ASN
55	RL	16	ASN
55	RL	75	ASN
55	RL	133	ASN
56	RN	8	ASN
56	RN	56	ASN
56	RN	89	GLN
56	RN	482	GLN
56	RN	703	GLN
56	RN	771	ASN
56	RN	797	ASN
57	RO	192	GLN
57	RO	266	ASN
57	RO	268	GLN
57	RO	273	GLN
57	RO	304	ASN
57	RO	306	GLN
57	RO	343	GLN
57	RO	434	ASN
57	RO	472	HIS
57	RO	474	HIS
58	RP	58	ASN
58	RP	1686	GLN
58	RP	1707	HIS

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Mol	Chain	Res	Type
58	RP	1785	ASN
58	RP	1787	ASN
58	RP	1802	HIS
58	RP	1816	HIS
59	RQ	303	GLN
59	RQ	310	HIS
59	RQ	344	GLN
59	RQ	867	GLN
59	RQ	876	GLN
63	RT	123	HIS
64	ST	122	HIS
65	SU	43	ASN
65	SU	48	GLN
66	RD	1485	GLN
66	RD	1522	ASN
66	RD	1525	ASN
67	RZ	385	GLN
67	RZ	794	GLN
67	RZ	884	GLN
67	RZ	1114	ASN
67	RZ	1232	ASN

5.3.3 RNA

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	1310/1812 (72%)	499 (38%)	32 (2%)
All	All	1665/2845 (58%)	608 (36%)	44 (2%)

All (608) 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

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Mol	Chain	Res	Type
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
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

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Mol	Chain	Res	Type
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
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

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Mol	Chain	Res	Type
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
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

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Mol	Chain	Res	Type
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
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

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Mol	Chain	Res	Type
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
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

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Mol	Chain	Res	Type
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
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

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Mol	Chain	Res	Type
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
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

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Mol	Chain	Res	Type
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
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

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Mol	Chain	Res	Type
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
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

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Mol	Chain	Res	Type
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
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

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Mol	Chain	Res	Type
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
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

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Mol	Chain	Res	Type
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
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	1487	A
3	SA	1488	G
3	SA	1489	U
3	SA	1490	C
3	SA	1491	U
3	SA	1492	A
3	SA	1493	C
3	SA	1522	U
3	SA	1523	G
3	SA	1524	A
3	SA	1527	C
3	SA	1531	G
3	SA	1532	U

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Mol	Chain	Res	Type
3	SA	1533	C
3	SA	1534	G
3	SA	1535	U
3	SA	1536	G
3	SA	1537	C
3	SA	1538	U
3	SA	1539	G
3	SA	1540	G
3	SA	1541	G
3	SA	1542	G
3	SA	1553	G
3	SA	1554	U
3	SA	1555	A
3	SA	1556	A
3	SA	1557	U
3	SA	1559	A
3	SA	1560	U
3	SA	1561	U
3	SA	1569	A
3	SA	1573	A
3	SA	1574	G
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
3	SA	1659	A
3	SA	1661	U
3	SA	1665	U

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Mol	Chain	Res	Type
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
3	SA	1757	G
3	SA	1758	U
3	SA	1778	G

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Mol	Chain	Res	Type
3	SA	1790	A
3	SA	1791	A
3	SA	1792	G
3	SA	1793	G
3	SA	1794	A
3	SA	1795	U
3	SA	1799	U
3	SA	1800	A
3	SA	1801	A
3	SA	1802	A
3	SA	1803	G
3	SA	1804	A

All (44) 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
3	SA	538	A
3	SA	542	A
3	SA	579	A
3	SA	602	U
3	SA	1052	U
3	SA	1084	A

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Mol	Chain	Res	Type
3	SA	1197	C
3	SA	1474	G
3	SA	1475	A
3	SA	1486	G
3	SA	1487	A
3	SA	1490	C
3	SA	1521	G
3	SA	1531	G
3	SA	1532	U
3	SA	1533	C
3	SA	1539	G
3	SA	1540	G
3	SA	1541	G
3	SA	1568	C
3	SA	1573	A
3	SA	1594	G
3	SA	1632	C
3	SA	1803	G

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

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

5.5 Carbohydrates

There are no monosaccharides in this entry.

5.6 Ligand geometry

Of 5 ligands modelled in this entry, 3 are monoatomic - leaving 2 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	$\#\|Z\|>2$

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
71	ADP	RZ	1301	-	24,29,29	0.95	1 (4%)	29,45,45	1.37	4 (13%)
69	GTP	RJ	1201	70	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
71	ADP	RZ	1301	-	-	4/12/32/32	0/3/3/3
69	GTP	RJ	1201	70	-	3/18/38/38	0/3/3/3

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
69	RJ	1201	GTP	C5-C6	-2.50	1.42	1.47
71	RZ	1301	ADP	C5-C4	2.43	1.47	1.40
69	RJ	1201	GTP	C8-N7	-2.03	1.31	1.35

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
71	RZ	1301	ADP	N3-C2-N1	-3.42	123.33	128.68
71	RZ	1301	ADP	C3'-C2'-C1'	3.02	105.53	100.98
71	RZ	1301	ADP	C4-C5-N7	-2.90	106.37	109.40
71	RZ	1301	ADP	PA-O3A-PB	-2.26	125.09	132.83

There are no chirality outliers.

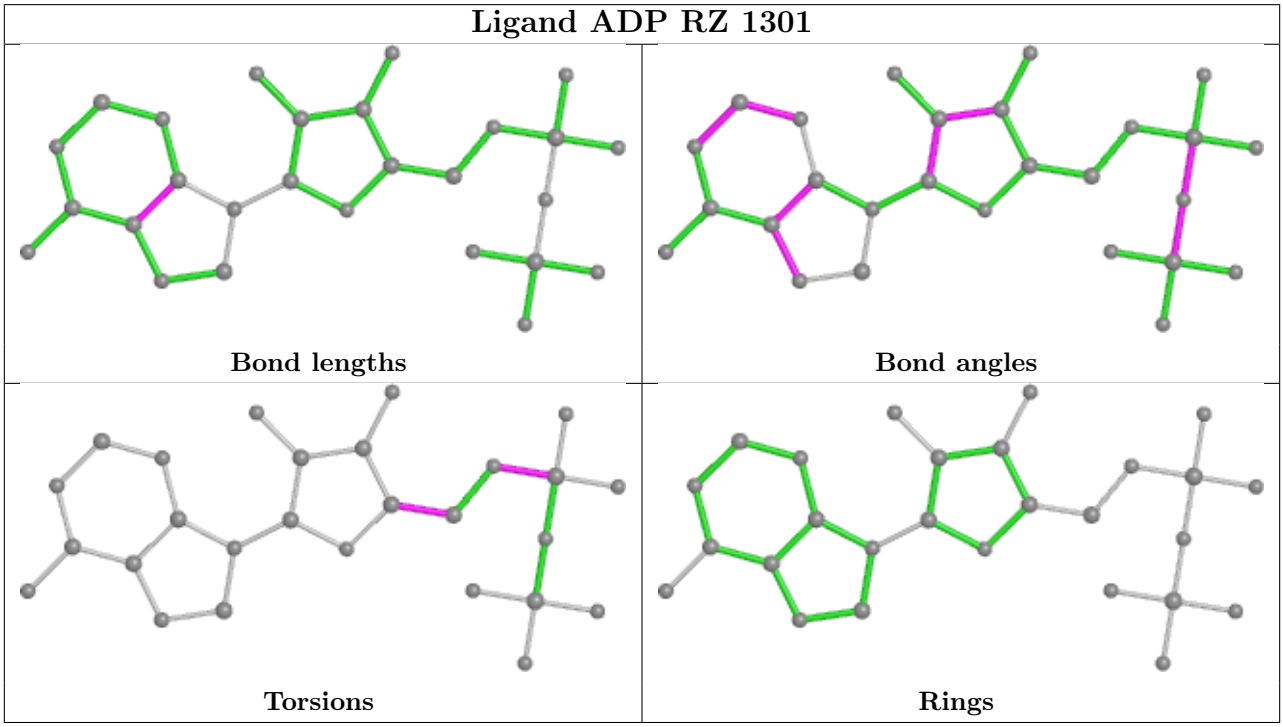
All (7) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
71	RZ	1301	ADP	C5'-O5'-PA-O2A
71	RZ	1301	ADP	C5'-O5'-PA-O3A
69	RJ	1201	GTP	O4'-C4'-C5'-O5'
69	RJ	1201	GTP	C3'-C4'-C5'-O5'
69	RJ	1201	GTP	C4'-C5'-O5'-PA
71	RZ	1301	ADP	O4'-C4'-C5'-O5'
71	RZ	1301	ADP	C3'-C4'-C5'-O5'

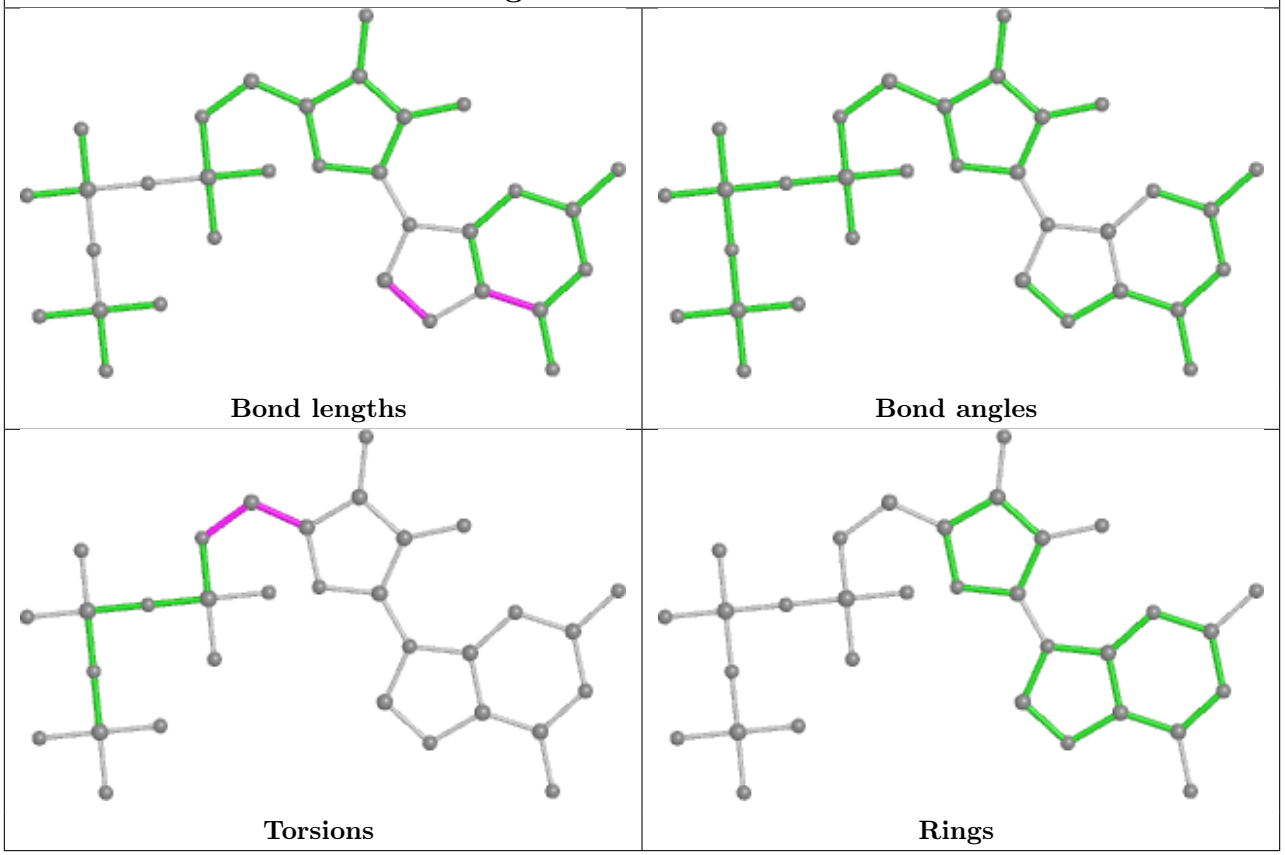
There are no ring outliers.

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 (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

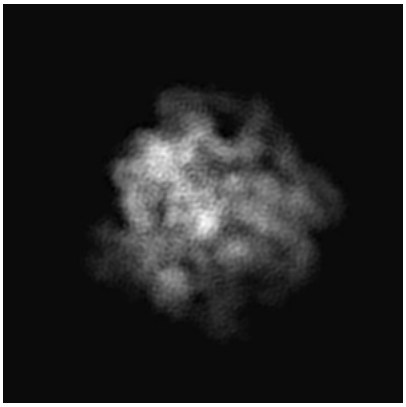
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-30588. These allow visual inspection of the internal detail of the map and identification of artifacts.

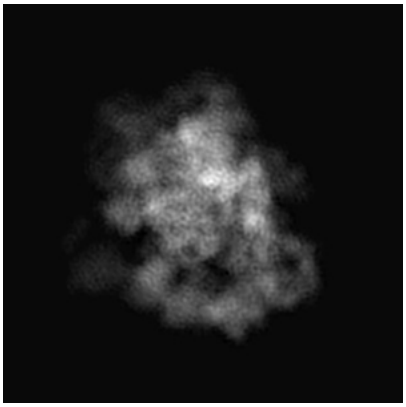
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

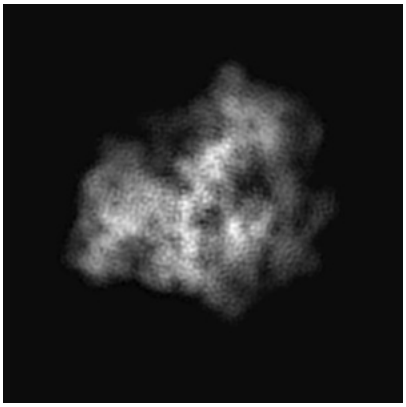
6.1.1 Primary map



X



Y

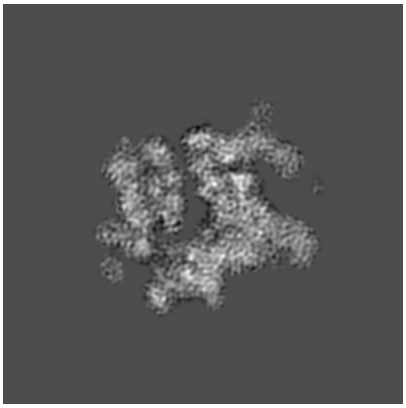


Z

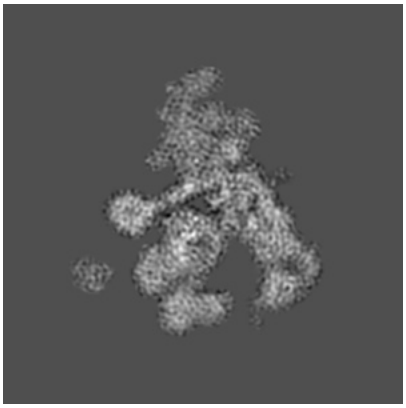
The images above show the map projected in three orthogonal directions.

6.2 Central slices

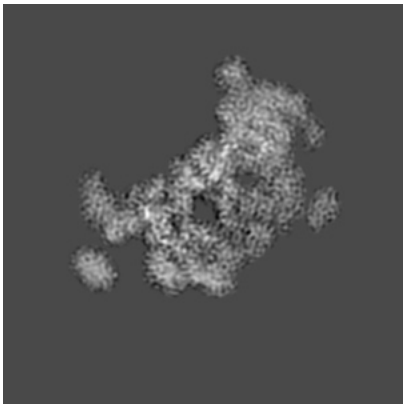
6.2.1 Primary map



X Index: 200



Y Index: 200

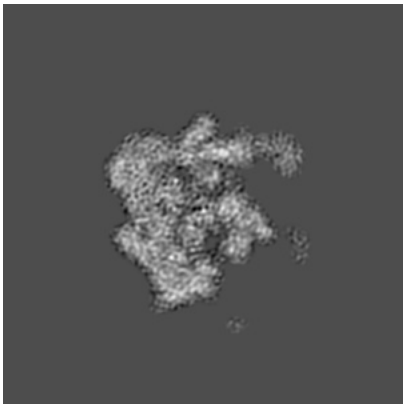


Z Index: 200

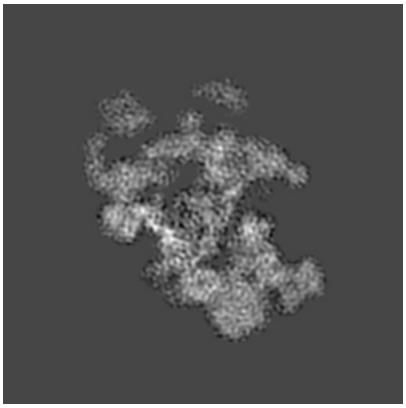
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

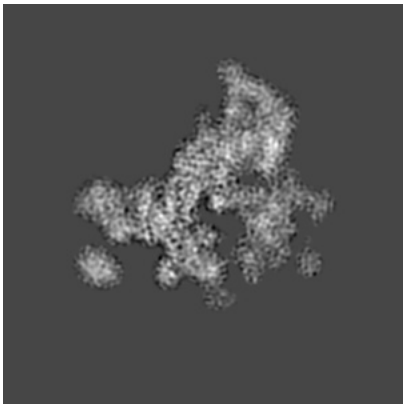
6.3.1 Primary map



X Index: 185



Y Index: 174

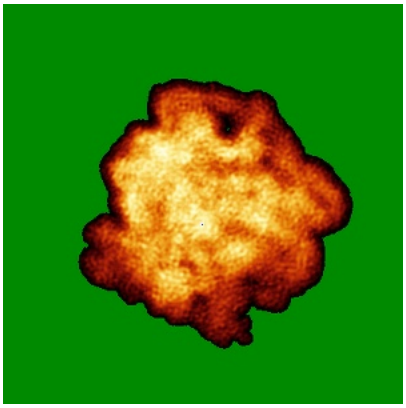


Z Index: 185

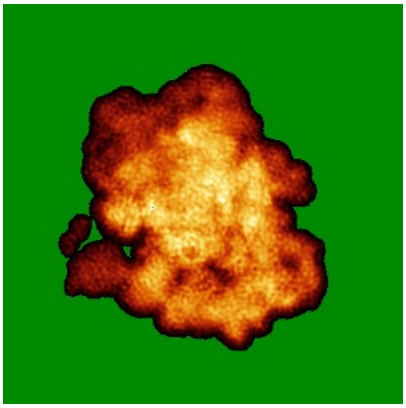
The images above show the largest variance slices of the map in three orthogonal directions.

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

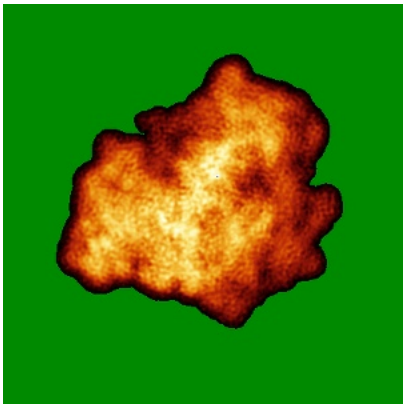
6.4.1 Primary map



X



Y

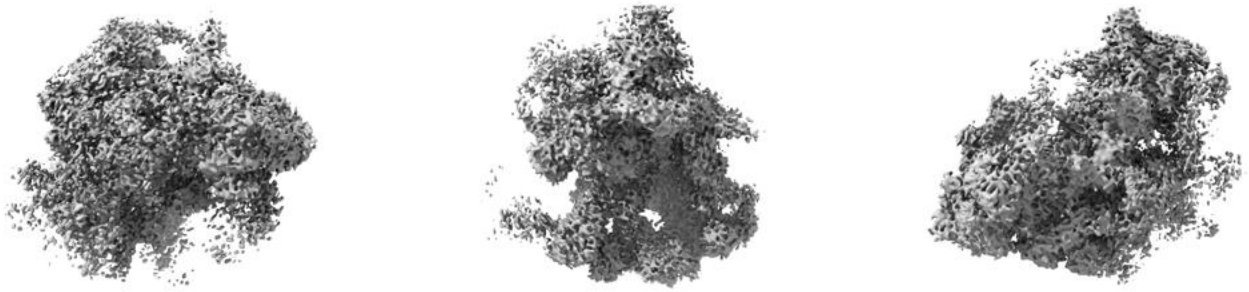


Z

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 0.01. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

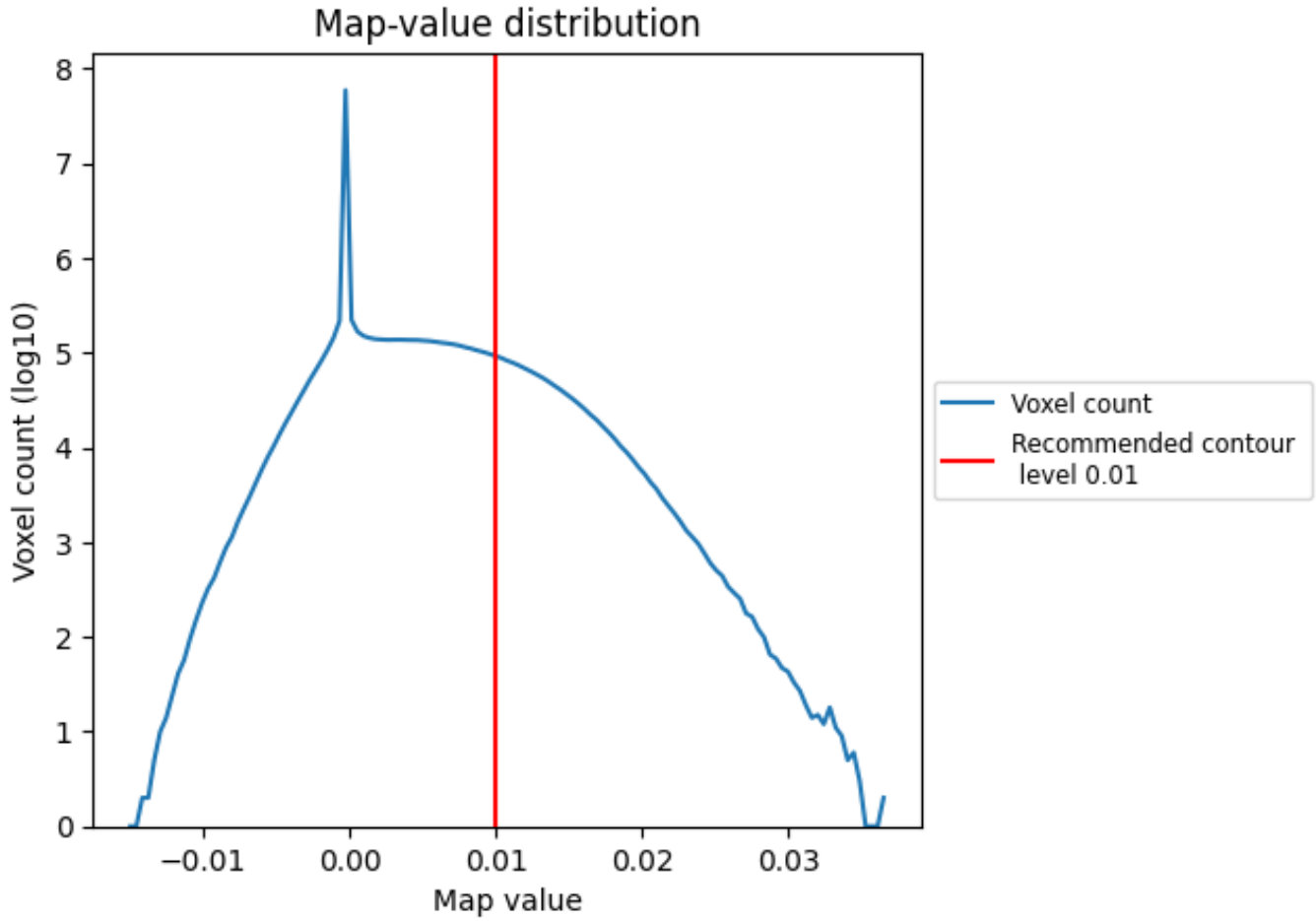
6.6 Mask visualisation (i)

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

7 Map analysis

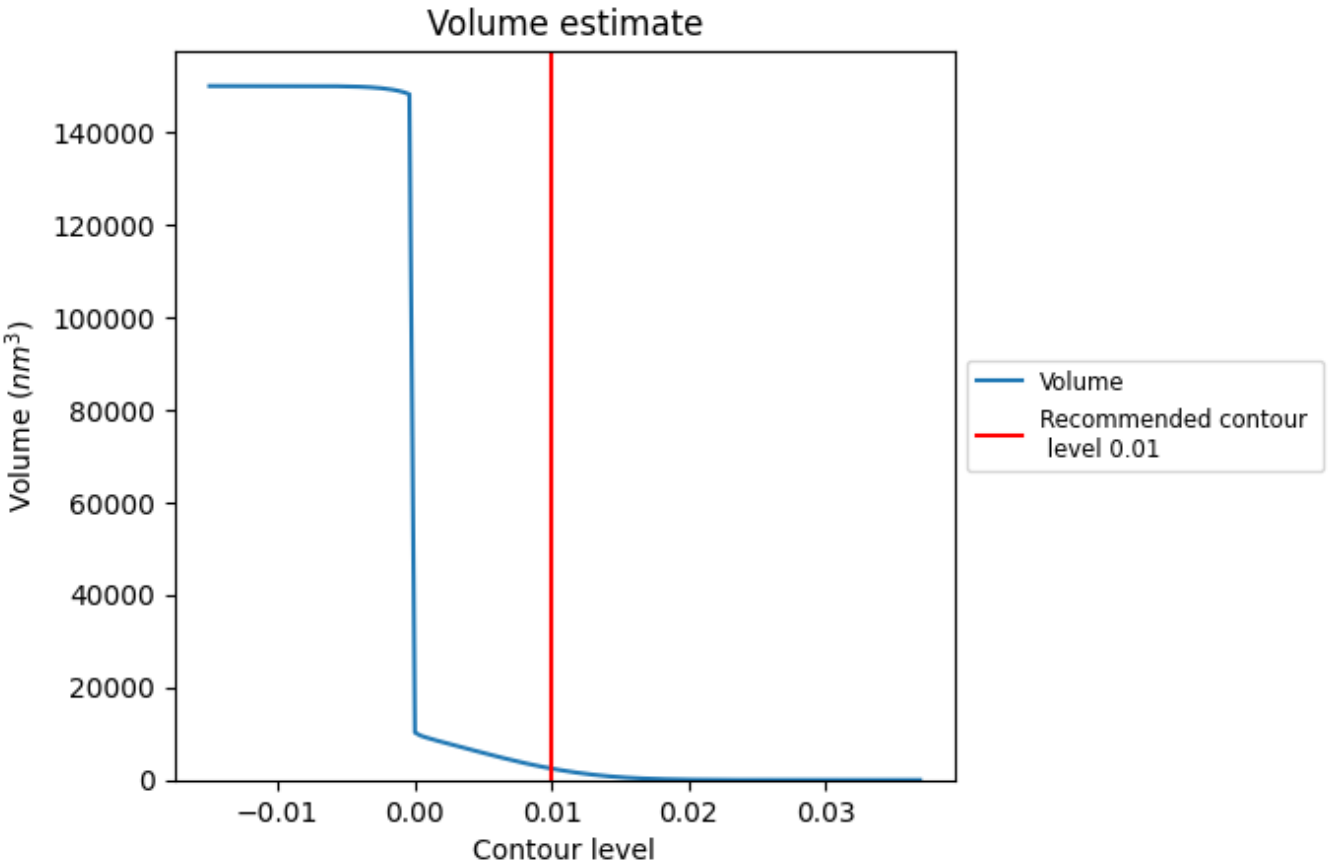
This section contains the results of statistical analysis of the map.

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.

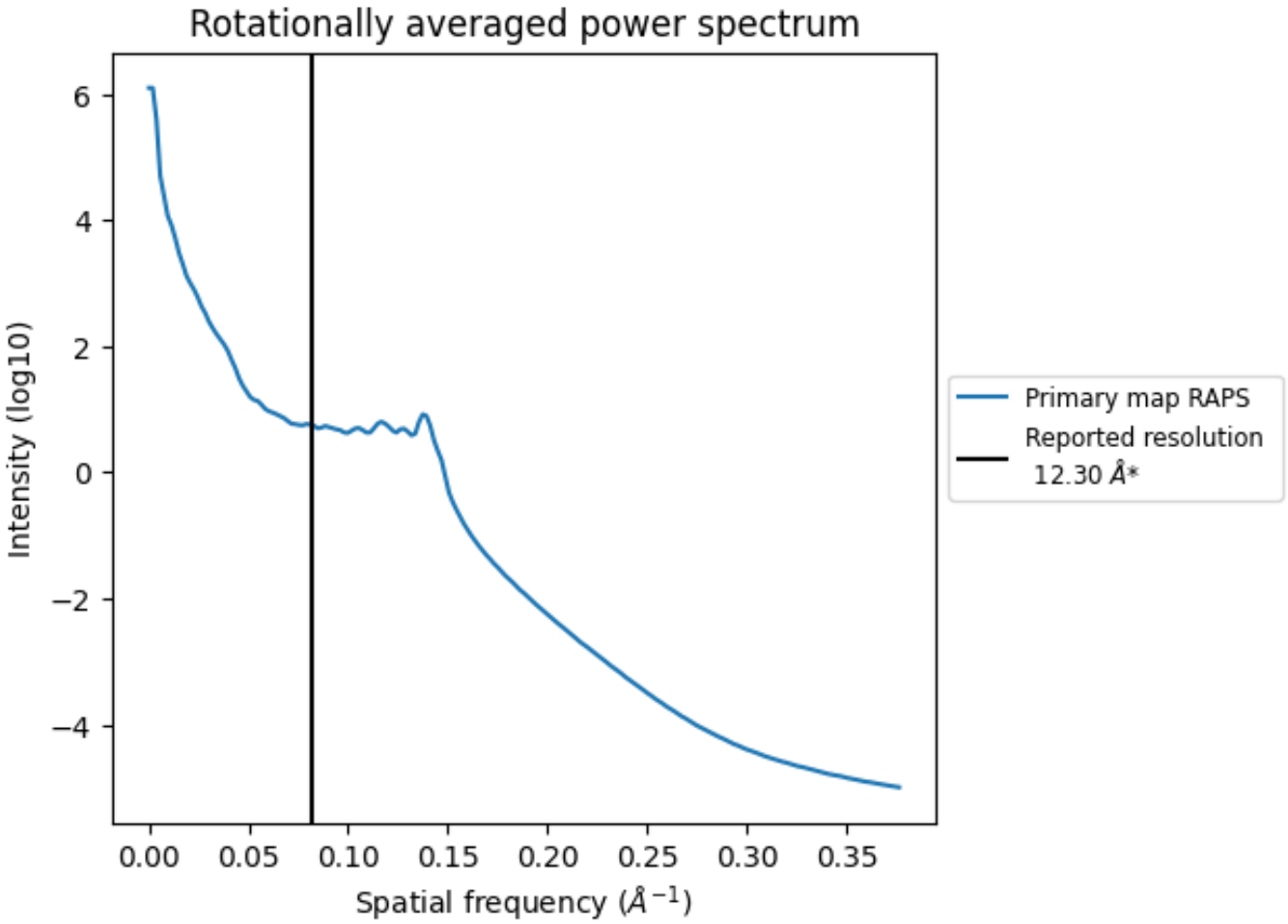
7.2 Volume estimate



The volume at the recommended contour level is 2465 nm^3; this corresponds to an approximate mass of 2227 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 0.081 Å^{-1}

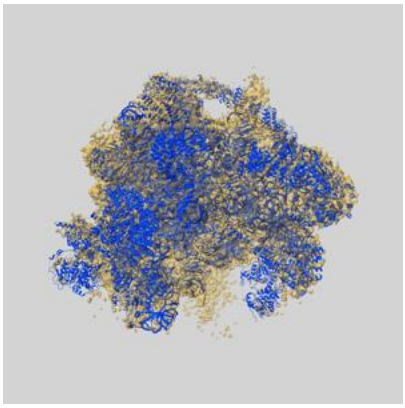
8 Fourier-Shell correlation

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

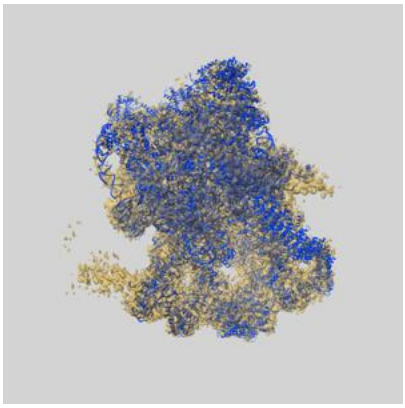
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-30588 and PDB model 7D63. Per-residue inclusion information can be found in section 3 on page 18.

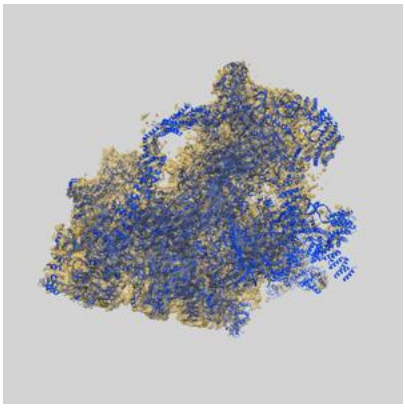
9.1 Map-model overlay



X



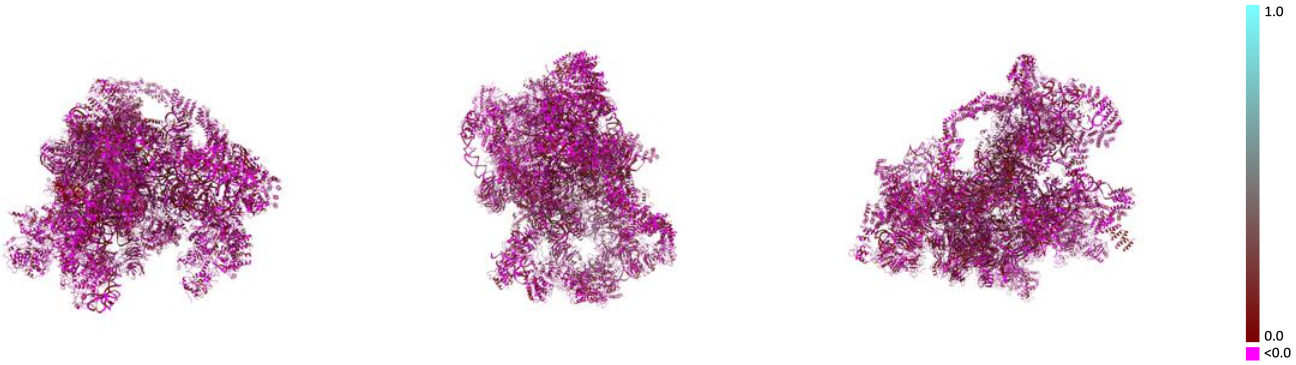
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.01 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

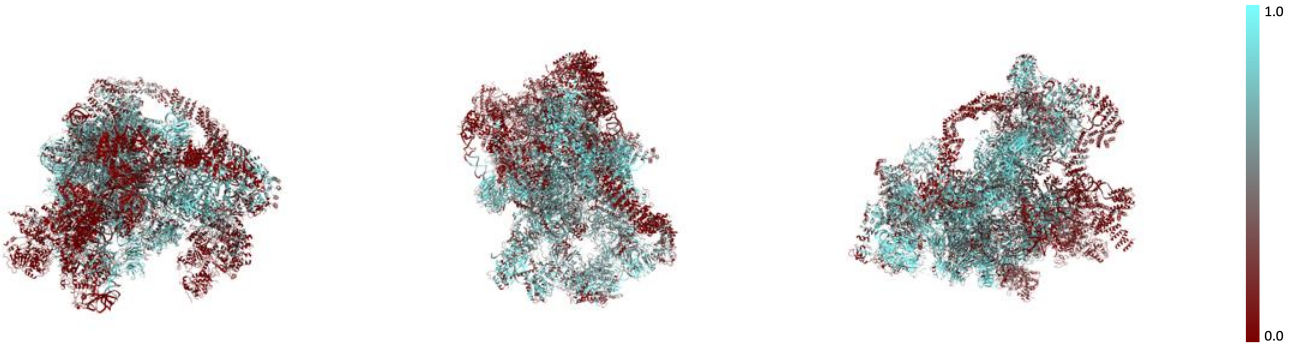
9.2 Q-score mapped to coordinate model



X Y Z

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

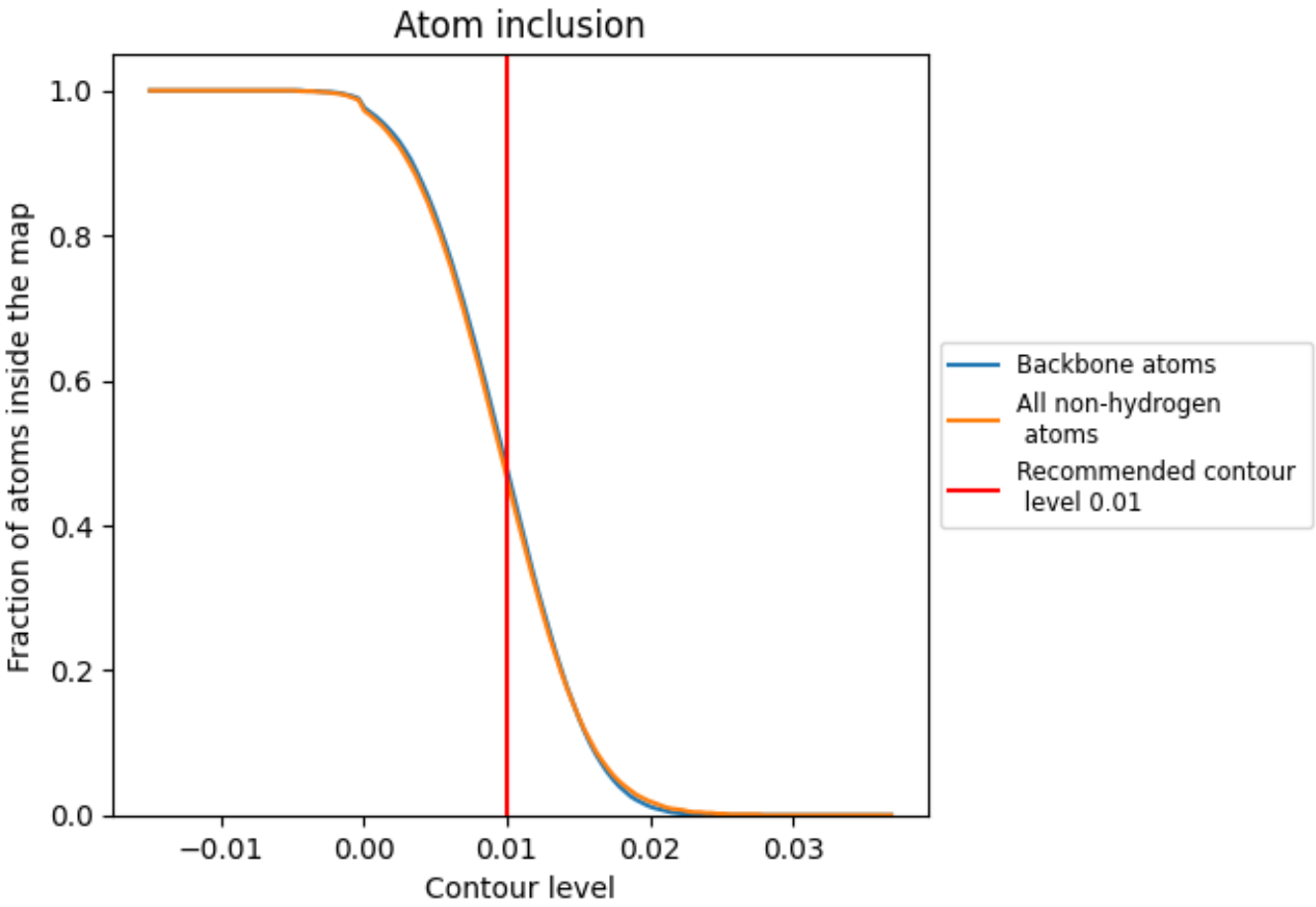
9.3 Atom inclusion mapped to coordinate model



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.01).

9.4 Atom inclusion (i)



At the recommended contour level, 48% of all backbone atoms, 47% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.01) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.4660	0.0430
3A	0.7300	0.0750
3B	0.4850	0.0720
3C	0.5050	0.0300
3D	0.6480	0.0740
3E	0.5400	0.0530
3F	0.6800	0.0520
3G	0.7000	0.0700
3H	0.5480	0.0570
5A	0.4620	0.0410
5B	0.1730	0.0220
5C	0.5190	0.0420
5D	0.3620	0.0510
5E	0.4860	0.0690
5F	0.4840	0.0750
5G	0.4940	0.0710
5H	0.5400	0.0360
5I	0.6100	0.0490
5J	0.3960	0.0810
5K	0.3810	0.0530
A4	0.6800	0.0470
A5	0.6300	0.0460
A8	0.5600	0.0260
A9	0.6910	0.0700
AE	0.3060	0.0360
AF	0.6460	0.0650
AG	0.7180	0.0530
B1	0.6050	0.0590
B2	0.7070	0.0560
B3	0.5320	0.0300
B6	0.4550	0.0650
B8	0.5910	0.0510
BE	0.6960	0.0560
RA	0.3730	0.0180
RB	0.3330	0.0360

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Chain	Atom inclusion	Q-score
RD	0.0000	-0.0170
RE	0.0600	0.0080
RF	0.0430	0.0160
RG	0.6280	0.0530
RH	0.4680	0.0300
RJ	0.5960	0.0590
RK	0.6340	0.0620
RL	0.2220	0.0320
RM	0.0710	0.0130
RN	0.4700	0.0370
RO	0.4470	0.0330
RP	0.2620	0.0280
RQ	0.2180	0.0110
RS	0.6410	0.0240
RT	0.0870	-0.0040
RY	0.1740	-0.0020
RZ	0.0700	0.0220
SA	0.5940	0.0540
SC	0.1120	0.0220
SF	0.5140	0.0200
SG	0.6420	0.0910
SH	0.4740	0.0360
SI	0.1110	0.0190
SJ	0.5740	0.0260
SK	0.5500	0.0880
SM	0.5310	-0.0050
SO	0.1890	0.0210
SP	0.1960	0.0140
SR	0.5560	0.0800
ST	0.1510	0.0370
SU	0.1310	0.0350
SX	0.1590	0.0140
SY	0.5430	0.0730
SZ	0.5910	0.0530
Sc	0.1360	0.0130
Sd	0.6440	0.0760
X1	0.2730	0.0560