



Full wwPDB EM Validation Report ⓘ

May 20, 2024 – 02:19 AM JST

PDB ID : 7D4I
EMDB ID : EMD-30574
Title : Cryo-EM structure of 90S small ribosomal precursors complex with the DEAH-box RNA helicase Dhr1 (State F)
Authors : Du, Y.; Zhang, J.; An, W.; Ye, K.
Deposited on : 2020-09-24
Resolution : 4.00 Å(reported)
Based on initial model : 6LQS

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:

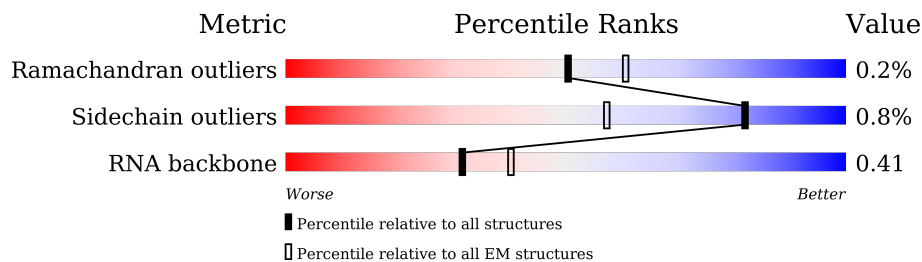
EMDB validation analysis : 0.0.1.dev92
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4.02b-467
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (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 4.00 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 $\leq 5\%$. 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	
2	5A	700	
3	SA	1812	
4	SC	255	
5	SF	261	
6	SG	225	
7	SH	236	
8	SI	190	

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Mol	Chain	Length	Quality of chain
9	SJ	200	54% 72% 26%
10	SK	197	7% 87% 12%
11	SM	156	71% 88% 12%
12	SO	151	7% 89% 11%
13	SP	137	• 83% 15%
14	SR	143	6% 87% 13%
15	ST	146	45% 76% 24%
16	SU	144	35% 96% •
17	SX	130	12% 96% ••
18	SY	145	12% 72% 28%
19	SZ	135	10% 90% • 9%
20	Sc	82	7% 96% ••
21	Sd	67	7% 93% • 6%
22	3B	327	• 73% • 26%
22	3C	327	6% 68% • 31%
23	3D	504	6% 74% • 25%
24	3E	511	12% 85% • 15%
25	3F	573	6% 75% • 24%
26	3G	126	6% 92% ••
26	3H	126	• 94% ••
27	A4	776	8% 84% • 15%
28	A5	643	18% 78% • 21%
29	A8	713	65% 76% • 23%
30	A9	575	11% 21% • 78%
31	AE	1769	27% 86% • 12%

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Mol	Chain	Length	Quality of chain
32	AF	513	21% 94% 5%
33	AG	896	18% 91% 8%
34	B1	900	9% 87% 12%
35	B2	943	11% 86% 13%
36	B3	817	10% 91% 7%
37	B8	594	6% 77% 22%
38	BE	939	11% 93% 5%
39	B6	440	13% 84% 14%
40	5B	214	10% 26% 73%
41	5C	554	14% 86% 13%
42	5D	250	22% 83% 16%
43	5E	593	8% 36% 64%
44	5F	183	34% 98% ..
45	5G	290	14% 82% 17%
46	5H	610	15% 84%
47	5I	489	5% 93% 6%
48	5J	217	17% 61% 38%
49	5K	189	5% 78% 21%
50	RD	1729	18% 18% 82%
51	RE	1237	24% 87% 12%
52	RF	297	33% 80% 19%
53	RG	252	73% 84% 14%
53	RH	252	64% 90% 9%
54	RJ	1183	8% 61% 38%
55	RK	367	9% 97% ..

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Mol	Chain	Length	Quality of chain
56	RN	810	62% 71% 28%
57	RO	552	73% 92% 6%
58	RP	2493	26% 81% 16%
59	RQ	899	15% 37% 62%
60	RS	480	51% 52% 48%
61	RT	326	14% 65% 35%
62	RW	206	26% 73% 26%
63	RZ	1267	38% 65% 34%
64	X1	611	19% 36% 64%
65	X2	694	19% 20% 80%
66	R5	305	98% 98%
67	R1	246	99% 98%
68	R3	394	86% 84% 14%
69	R6	223	100% 100%
70	R2	265	100% 100%
71	M3	250	86% 85% 14%
72	R0	240	99% 99%
73	r4	359	82% 81% 18%
74	C4	292	76% 75% 24%
75	R4	1001	95% 94% 5%
76	r6	733	56% 56% 44%
77	R7	184	61% 61% 39%
78	M4	1073	91% 90% 9%
79	M6	186	22% 22% 78%

2 Entry composition

There are 83 unique types of molecules in this entry. The entry contains 253642 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	216	4570	2044	784	1526	216	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	5A	118	2536	1131	467	820	118	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
3	SA	1337	28478	12732	5036	9373	1337	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	242	1923	1214	356	349	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	247	1915	1223	351	338	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
			Total	C	N	O	S		
7	SH	182	1456	916	273	266	1	0	0

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	SJ	148	1181	739	228	212	2	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	SK	174	1410	892	272	245	1	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	SM	137	1113	715	212	183	3	0	0

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	SP	116	848	524	158	163	3	0	0

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

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

- Molecule 15 is a protein called 40S ribosomal protein S18-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	ST	111	Total	C	N	O	S	0	0
			902	568	171	161	2		

- Molecule 16 is a protein called 40S ribosomal protein S19-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	SU	138	Total	C	N	O	S	0	0
			1075	673	203	197	2		

- Molecule 17 is a protein called 40S ribosomal protein S22-B.

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

- Molecule 18 is a protein called 40S ribosomal protein S23-A.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	SY	104	Total	C	N	O	S	0	0
			792	506	145	139	2		

- Molecule 19 is a protein called 40S ribosomal protein S24-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
19	SZ	123	Total	C	N	O	0	0
			986	626	188	172		

- Molecule 20 is a protein called 40S ribosomal protein S27-A.

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

- Molecule 21 is a protein called 40S ribosomal protein S28-A.

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

- Molecule 22 is a protein called rRNA 2'-O-methyltransferase fibrillar.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	3B	242	Total	C	N	O	S	0	0
			1878	1190	338	340	10		
22	3C	224	Total	C	N	O	S	0	0
			1754	1114	314	316	10		

- Molecule 23 is a protein called Nucleolar protein 56.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	3D	378	Total	C	N	O	S	0	0
			2974	1886	511	568	9		

- Molecule 24 is a protein called Nucleolar protein 58.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	3E	435	Total	C	N	O	S	0	0
			3056	1904	548	595	9		

- Molecule 25 is a protein called Ribosomal RNA-processing protein 9.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	3F	437	Total	C	N	O	S	0	0
			3498	2227	609	652	10		

- Molecule 26 is a protein called 13 kDa ribonucleoprotein-associated protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	3G	121	Total	C	N	O	S	0	0
			916	583	158	171	4		
26	3H	121	Total	C	N	O	S	0	0
			916	583	158	171	4		

- Molecule 27 is a protein called U3 small nucleolar RNA-associated protein 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	A4	657	Total	C	N	O	S	0	0
			5187	3286	902	978	21		

- Molecule 28 is a protein called U3 small nucleolar RNA-associated protein 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
28	A5	511	3953	2507	682	751	13	0	0

- Molecule 29 is a protein called U3 small nucleolar RNA-associated protein 8.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
29	A8	548	3307	2054	608	642	3	0	0

- Molecule 30 is a protein called U3 small nucleolar RNA-associated protein 9.

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

- Molecule 31 is a protein called U3 small nucleolar RNA-associated protein 10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
31	AE	1552	10262	6453	1810	1979	20	0	0

- Molecule 32 is a protein called U3 small nucleolar RNA-associated protein 15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
32	AF	487	3860	2431	692	725	12	0	0

- Molecule 33 is a protein called NET1-associated nuclear protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
33	AG	825	6565	4178	1110	1258	19	0	0

- Molecule 34 is a protein called Periodic tryptophan protein 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
34	B1	791	6316	4037	1082	1179	18	0	0

- Molecule 35 is a protein called U3 small nucleolar RNA-associated protein 12.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
35	B2	824	6497	4153	1095	1222	27	0	0

- Molecule 36 is a protein called U3 small nucleolar RNA-associated protein 13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
36	B3	757	5906	3763	993	1123	27	0	0

- Molecule 37 is a protein called U3 small nucleolar RNA-associated protein 18.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
37	B8	463	3648	2314	640	684	10	0	0

- Molecule 38 is a protein called U3 small nucleolar RNA-associated protein 21.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
38	BE	890	6876	4356	1191	1308	21	0	0

- Molecule 39 is a protein called U3 small nucleolar RNA-associated protein 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
39	B6	377	3077	1984	529	549	15	0	0

- Molecule 40 is a protein called Bud site selection protein 21.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
40	5B	58	482	302	98	82	0	0

- Molecule 41 is a protein called U3 small nucleolar RNA-associated protein 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
41	5C	482	3825	2409	684	721	11	0	0

- Molecule 42 is a protein called U3 small nucleolar RNA-associated protein 11.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	5D	209	Total	C	N	O	S	0	0
			1778	1111	344	317	6		

- Molecule 43 is a protein called U3 small nucleolar RNA-associated protein MPP10.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	5E	213	Total	C	N	O	S	0	0
			1728	1072	304	348	4		

- Molecule 44 is a protein called U3 small nucleolar ribonucleoprotein protein IMP3.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	5F	182	Total	C	N	O	S	0	0
			1530	967	287	269	7		

- Molecule 45 is a protein called U3 small nucleolar ribonucleoprotein protein IMP4.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	5G	241	Total	C	N	O	S	0	0
			1956	1228	368	353	7		

- Molecule 46 is a protein called Something about silencing protein 10.

Mol	Chain	Residues	Atoms				AltConf	Trace
46	5H	95	Total	C	N	O	0	0
			700	435	143	122		

- Molecule 47 is a protein called Protein SOF1.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	5I	461	Total	C	N	O	S	0	0
			3765	2354	686	709	16		

- Molecule 48 is a protein called rRNA-processing protein FCF2.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	5J	134	Total	C	N	O	S	0	0
			1127	712	205	207	3		

- Molecule 49 is a protein called rRNA-processing protein FCF1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
49	5K	150	1190	765	212	203	10	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
5K	138	ASN	ASP	variant	UNP Q05498

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
50	RD	316	2413	1541	415	452	5	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
51	RE	1090	8805	5720	1452	1609	24	0	0

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

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

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
54	RJ	738	5994	3851	1063	1054	26	0	0

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
56	RN	584	4459	2819	800	827	13	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
57	RO	520	3741	2397	641	691	12	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
58	RP	2084	12263	7556	2298	2392	17	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
59	RQ	339	2408	1484	456	466	2	0	0

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

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

- Molecule 61 is a protein called Pno1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
61	RT	213	1652	1051	300	297	4	0	0

- Molecule 62 is a protein called Regulator of rDNA transcription protein 14.

Mol	Chain	Residues	Atoms				AltConf	Trace
62	RW	153	Total	C	N	O	0	0
			762	456	153	153		

- Molecule 63 is a protein called Probable ATP-dependent RNA helicase DHR1.

Mol	Chain	Residues	Atoms					AltConf	Trace
63	RZ	838	Total	C	N	O	S	1	0
			6598	4212	1145	1206	35		

- Molecule 64 is a protein called Unassigned peptides 1.

Mol	Chain	Residues	Atoms				AltConf	Trace
64	X1	221	Total	C	N	O	0	0
			1105	663	221	221		

- Molecule 65 is a protein called Unassigned peptides 2.

Mol	Chain	Residues	Atoms				AltConf	Trace
65	X2	141	Total	C	N	O	0	0
			705	423	141	141		

- Molecule 66 is a protein called Exosome complex component RRP45.

Mol	Chain	Residues	Atoms					AltConf	Trace
66	R5	299	Total	C	N	O	S	0	0
			2304	1444	393	451	16		

- Molecule 67 is a protein called Exosome complex component SKI6.

Mol	Chain	Residues	Atoms					AltConf	Trace
67	R1	244	Total	C	N	O	S	0	0
			1886	1177	335	366	8		

- Molecule 68 is a protein called Exosome complex component RRP43.

Mol	Chain	Residues	Atoms					AltConf	Trace
68	R3	339	Total	C	N	O	S	1	0
			2588	1640	441	497	10		

- Molecule 69 is a protein called Exosome complex component RRP46.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
69	R6	223	1701	1072	285	334	10	1	0

- Molecule 70 is a protein called Exosome complex component RRP42.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
70	R2	265	2035	1299	334	397	5	1	0

- Molecule 71 is a protein called Exosome complex component MTR3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
71	M3	215	1639	1024	273	332	10	0	0

- Molecule 72 is a protein called Exosome complex component RRP40.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
72	R0	237	1792	1143	295	344	10	0	0

- Molecule 73 is a protein called Exosome complex component RRP4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
73	r4	293	2236	1393	403	428	12	0	0

- Molecule 74 is a protein called Exosome complex component CSL4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
74	C4	222	1653	1034	287	325	7	0	0

- Molecule 75 is a protein called Exosome complex exonuclease DIS3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
75	R4	948	7430	4693	1308	1394	35	0	0

- Molecule 76 is a protein called Exosome complex exonuclease RRP6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
76	r6	414	2517	1544	469	498	6	0	0

- Molecule 77 is a protein called Exosome complex protein LRP1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
77	R7	113	894	565	151	174	4	0	0

- Molecule 78 is a protein called ATP-dependent RNA helicase DOB1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
78	M4	978	7626	4871	1294	1419	42	0	0

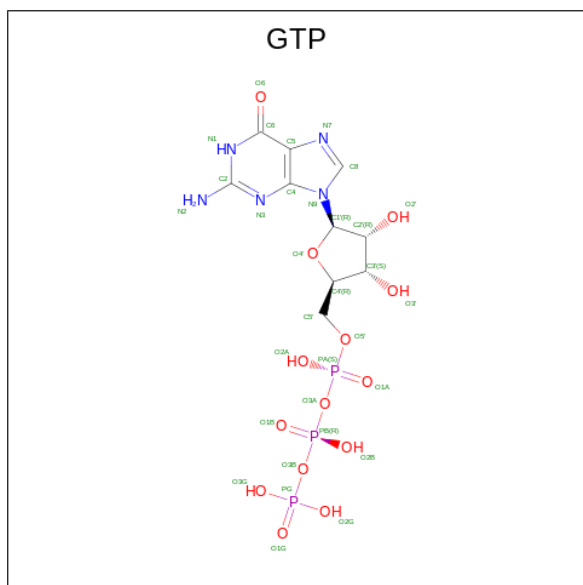
- Molecule 79 is a protein called M-phase phosphoprotein 6 homolog.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
79	M6	40	275	170	51	54	0	0

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

Mol	Chain	Residues	Atoms		AltConf
			Total	Zn	
80	Sc	1	1	1	0
80	5K	1	1	1	0

- Molecule 81 is GUANOSINE-5'-TRIPHOSPHATE (three-letter code: GTP) (formula: C₁₀H₁₆N₅O₁₄P₃).

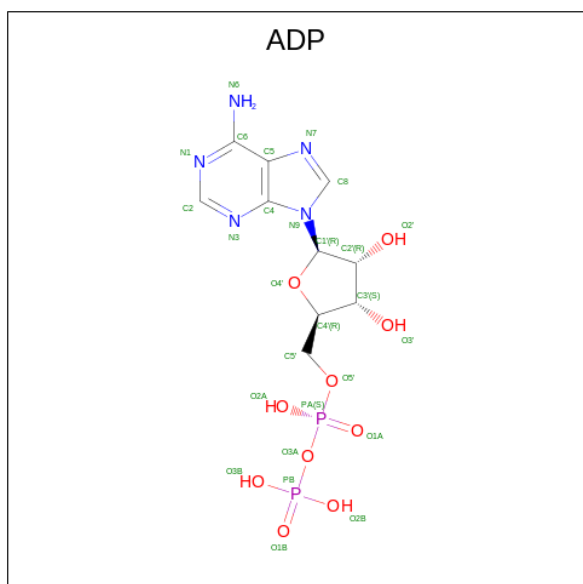


Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
81	RJ	1	32	10	5	14	3	0

- Molecule 82 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

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

- Molecule 83 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$).

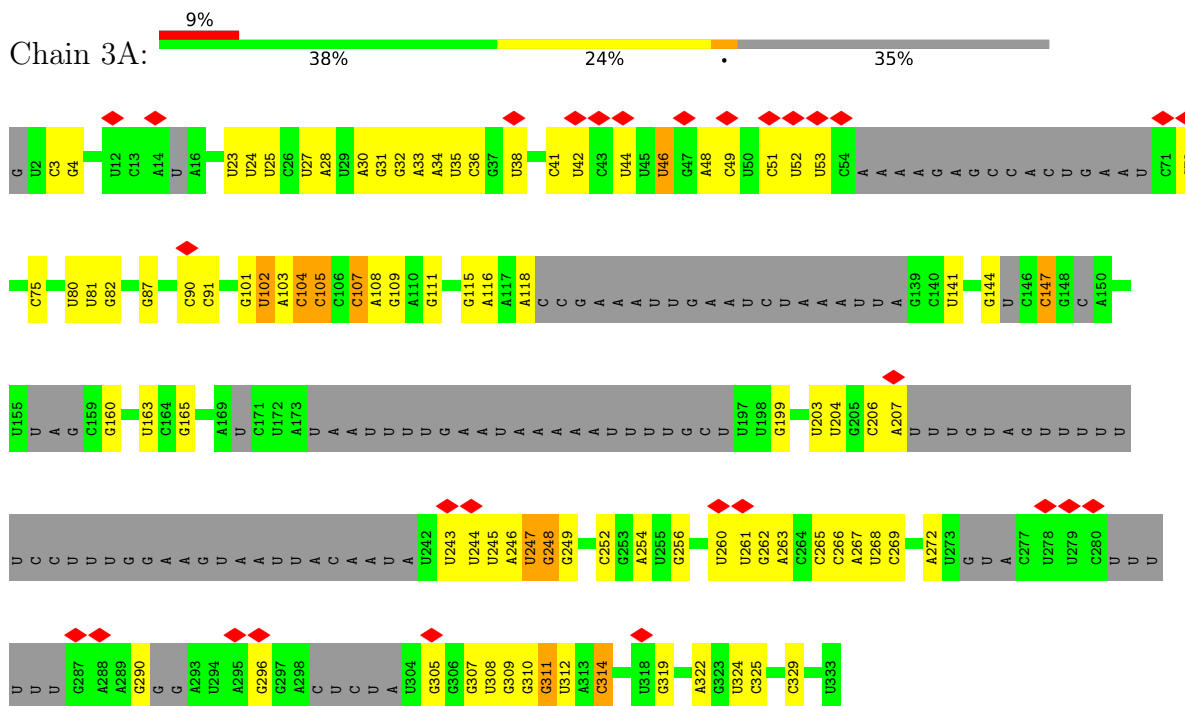


Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
83	RZ	1	27	10	5	10	2	0

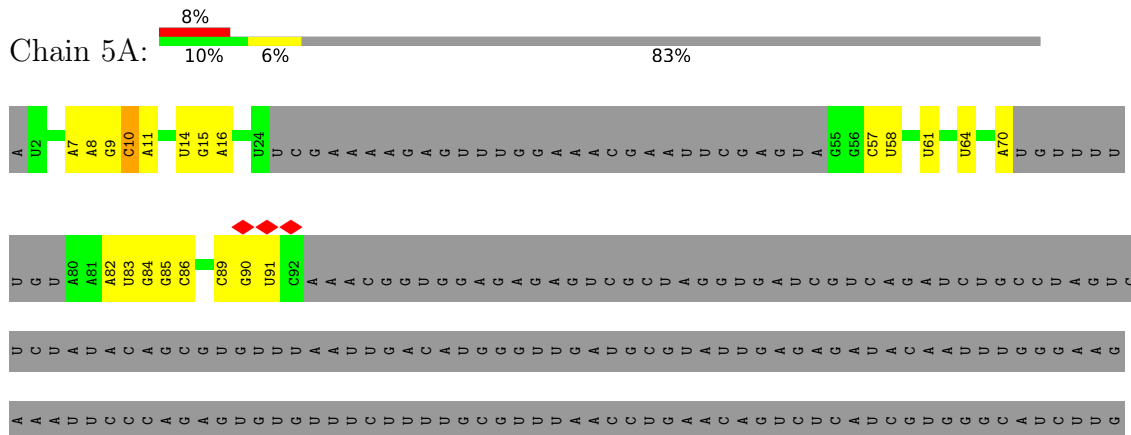
3 Residue-property plots i

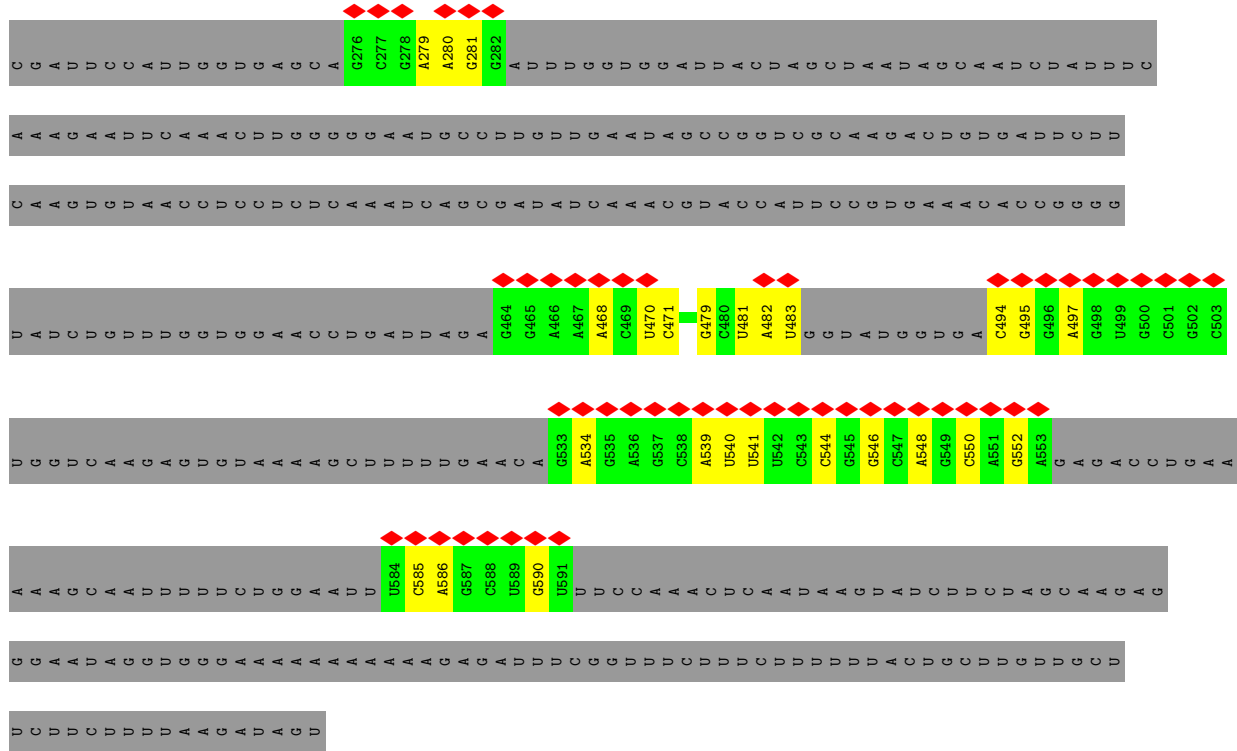
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

• Molecule 1: U3 snoRNA

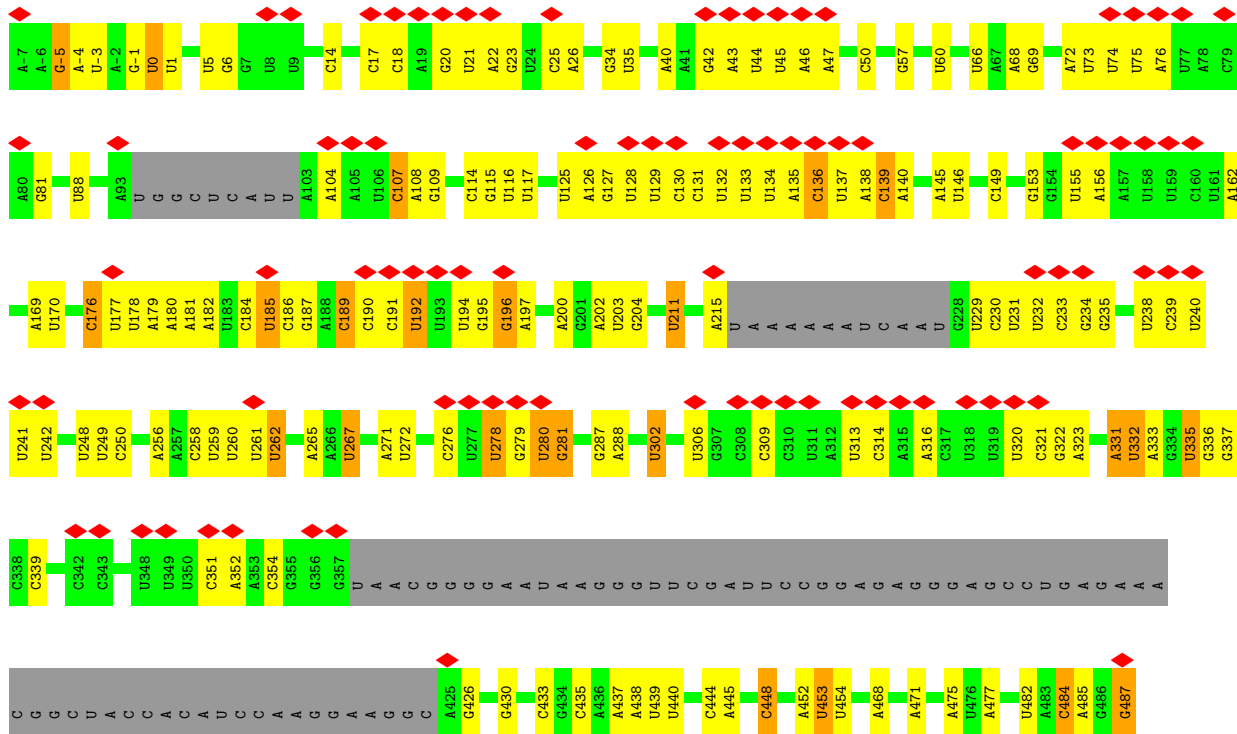


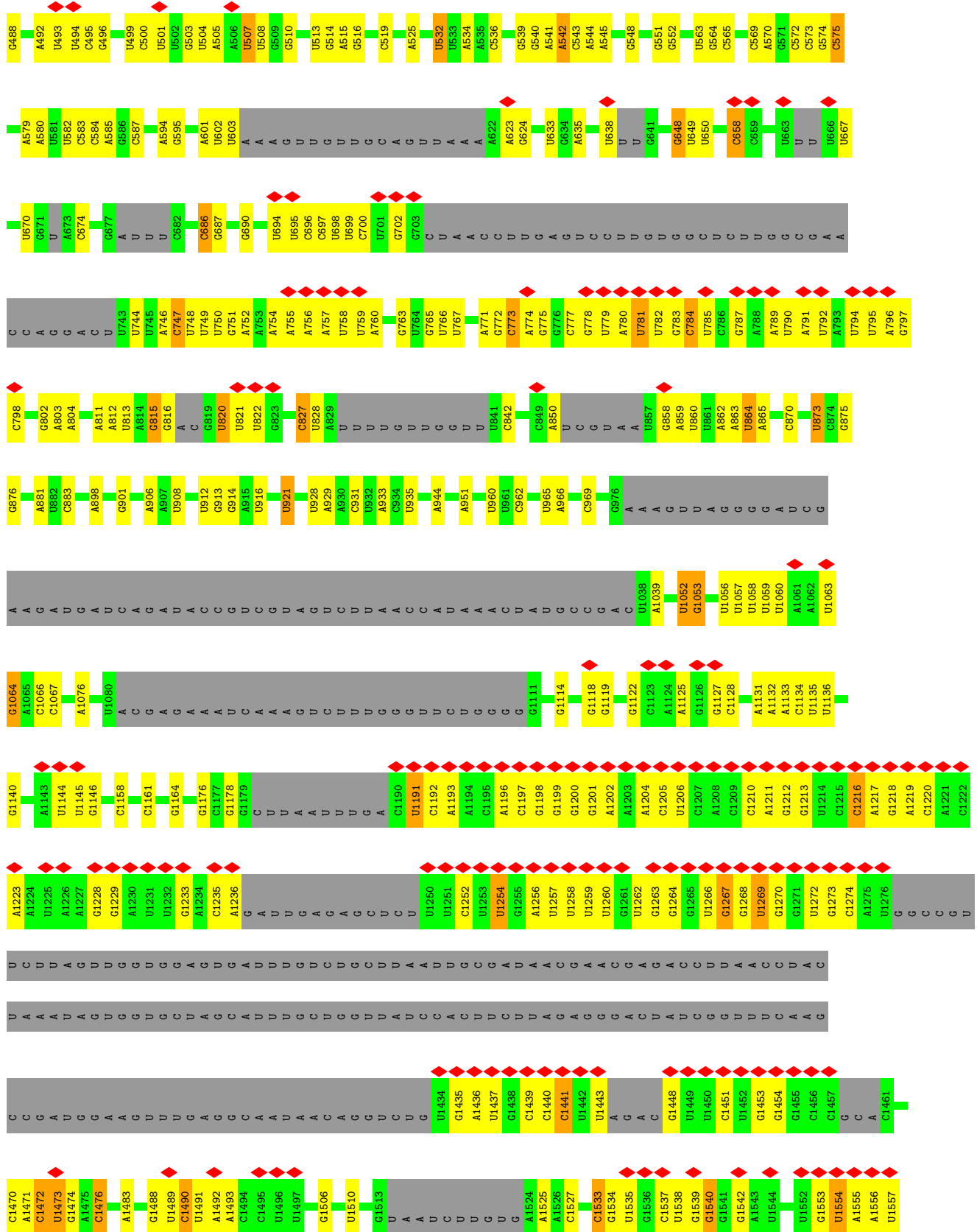
• Molecule 2: 5' ETS

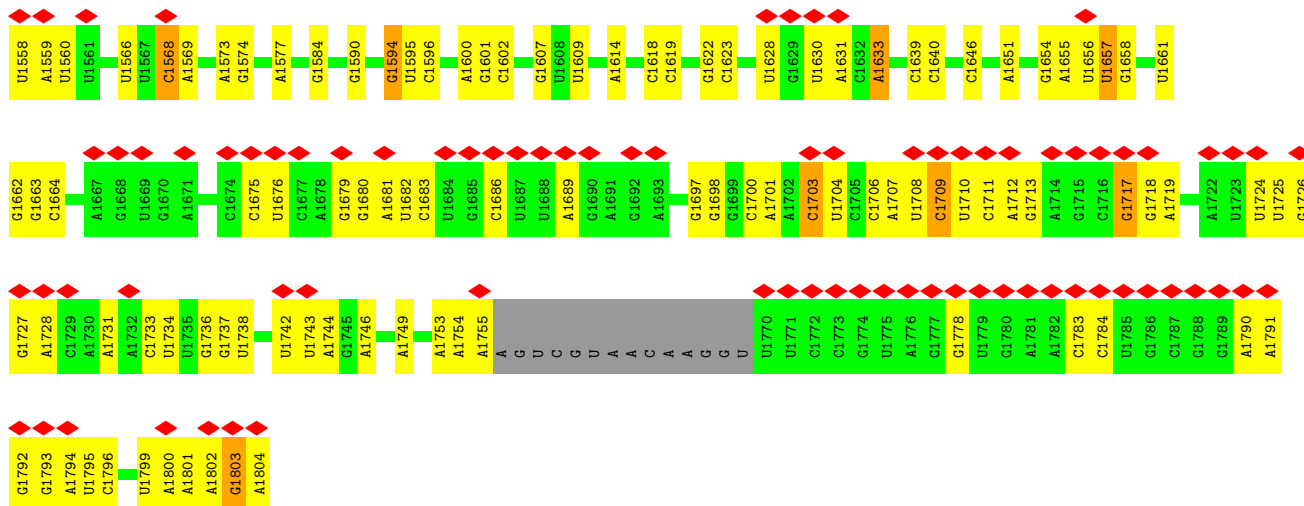




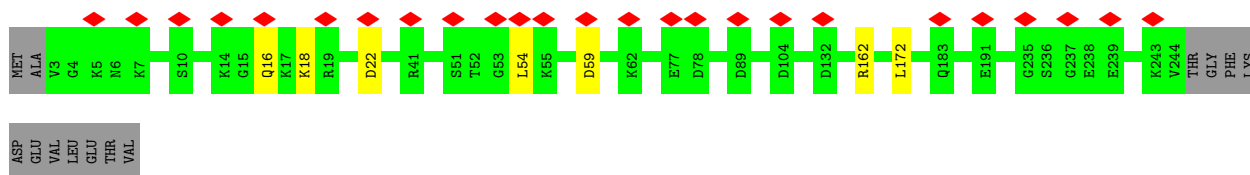
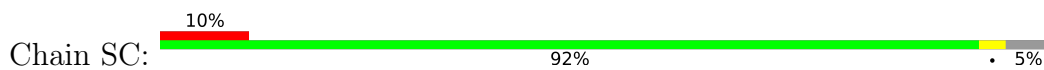
• Molecule 3: 18S rRNA



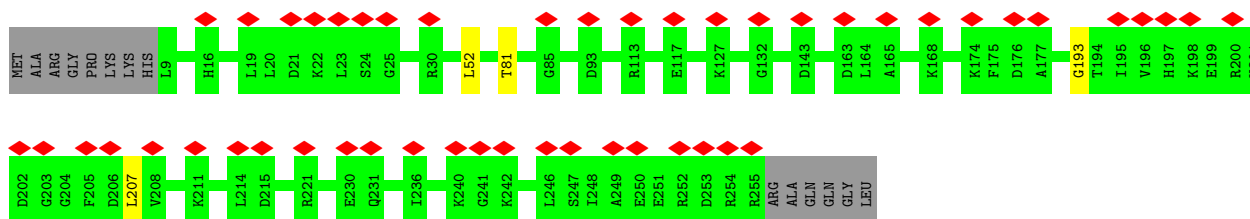
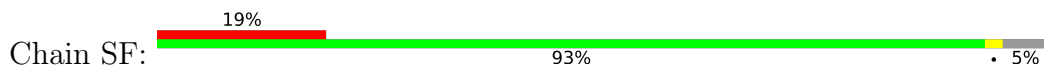




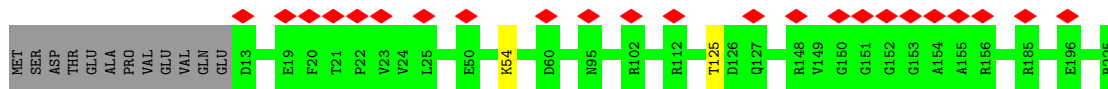
• Molecule 4: 40S ribosomal protein S1-A



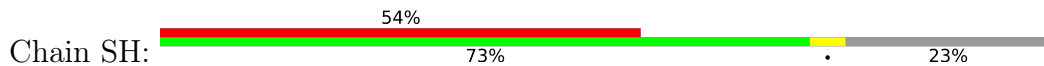
• Molecule 5: 40S ribosomal protein S4-A

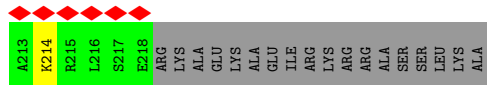
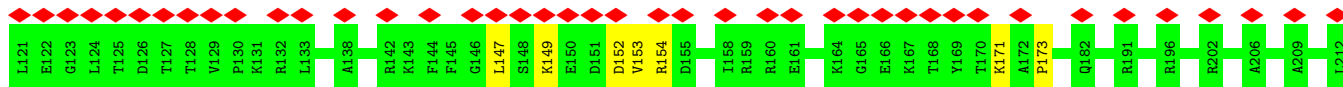
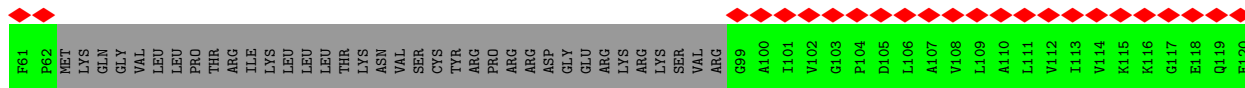
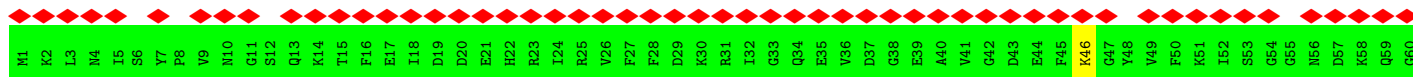


• Molecule 6: 40S ribosomal protein S5

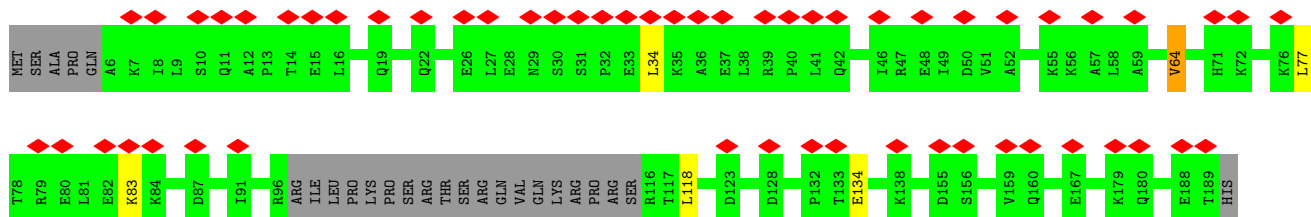
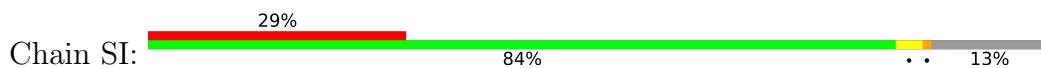


• Molecule 7: 40S ribosomal protein S6-A

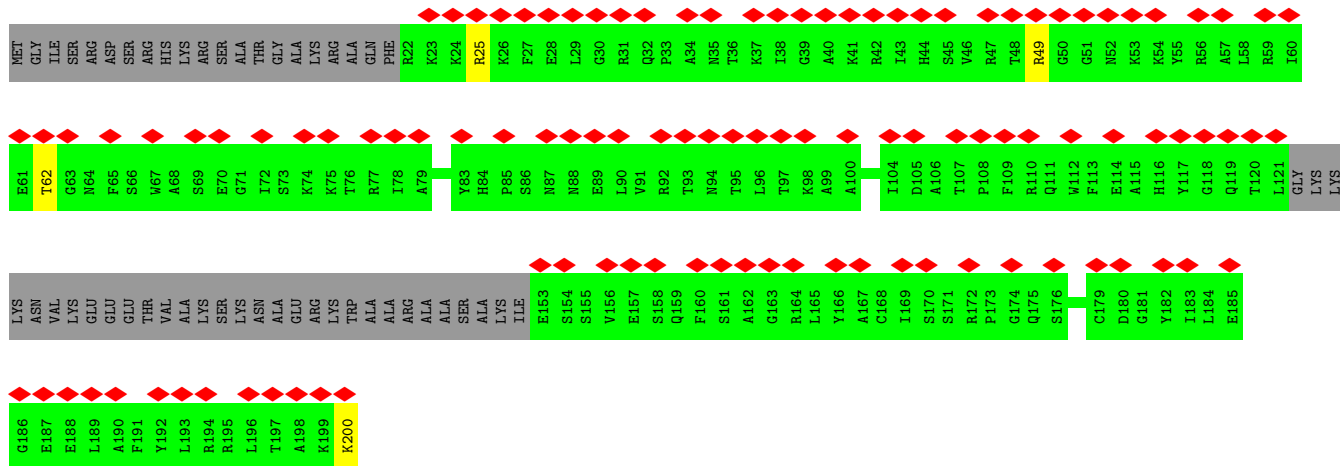
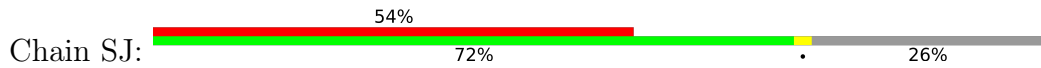




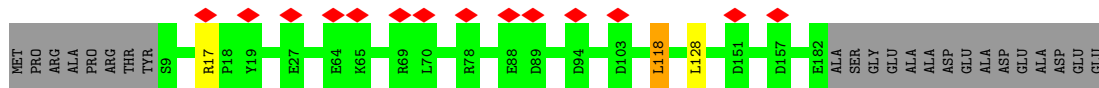
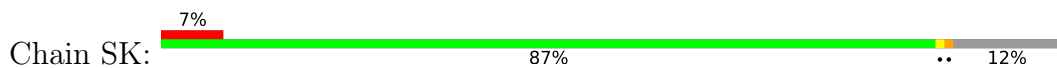
• Molecule 8: 40S ribosomal protein S7-A



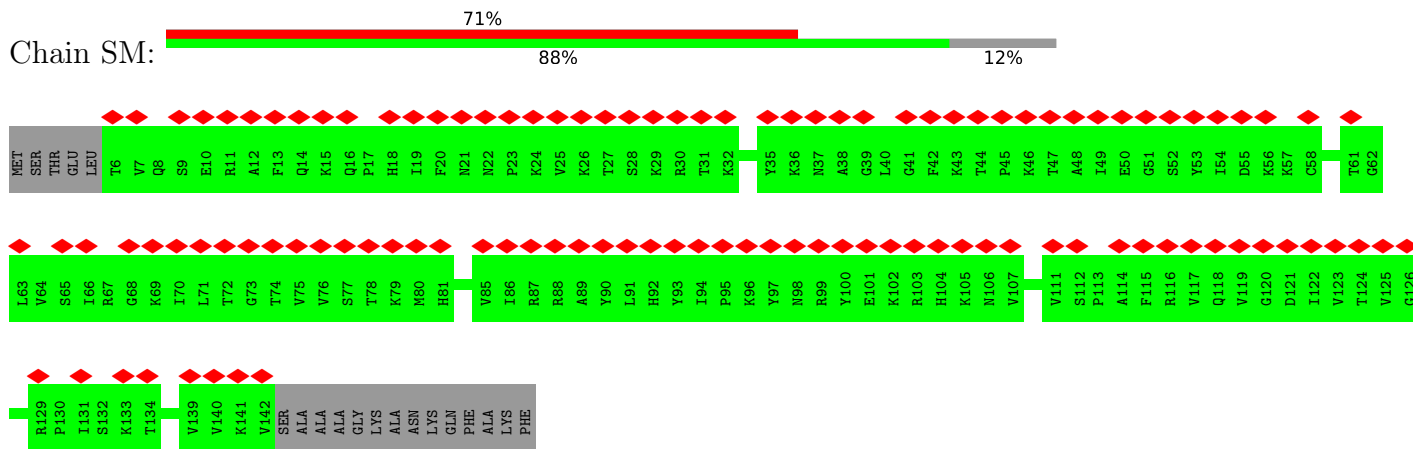
• Molecule 9: 40S ribosomal protein S8-A



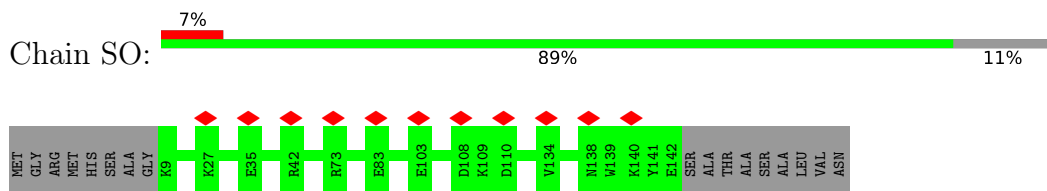
• Molecule 10: 40S ribosomal protein S9-A



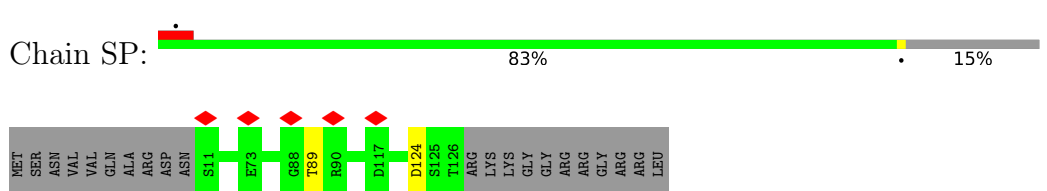
• Molecule 11: 40S ribosomal protein S11-A



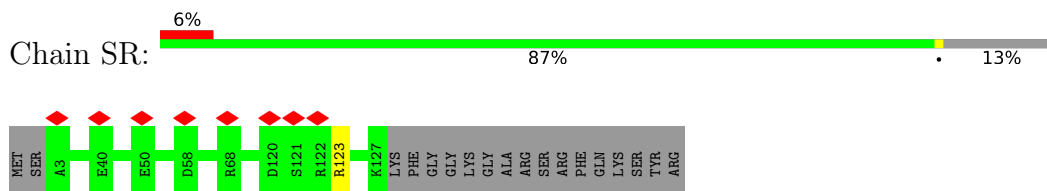
• Molecule 12: 40S ribosomal protein S13



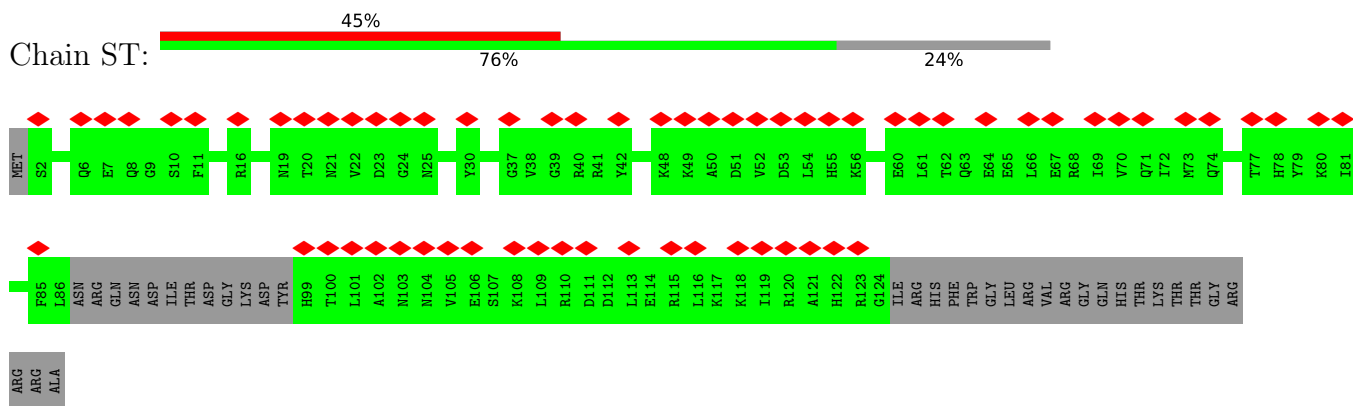
• Molecule 13: 40S ribosomal protein S14-A



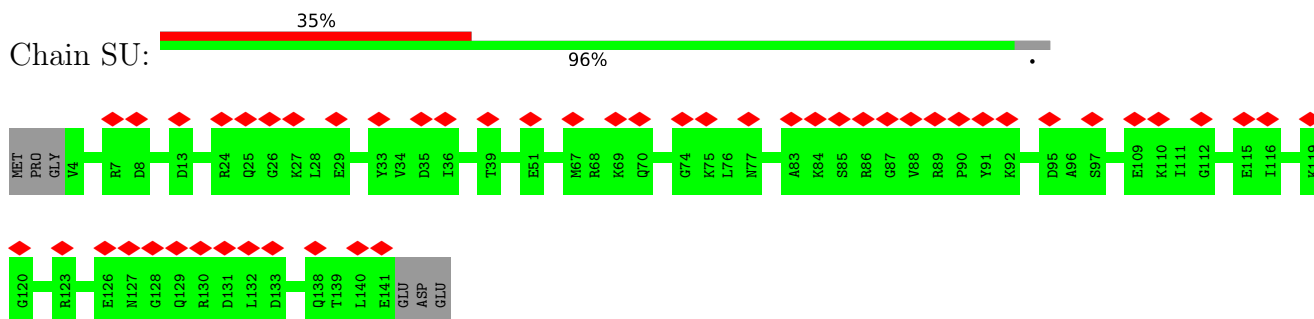
• Molecule 14: 40S ribosomal protein S16-A



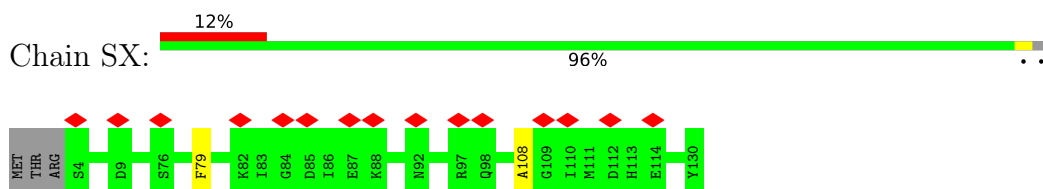
• Molecule 15: 40S ribosomal protein S18-A



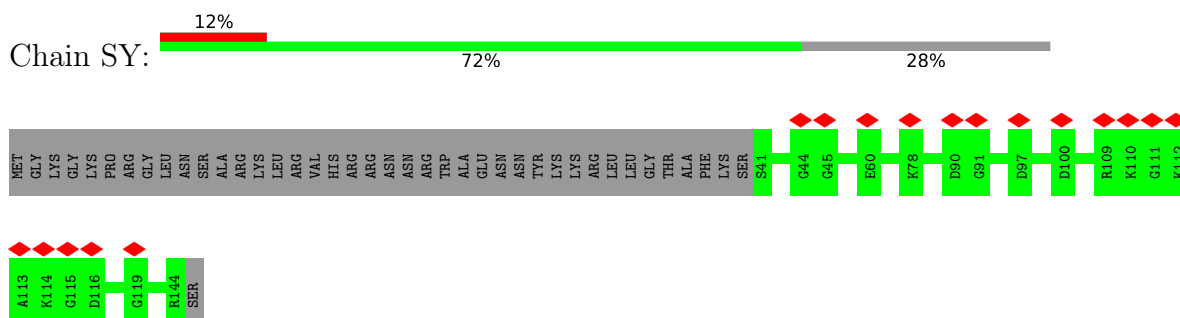
- Molecule 16: 40S ribosomal protein S19-A



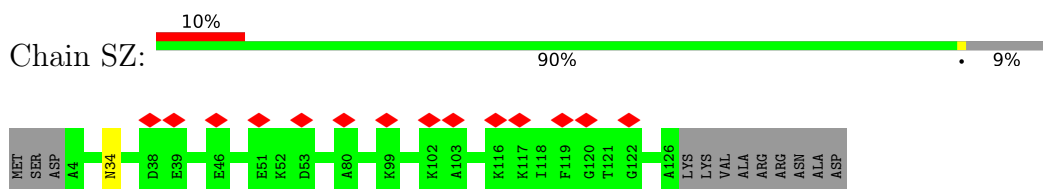
- Molecule 17: 40S ribosomal protein S22-B



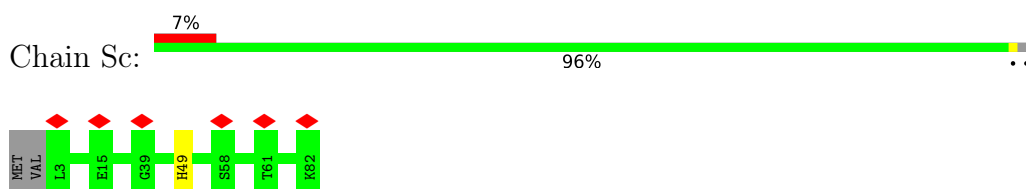
- Molecule 18: 40S ribosomal protein S23-A



- Molecule 19: 40S ribosomal protein S24-A

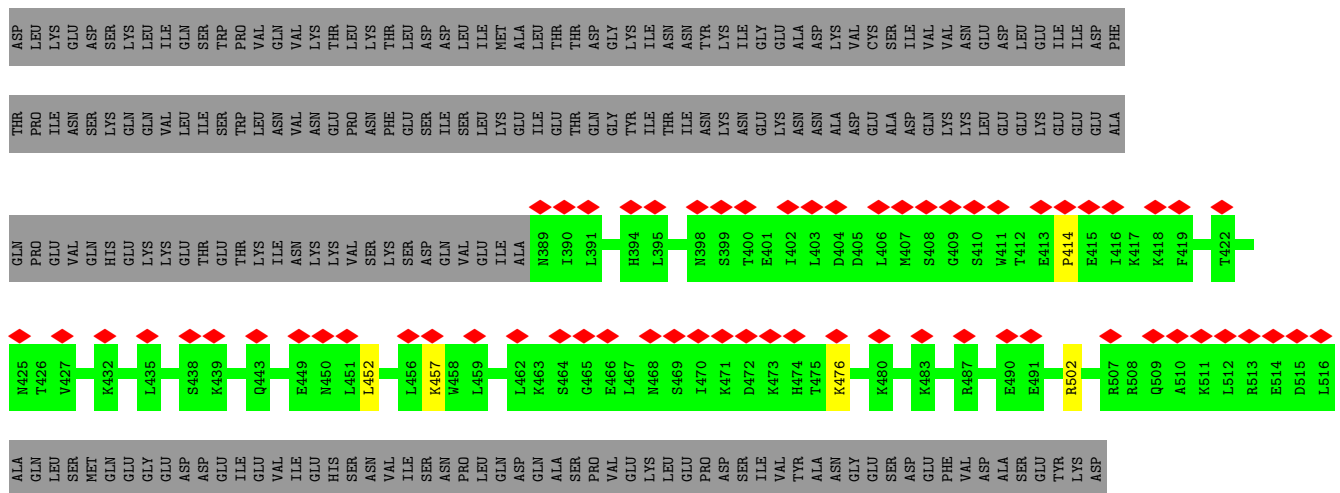


- Molecule 20: 40S ribosomal protein S27-A

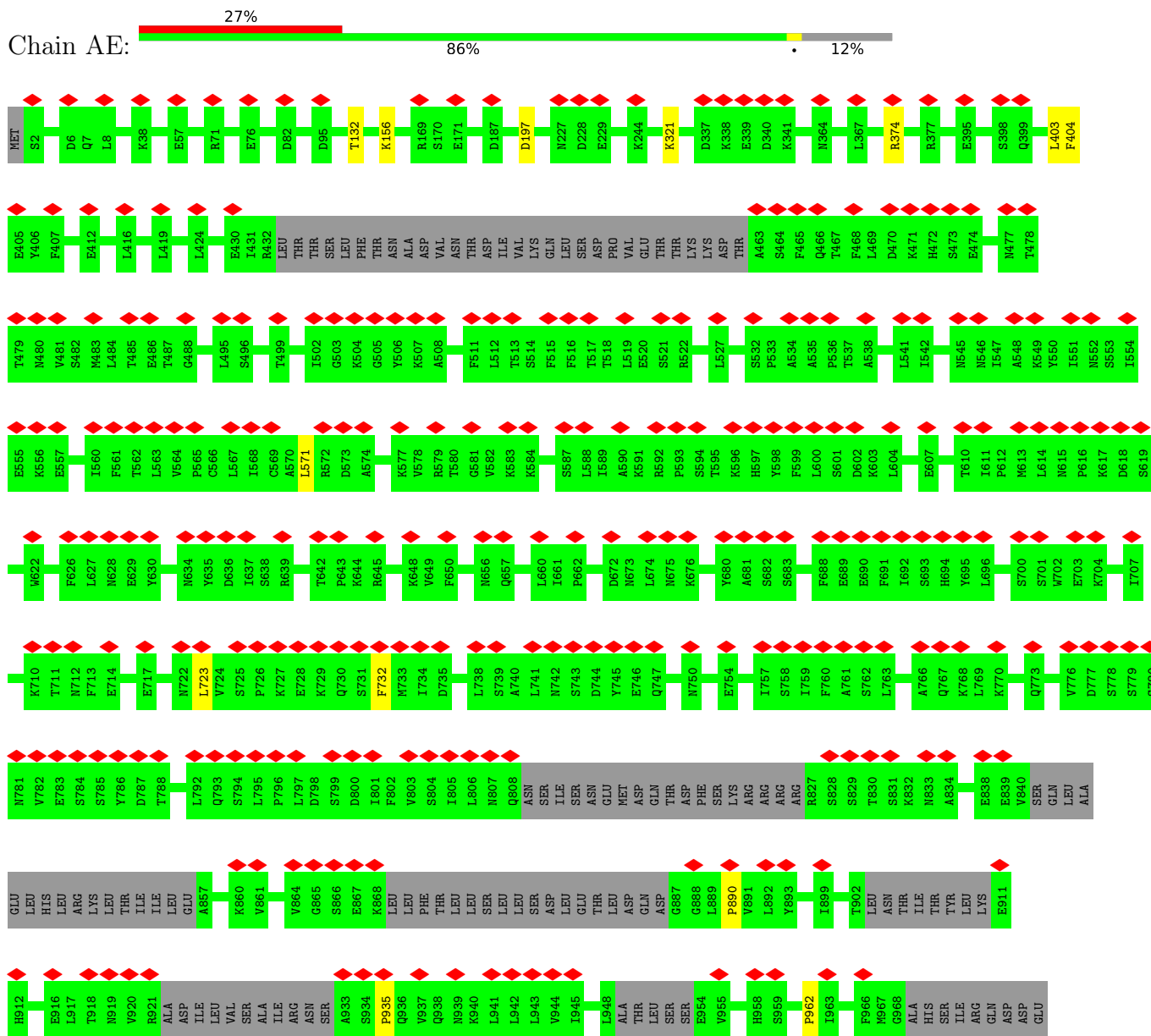


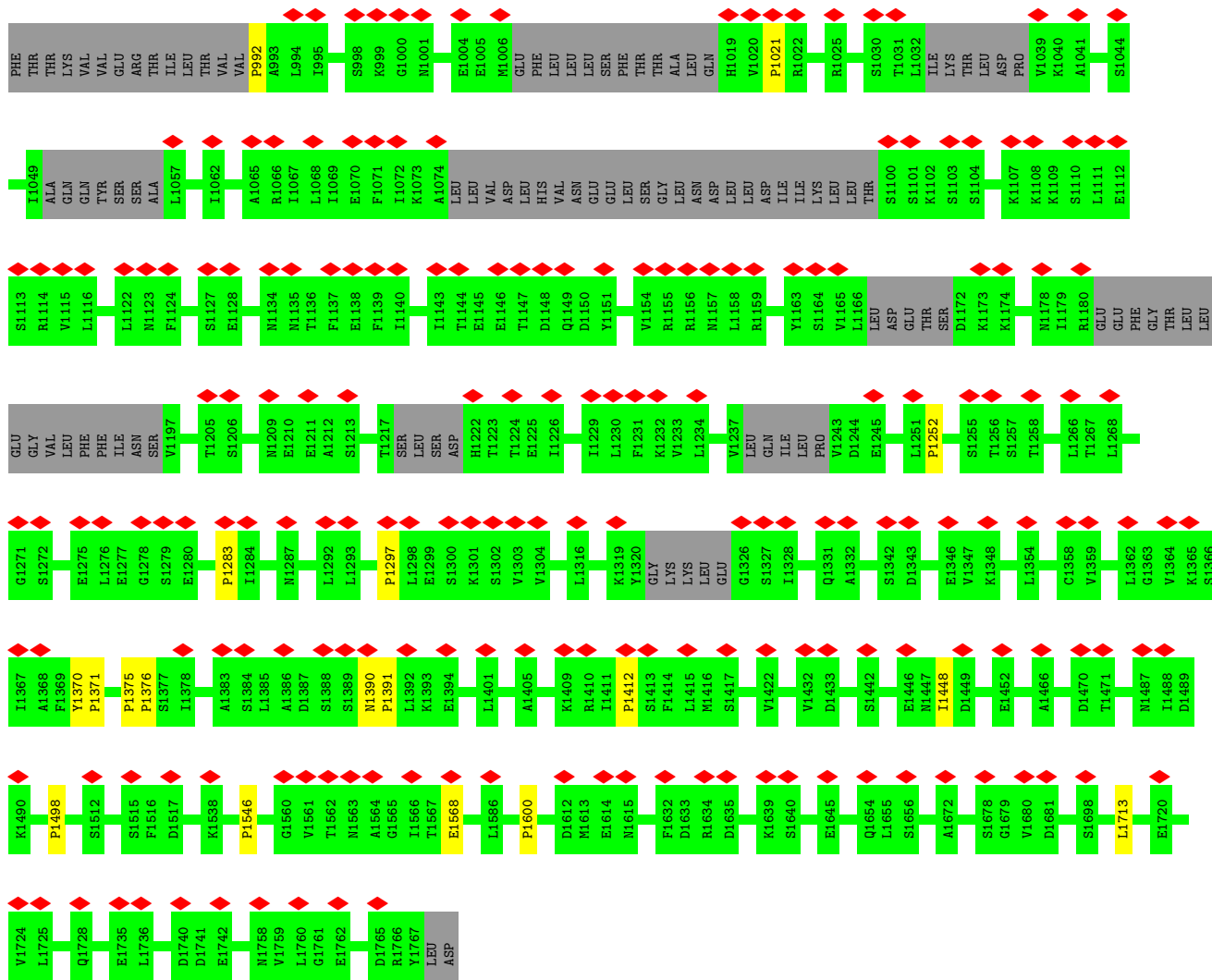
- Molecule 21: 40S ribosomal protein S28-A



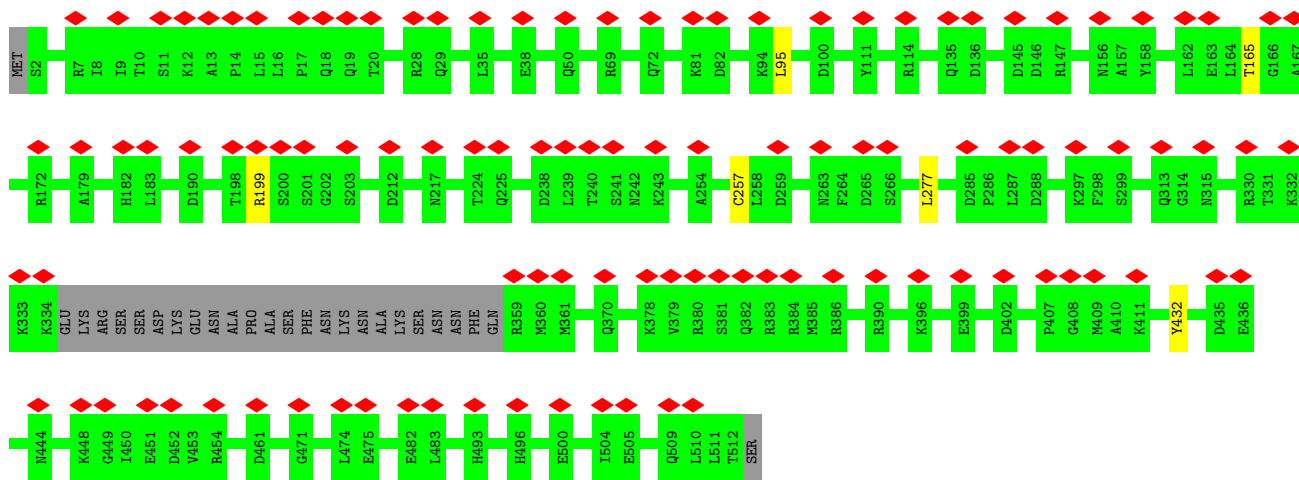


• Molecule 31: U3 small nucleolar RNA-associated protein 10

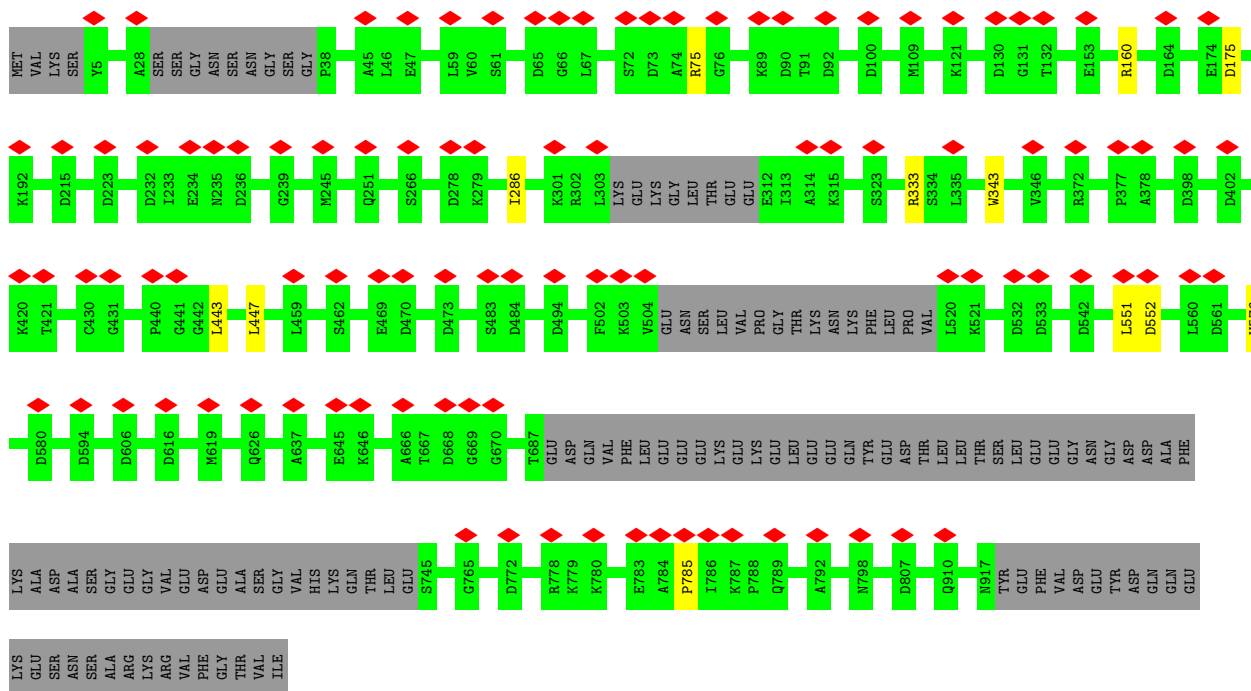




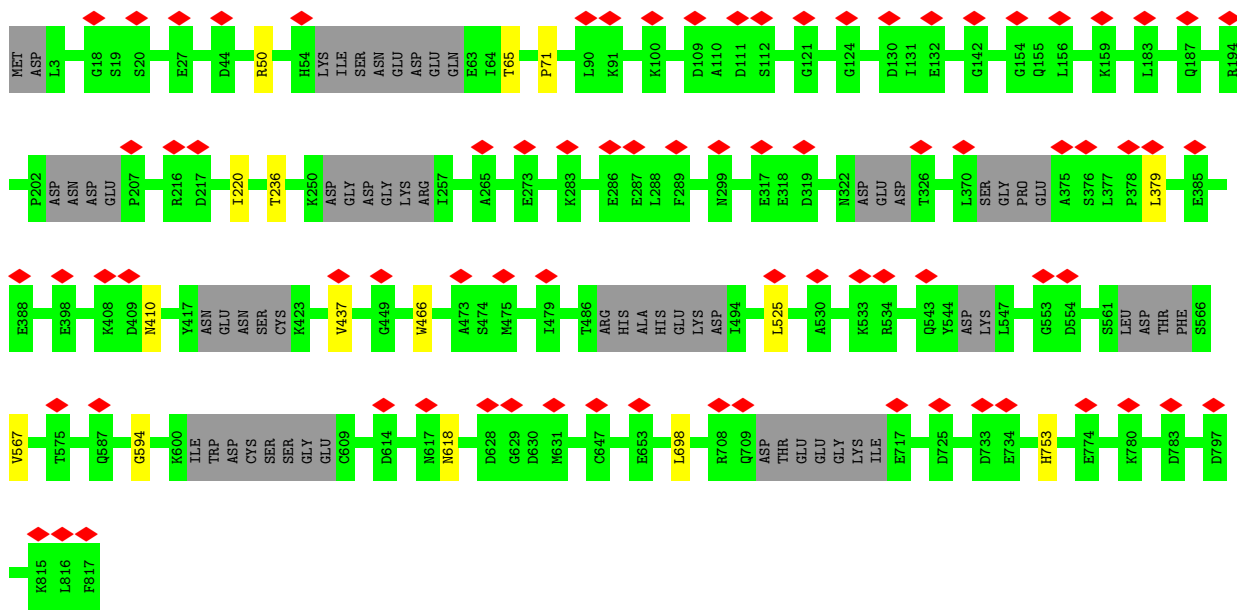
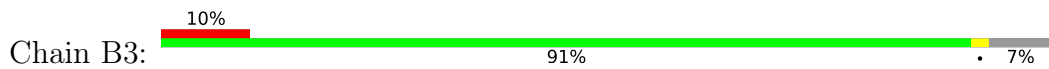
• Molecule 32: U3 small nucleolar RNA-associated protein 15



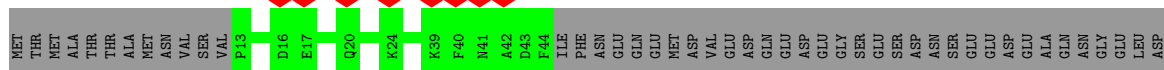
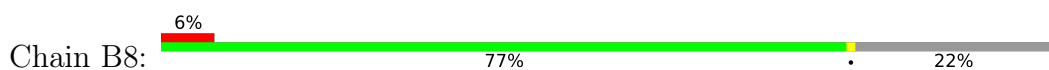
• Molecule 33: NET1-associated nuclear protein 1

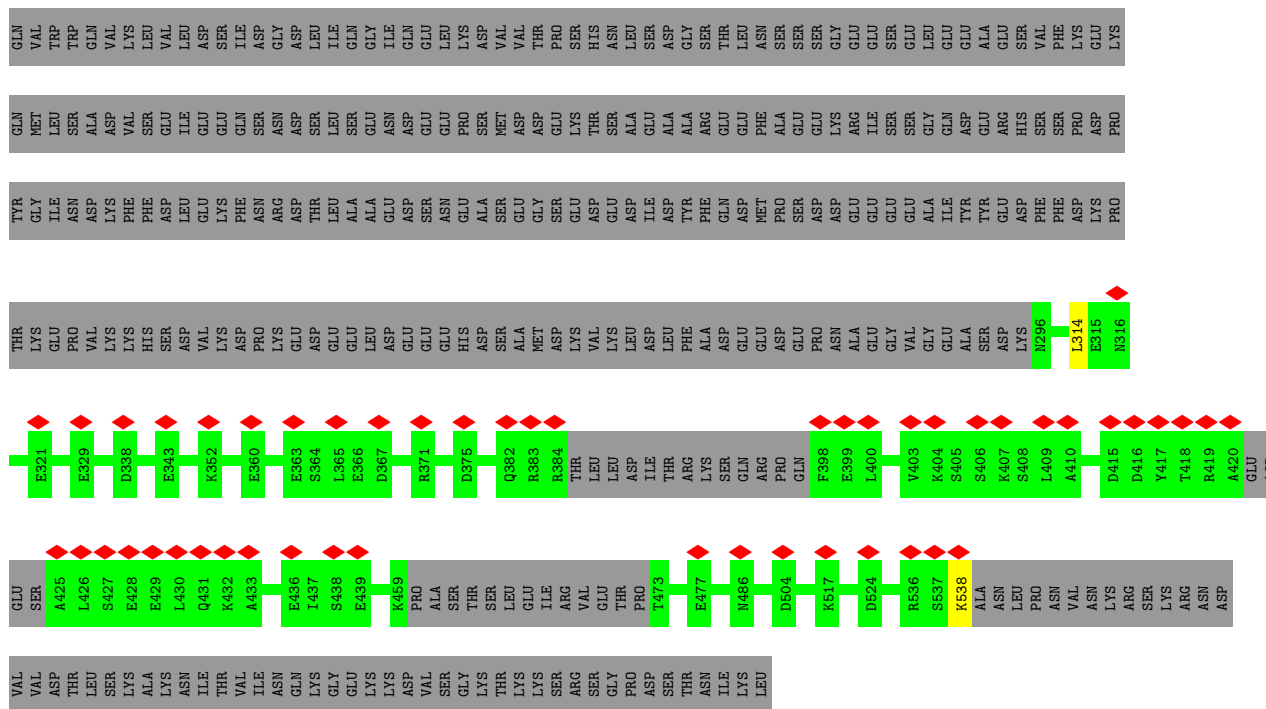


● Molecule 36: U3 small nucleolar RNA-associated protein 13

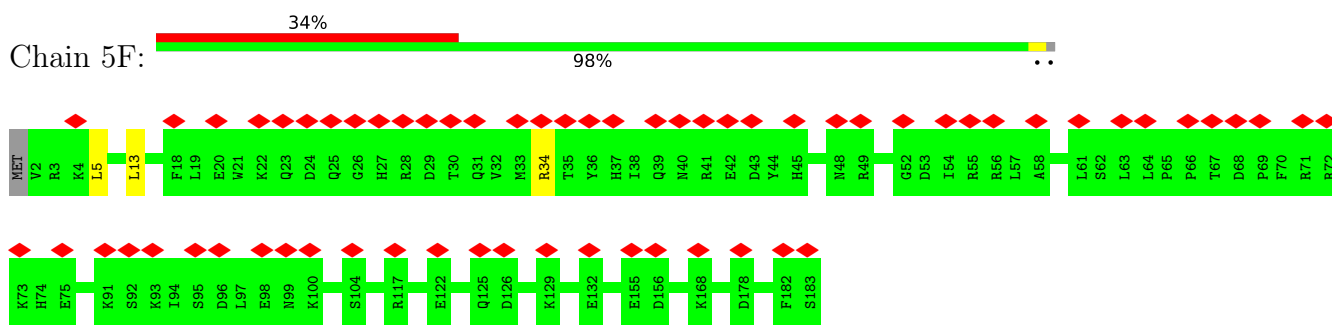


● Molecule 37: U3 small nucleolar RNA-associated protein 18

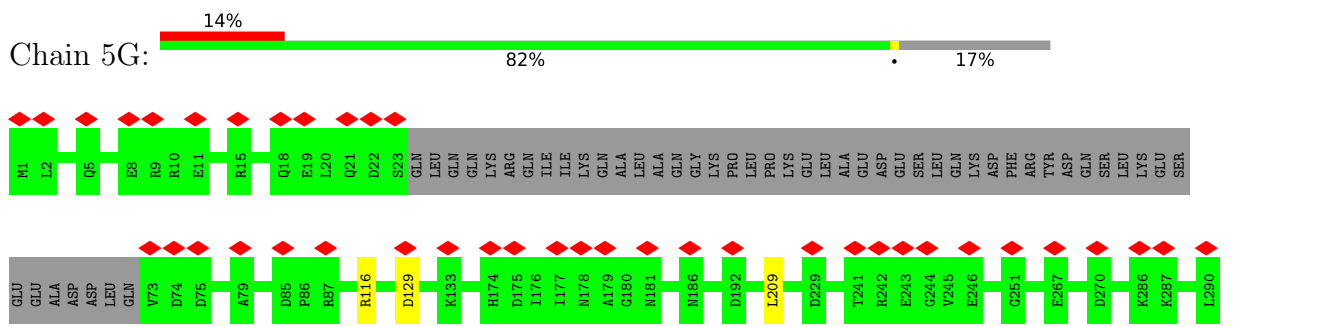




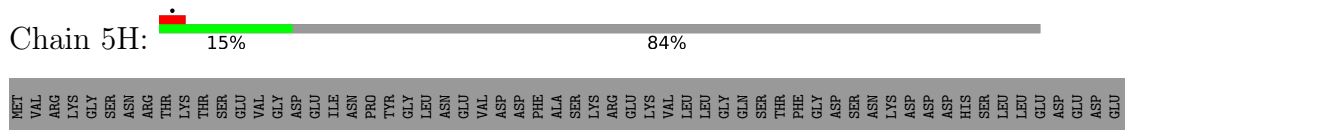
• Molecule 44: U3 small nucleolar ribonucleoprotein protein IMP3

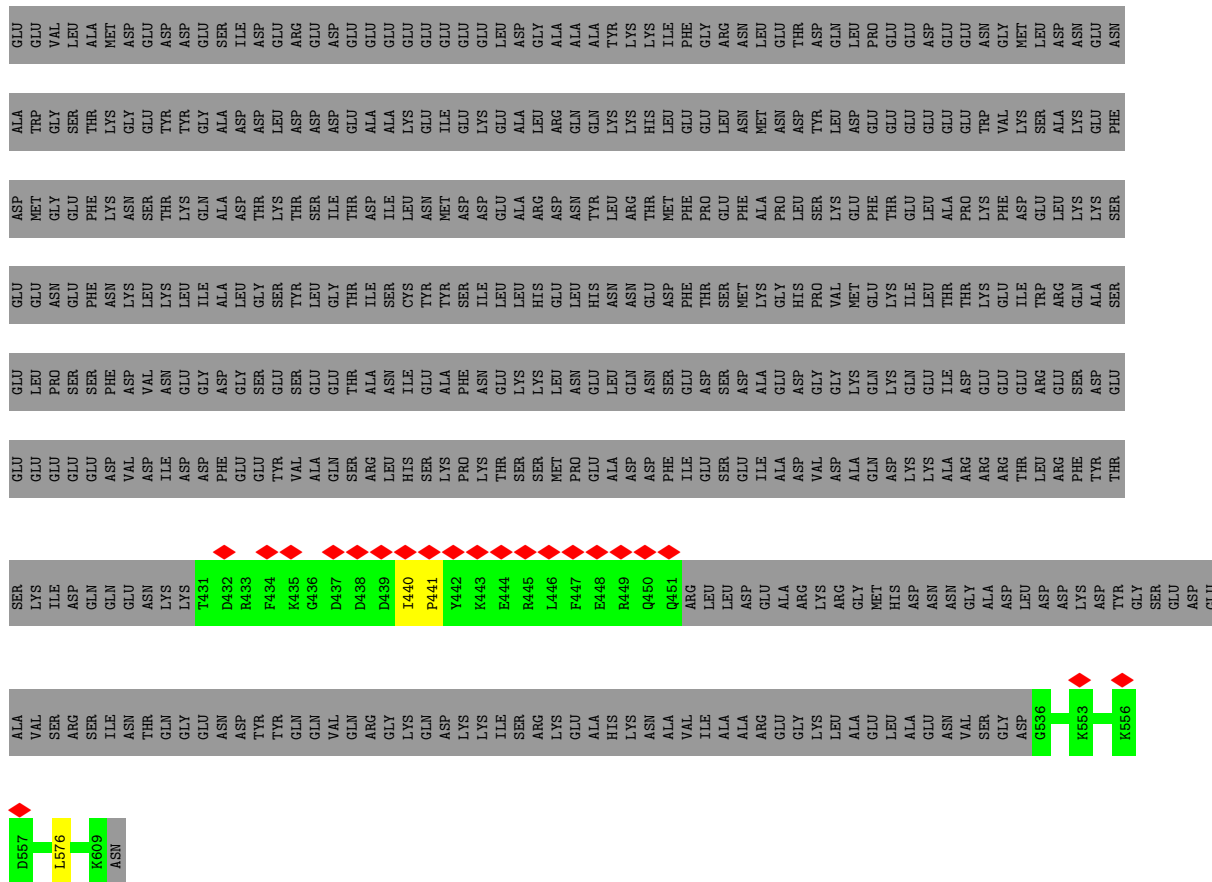


• Molecule 45: U3 small nucleolar ribonucleoprotein protein IMP4

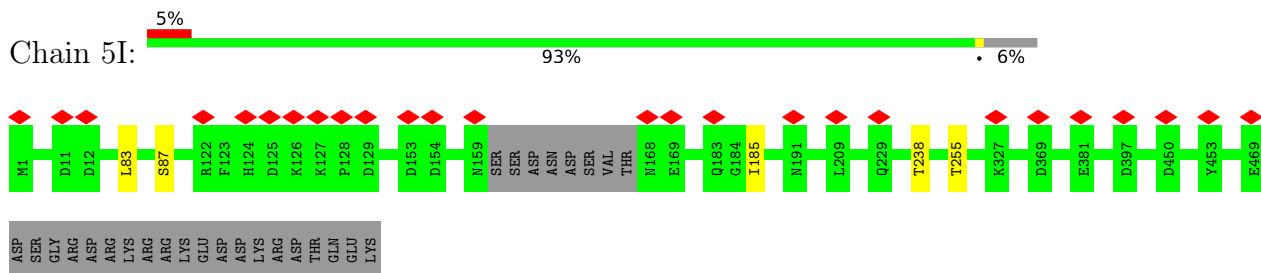


• Molecule 46: Something about silencing protein 10

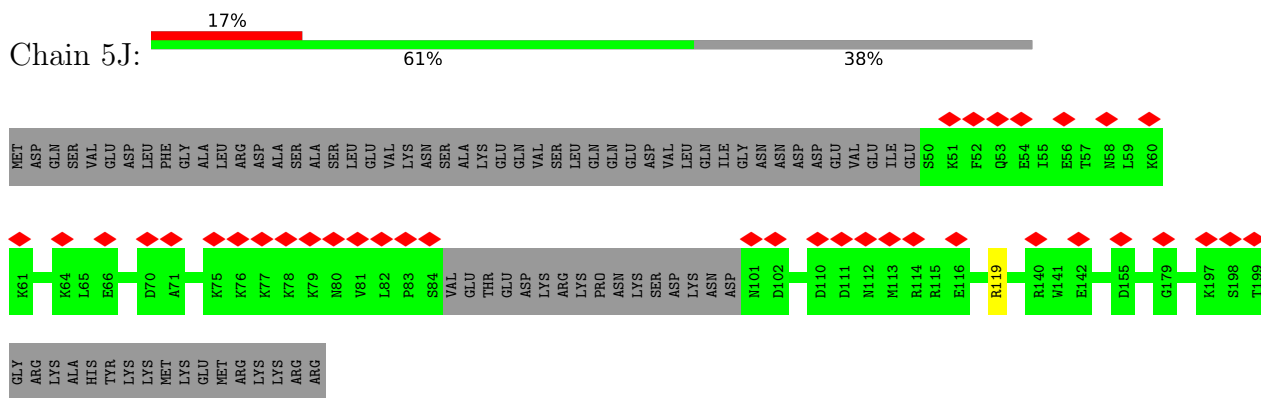




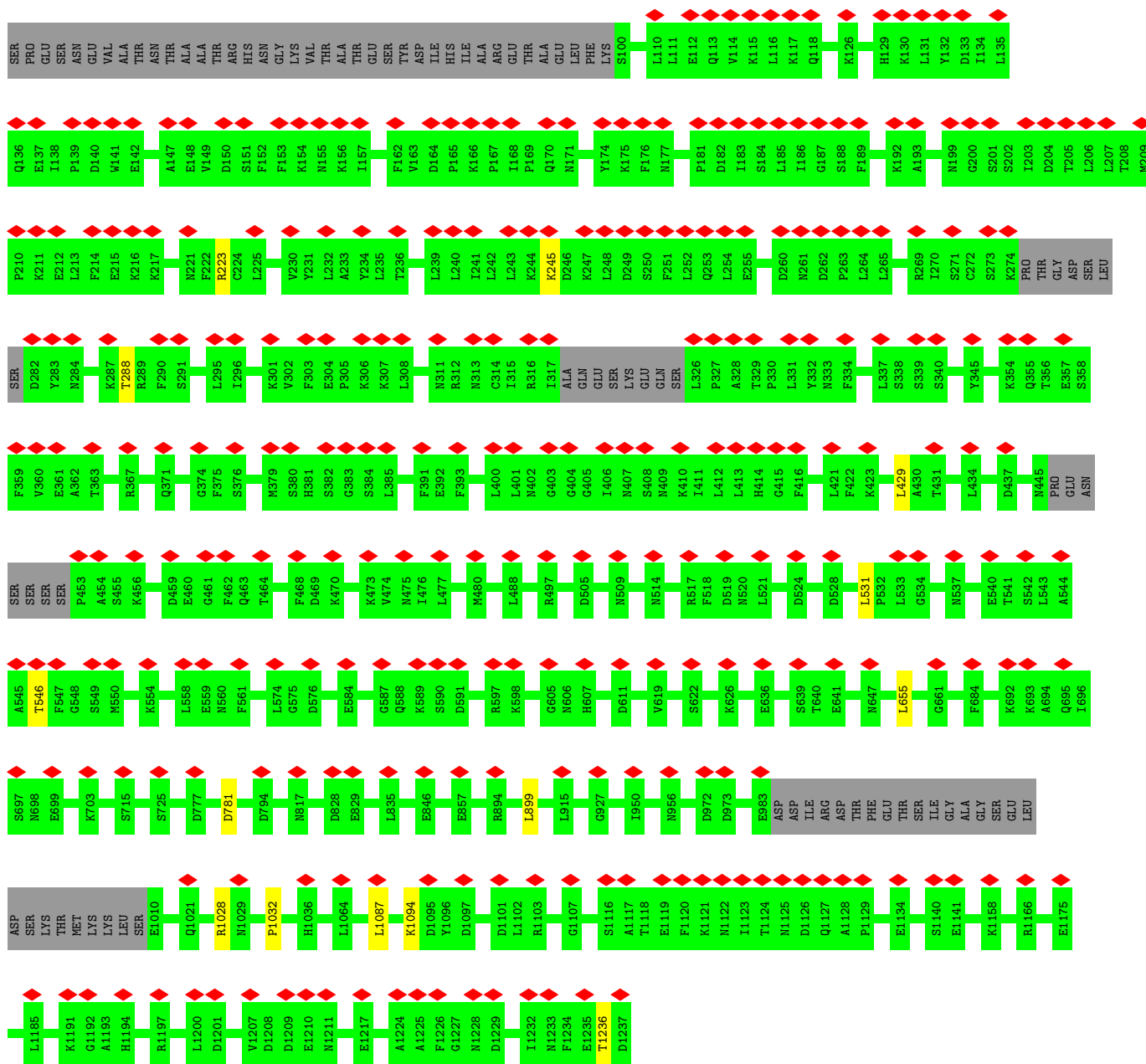
• Molecule 47: Protein SOF1



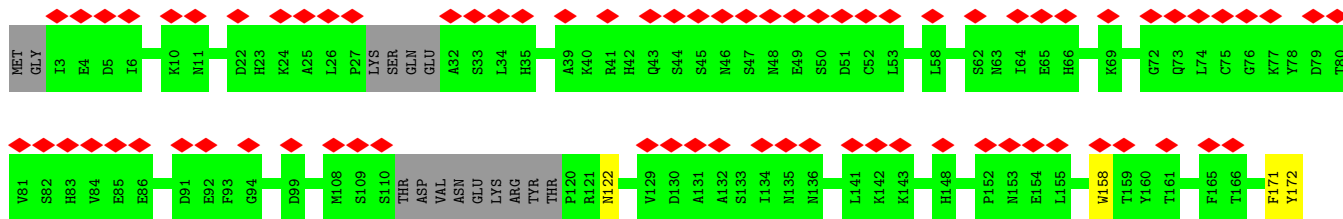
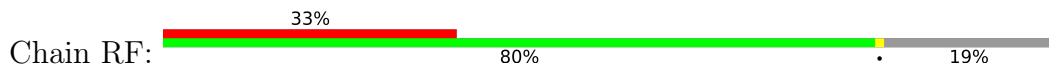
• Molecule 48: rRNA-processing protein FCF2

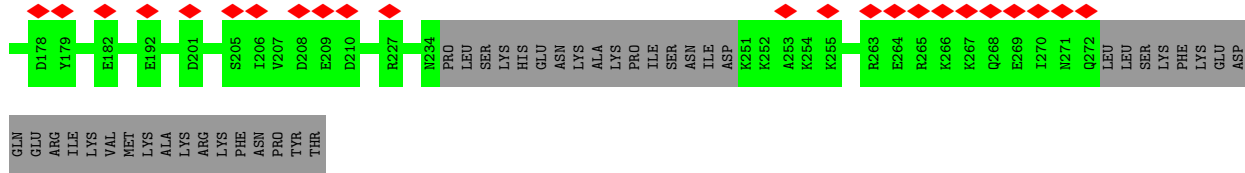


• Molecule 49: rRNA-processing protein FCF1

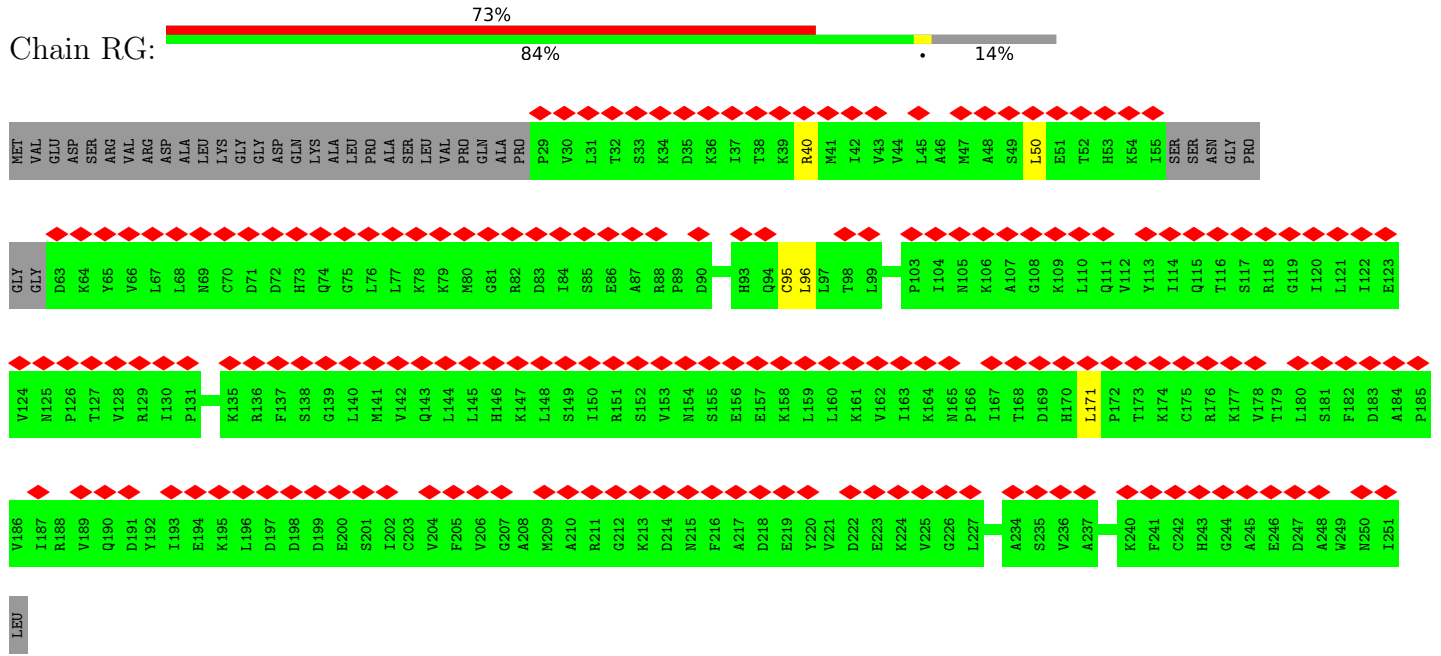


• Molecule 52: Ribosomal RNA-processing protein 7

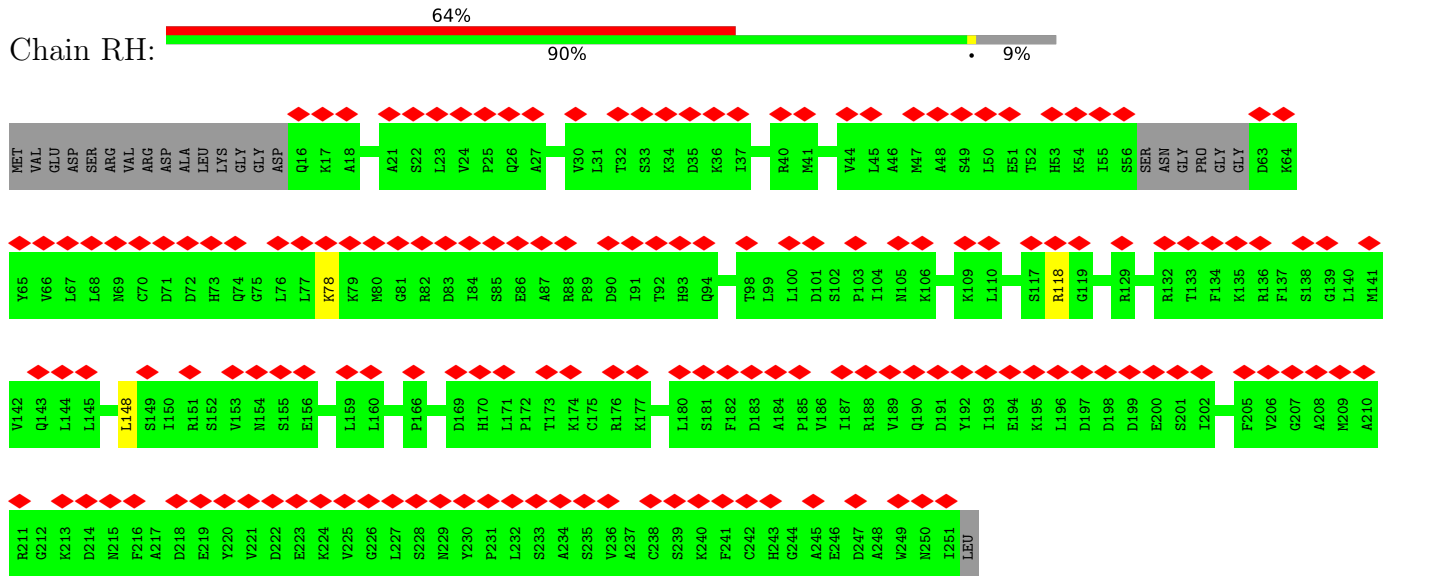




• Molecule 53: Ribosomal RNA small subunit methyltransferase NEP1

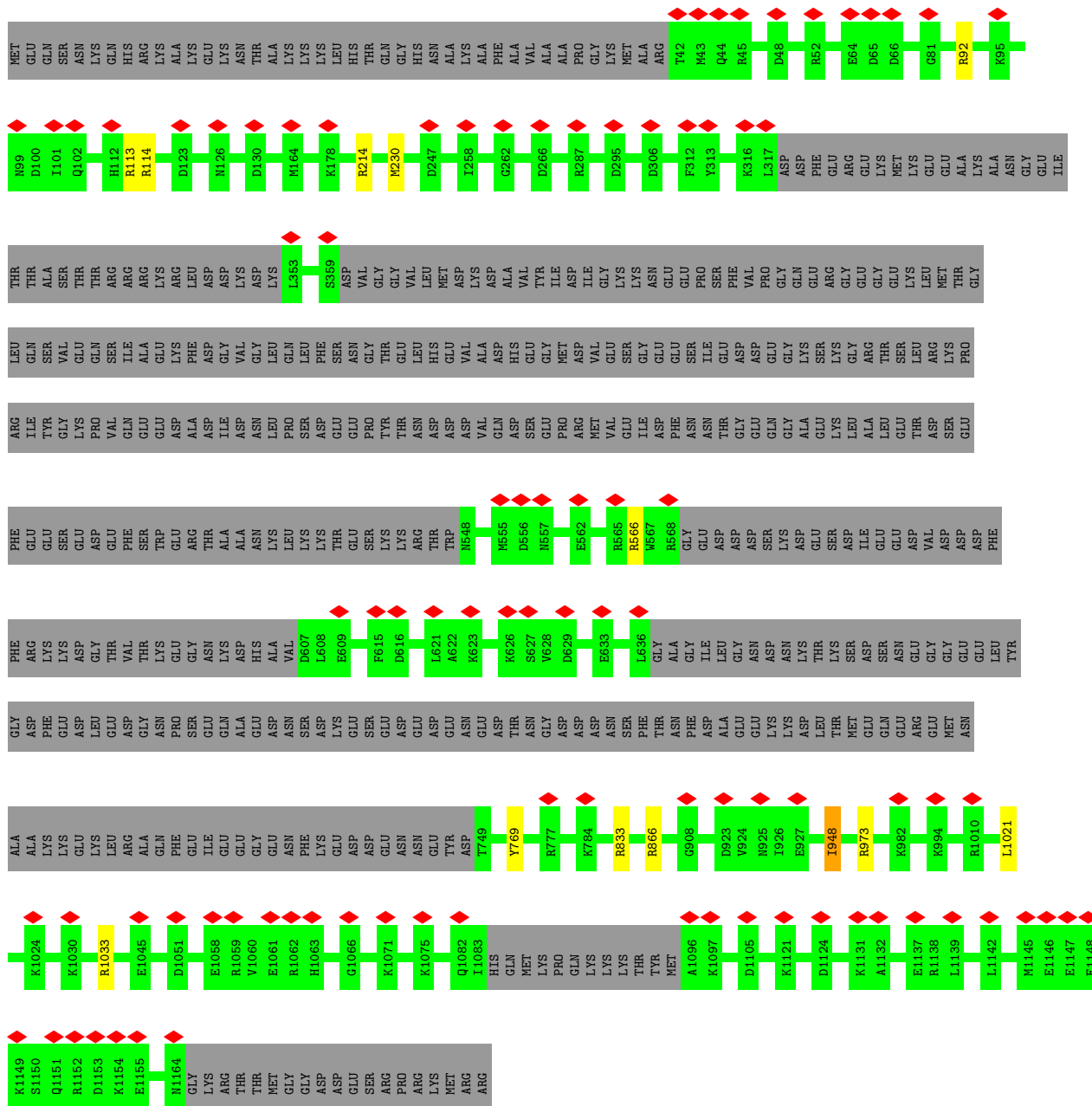


• Molecule 53: Ribosomal RNA small subunit methyltransferase NEP1

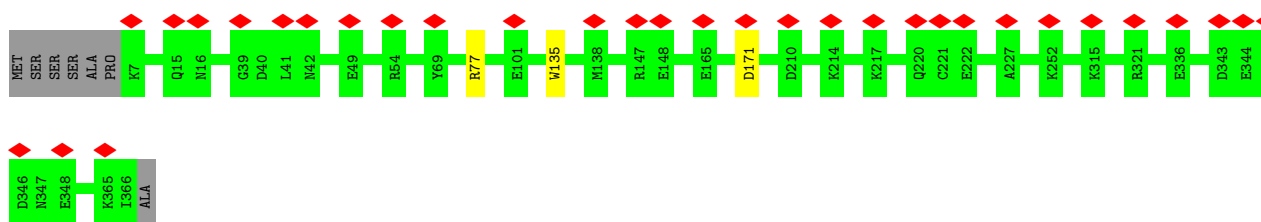


• Molecule 54: Ribosome biogenesis protein BMS1

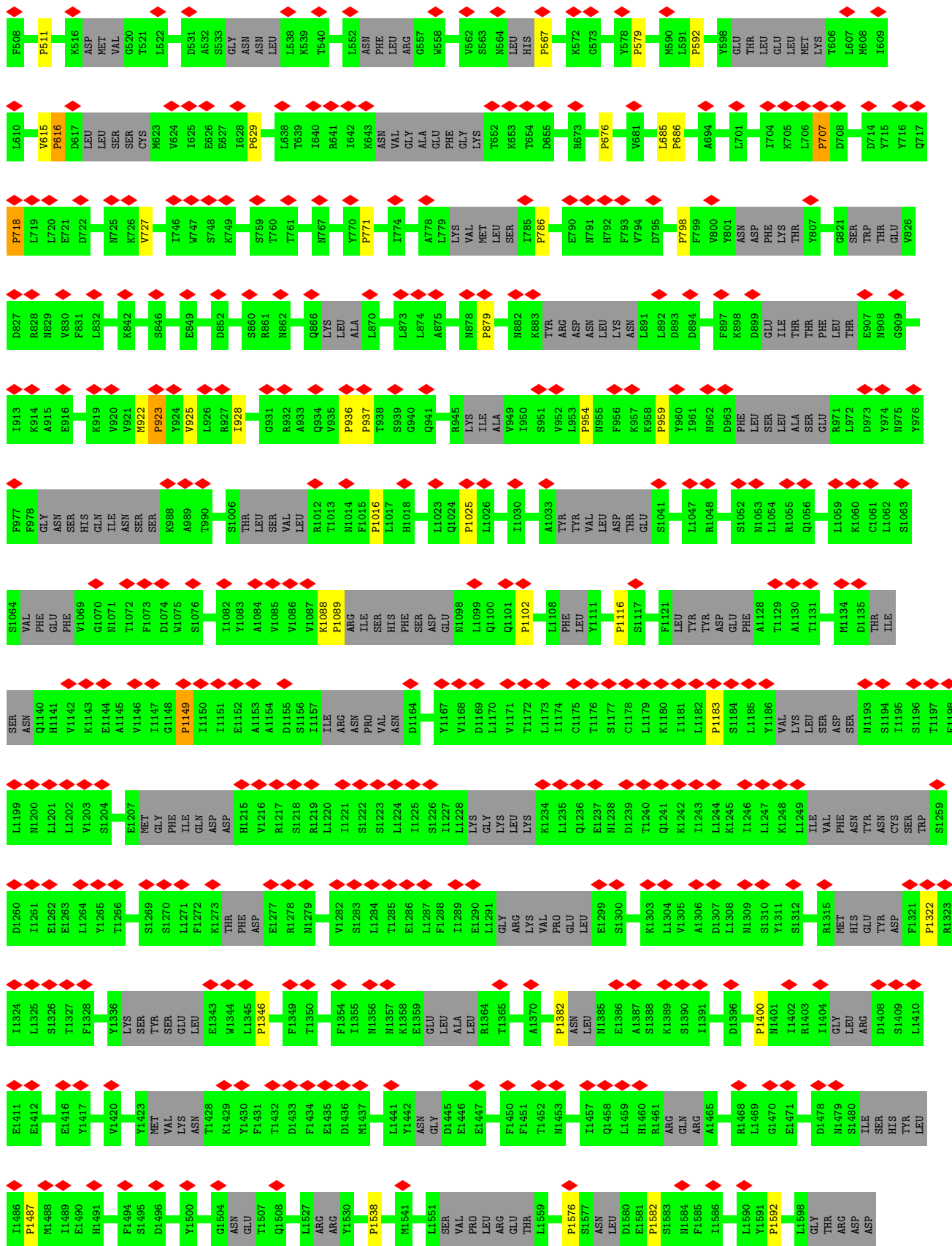


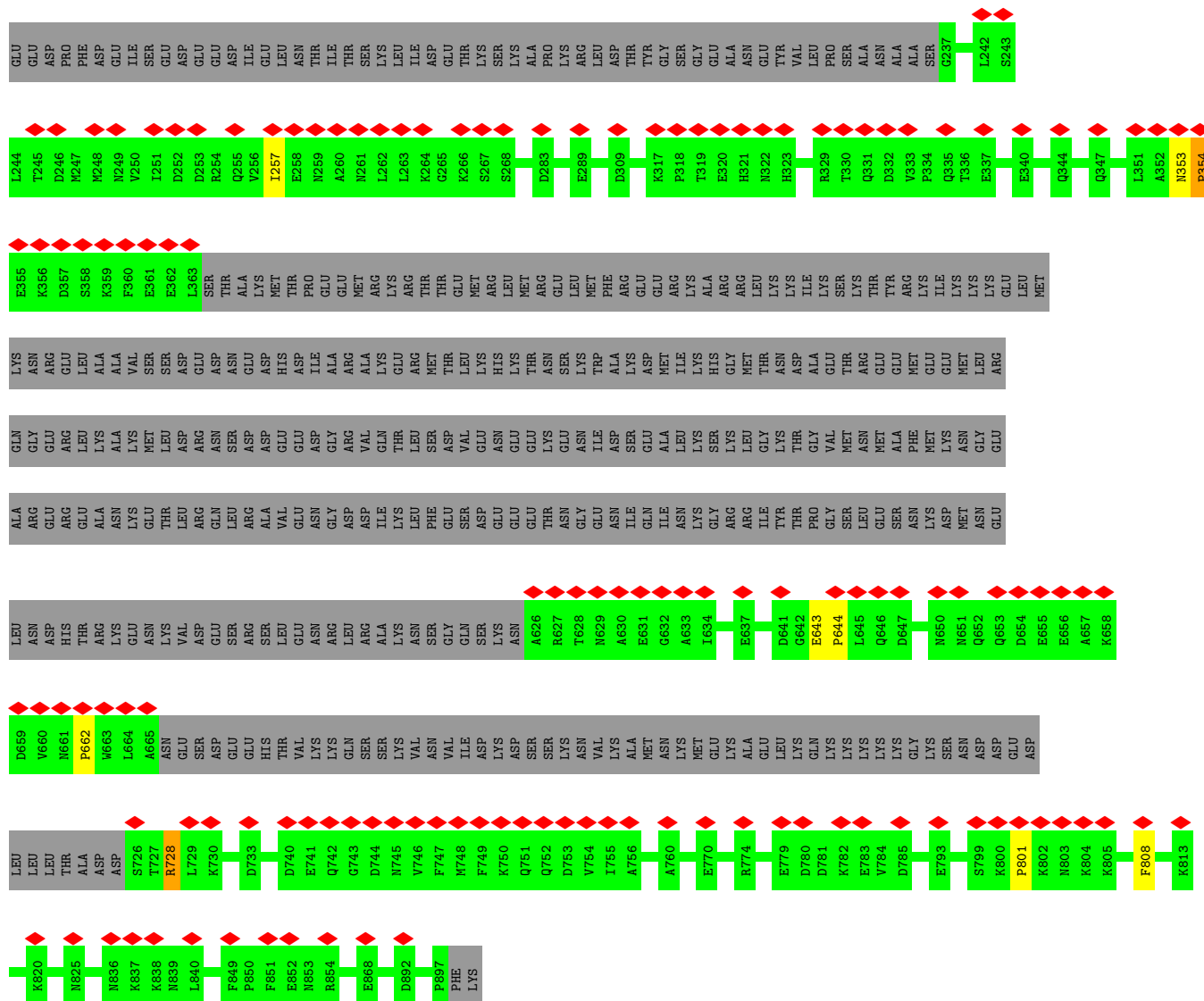


• Molecule 55: RNA 3'-terminal phosphate cyclase-like protein

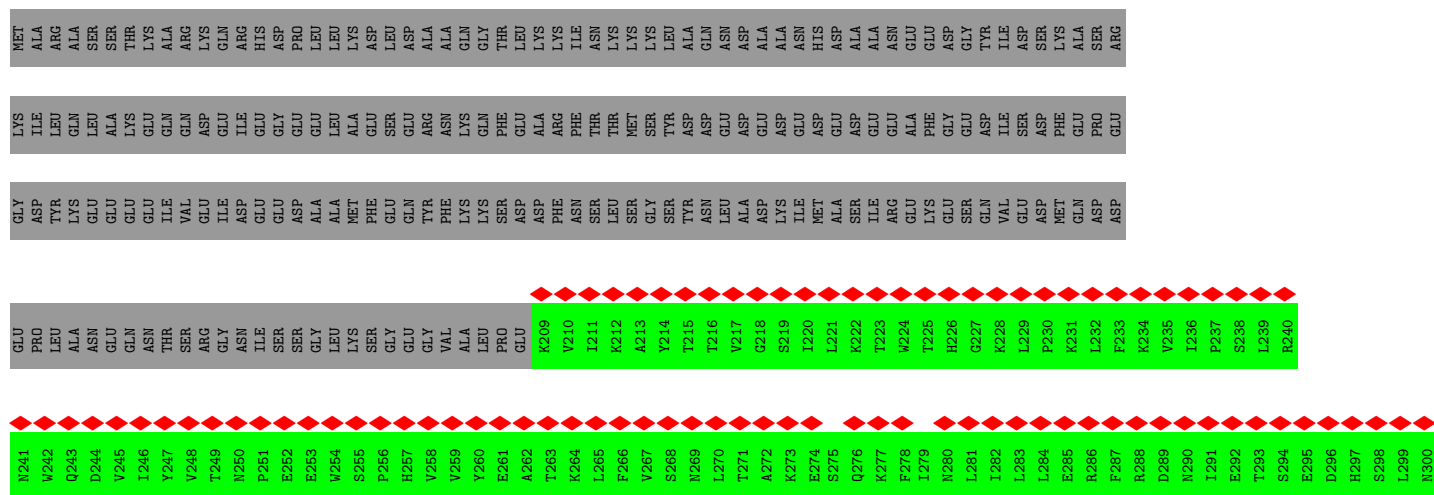


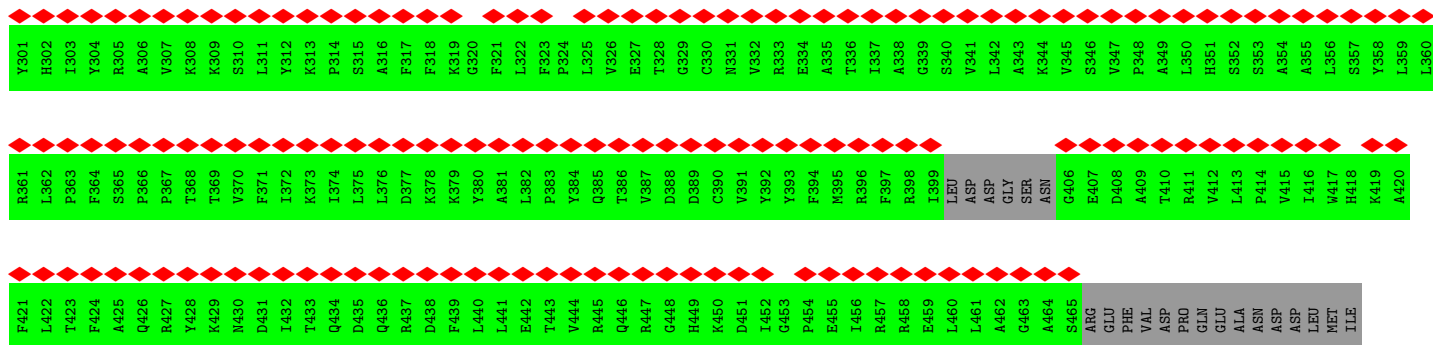
• Molecule 56: Nucleolar complex protein 14



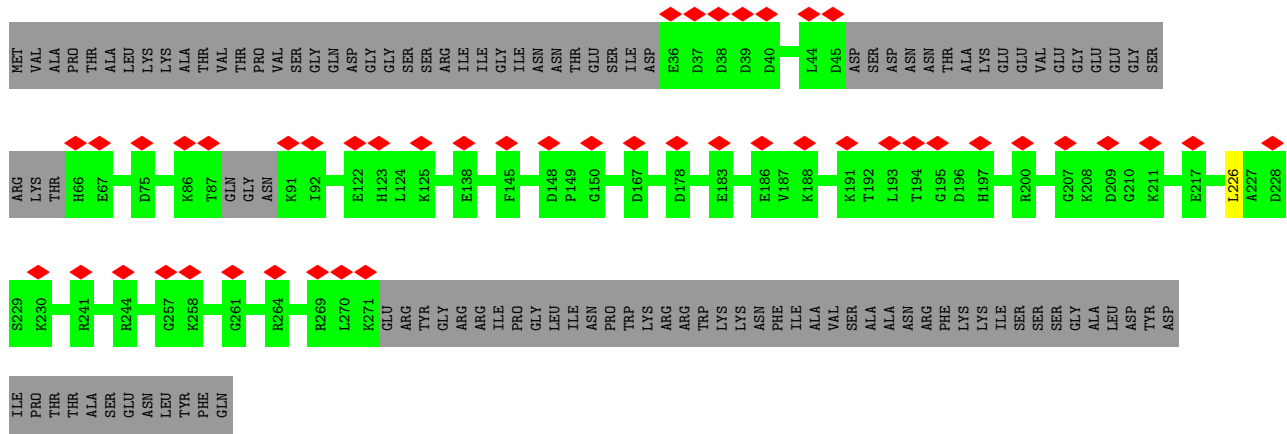


● Molecule 60: Essential nuclear protein 1

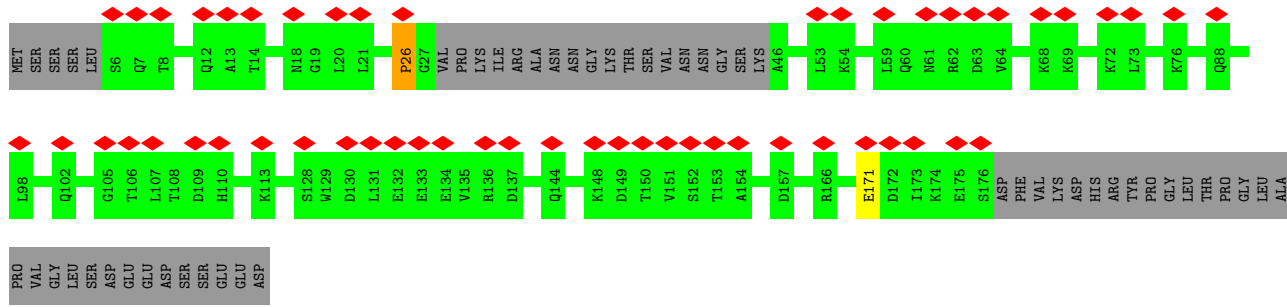
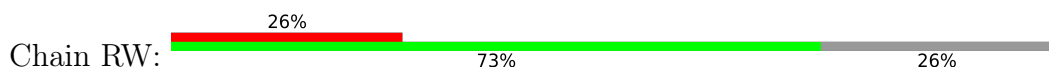




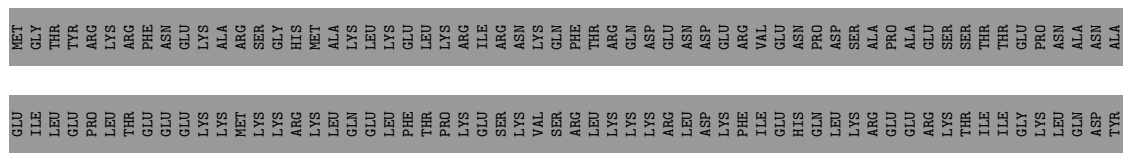
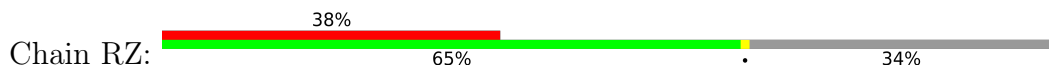
• Molecule 61: Pno1

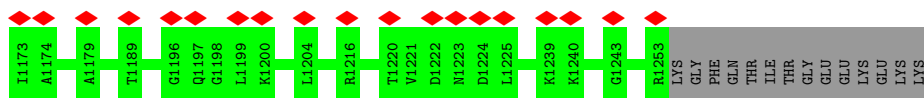


• Molecule 62: Regulator of rDNA transcription protein 14

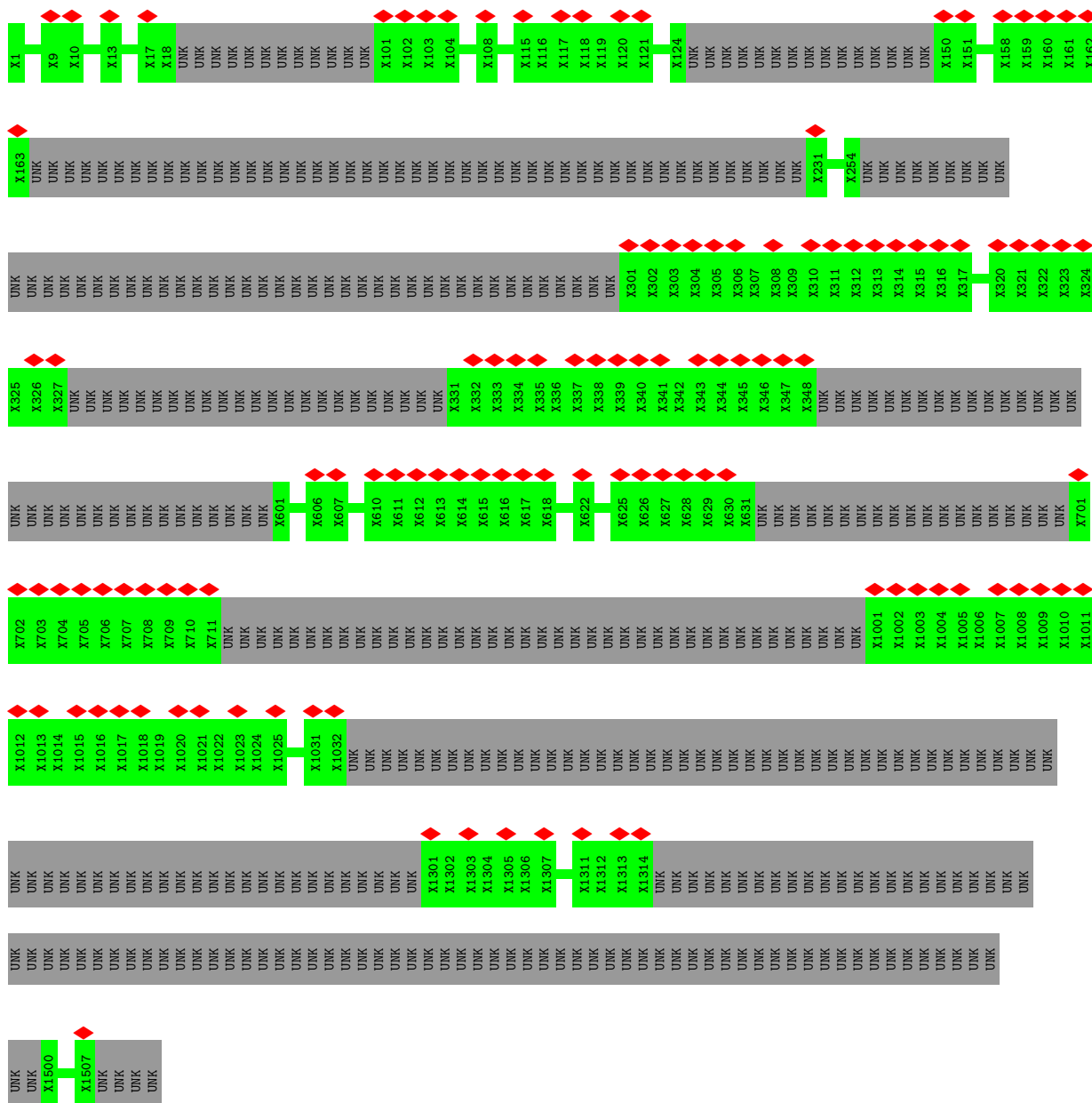


• Molecule 63: Probable ATP-dependent RNA helicase DHR1

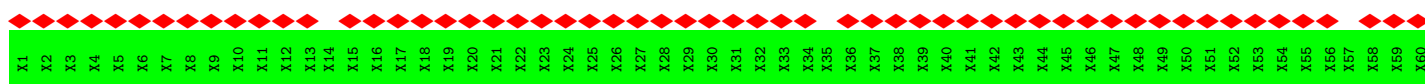


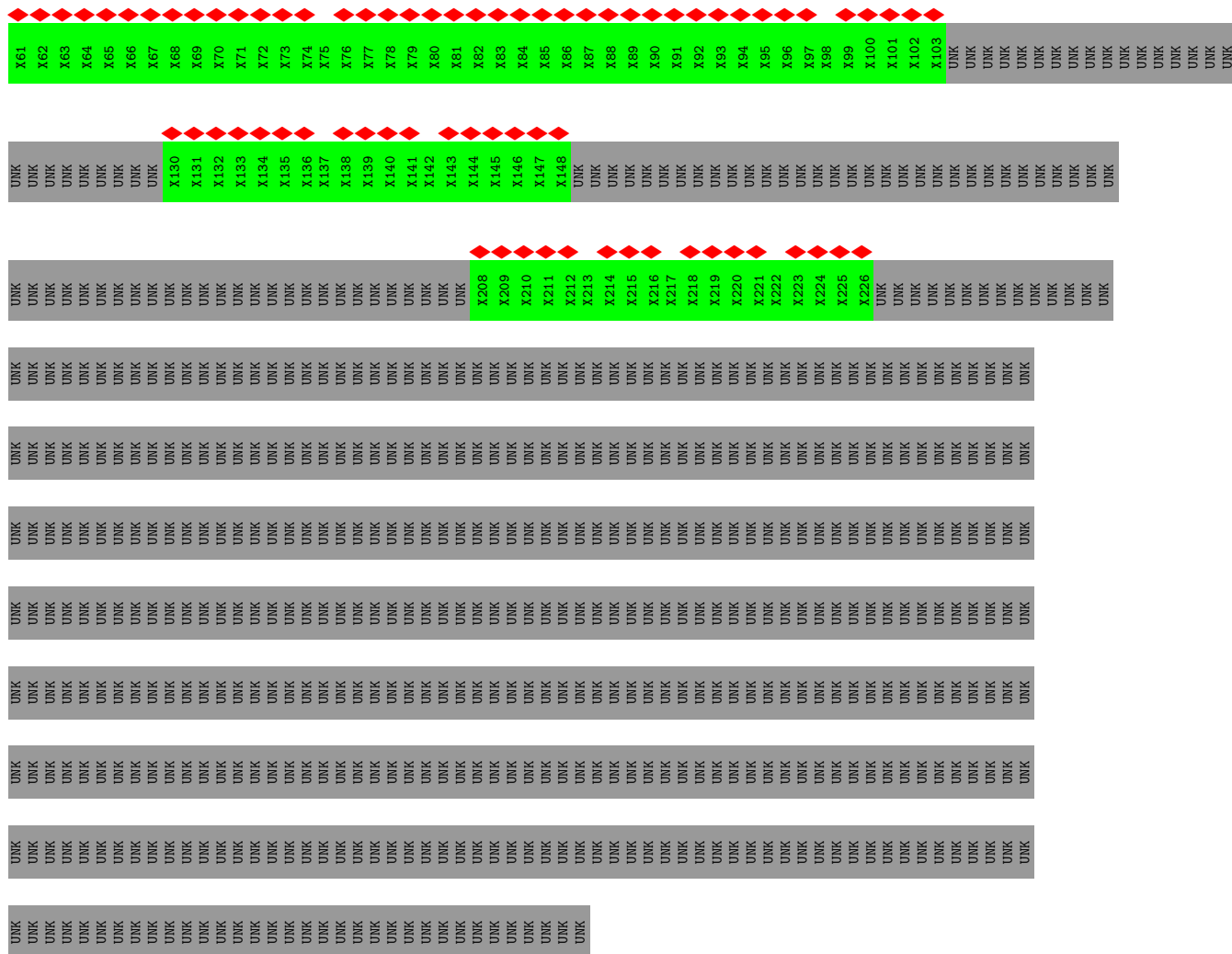


• Molecule 64: Unassigned peptides 1

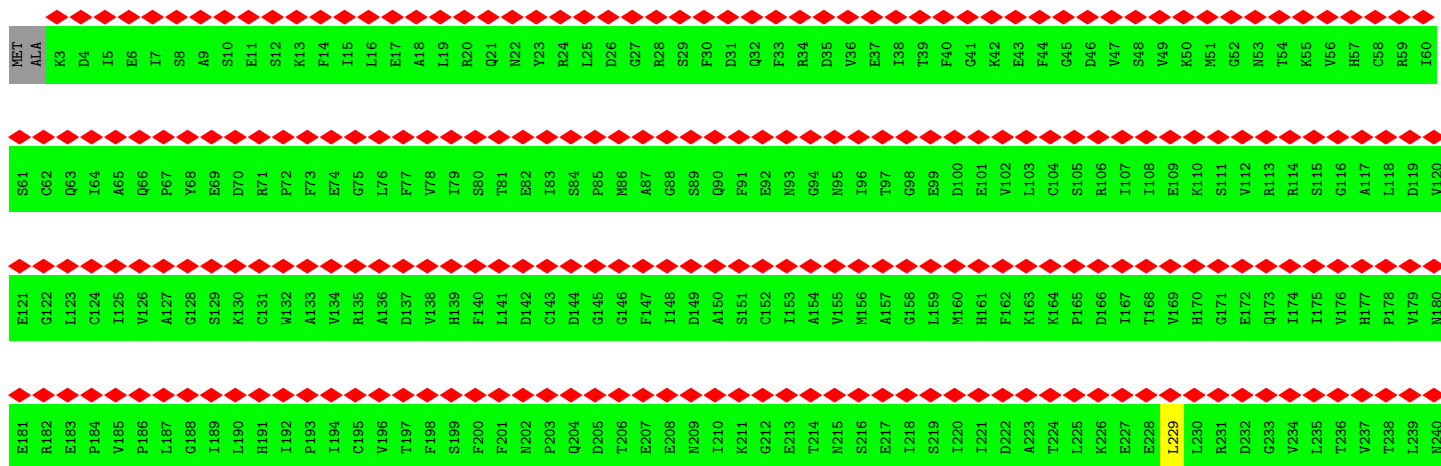


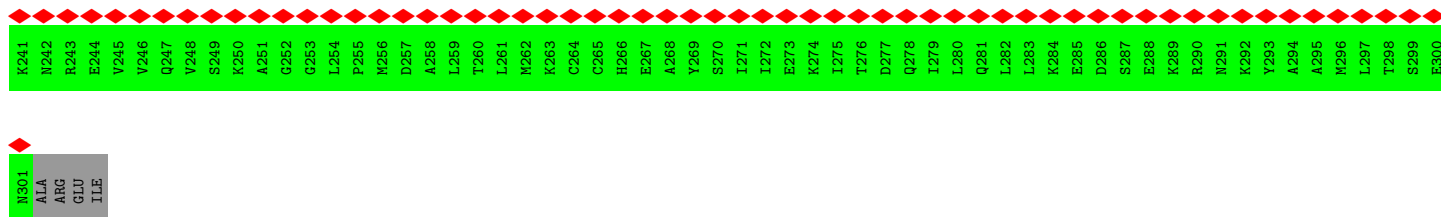
• Molecule 65: Unassigned peptides 2



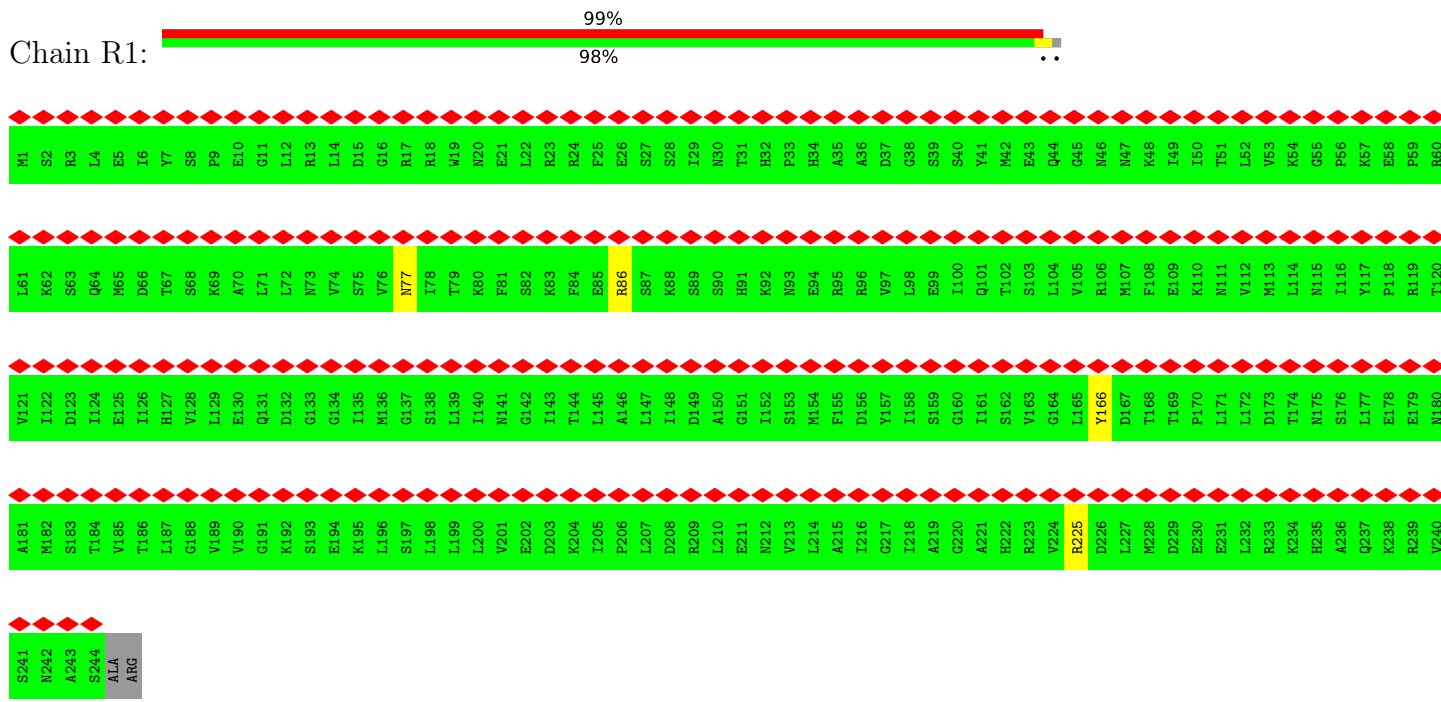


● Molecule 66: Exosome complex component RRP45

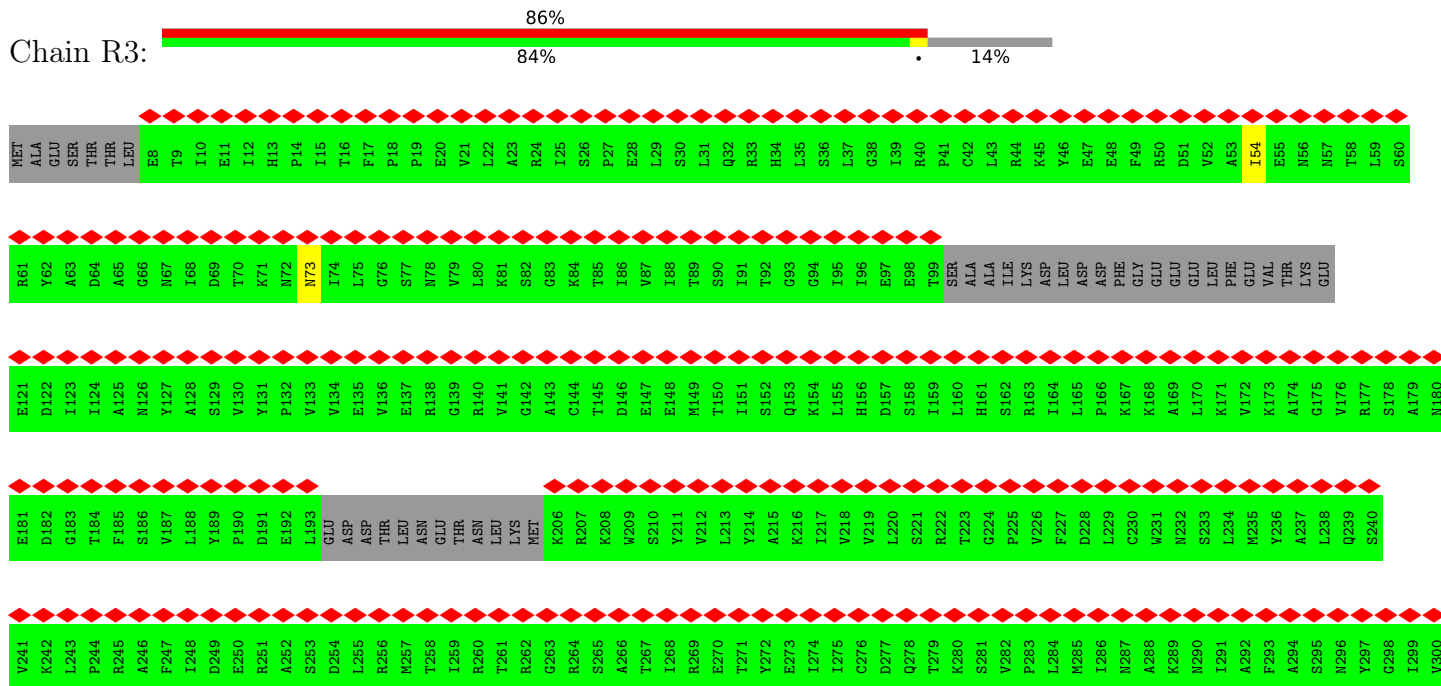


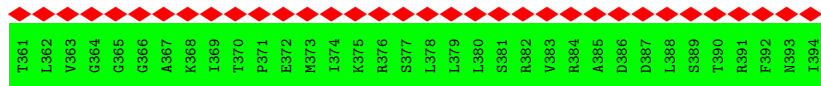
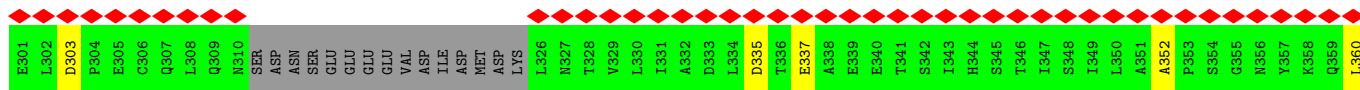


• Molecule 67: Exosome complex component SKI6

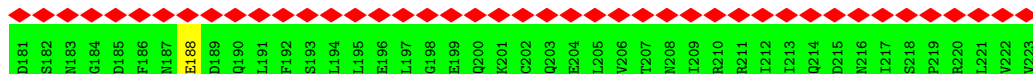
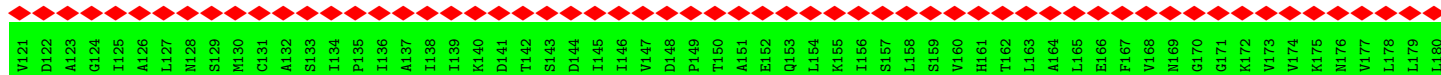
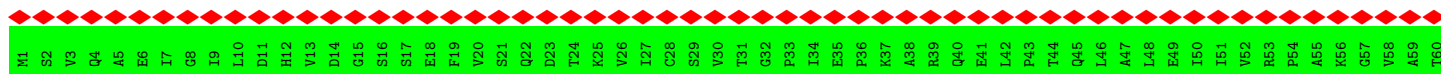


• Molecule 68: Exosome complex component RRP43

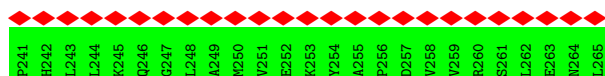
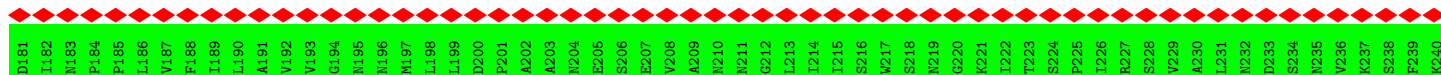
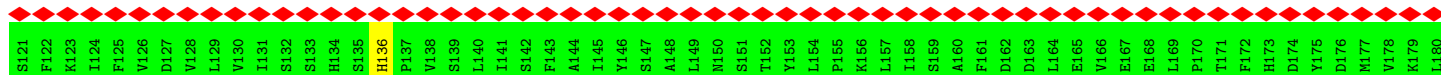
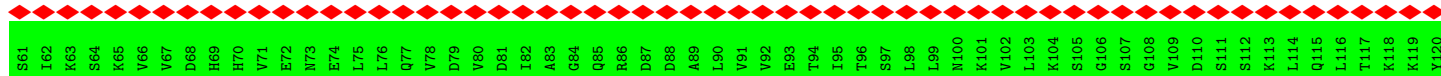
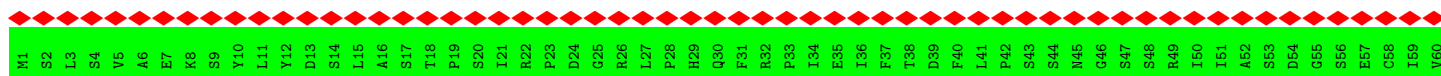




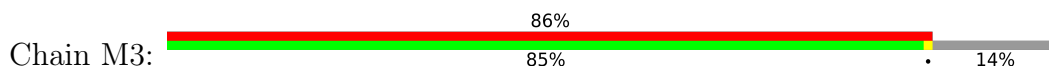
• Molecule 69: Exosome complex component RRP46

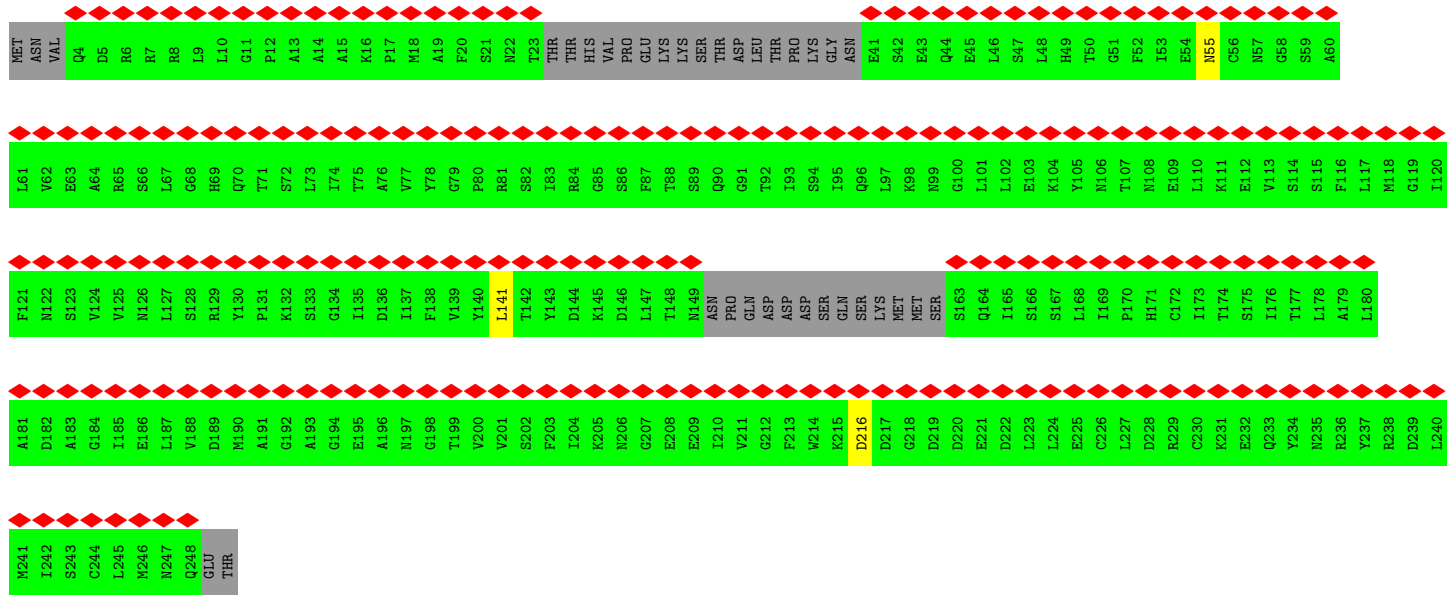


• Molecule 70: Exosome complex component RRP42

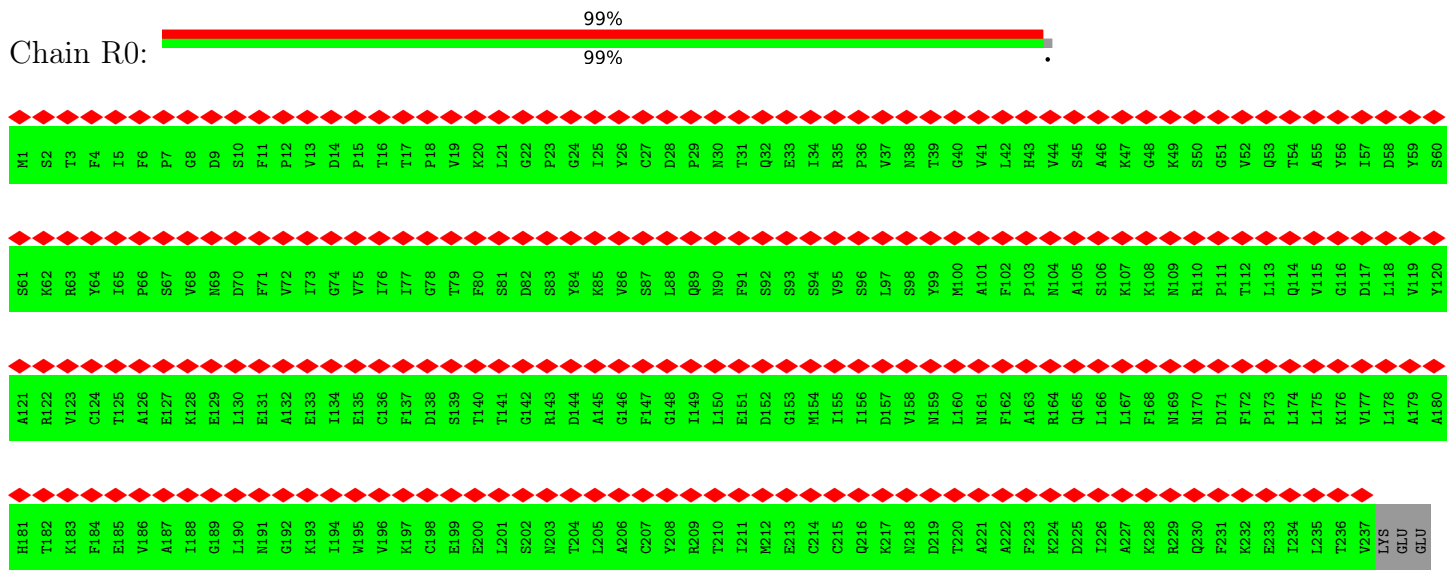


• Molecule 71: Exosome complex component MTR3

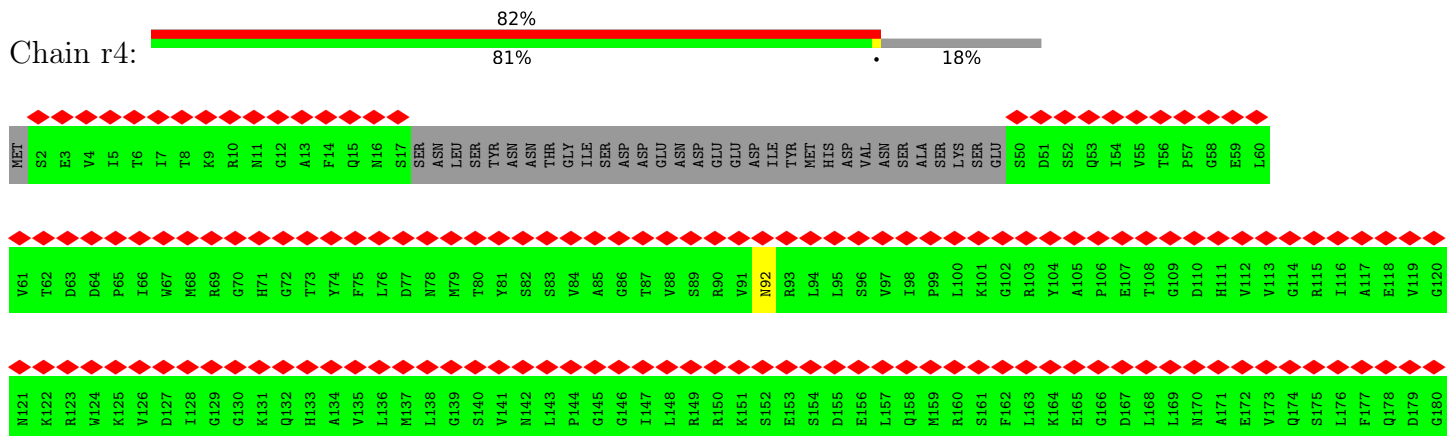


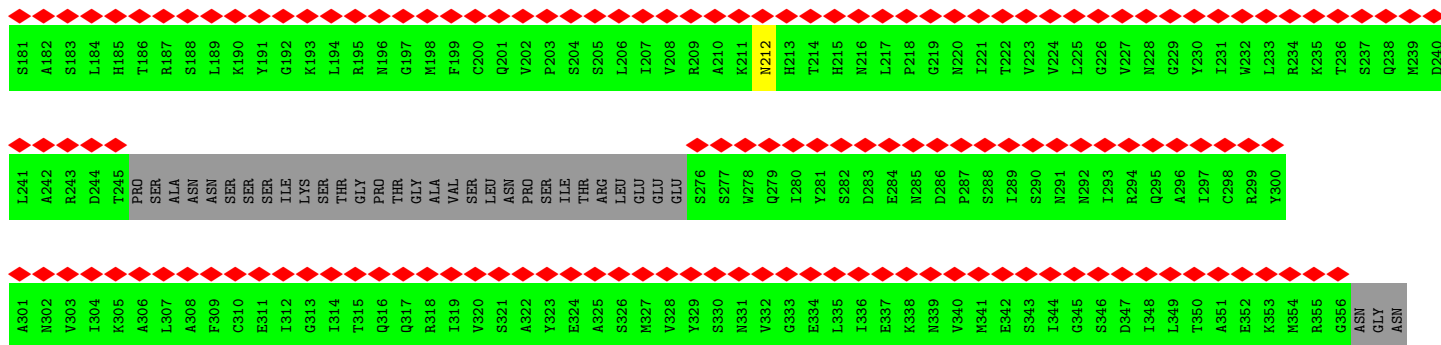


• Molecule 72: Exosome complex component RRP40

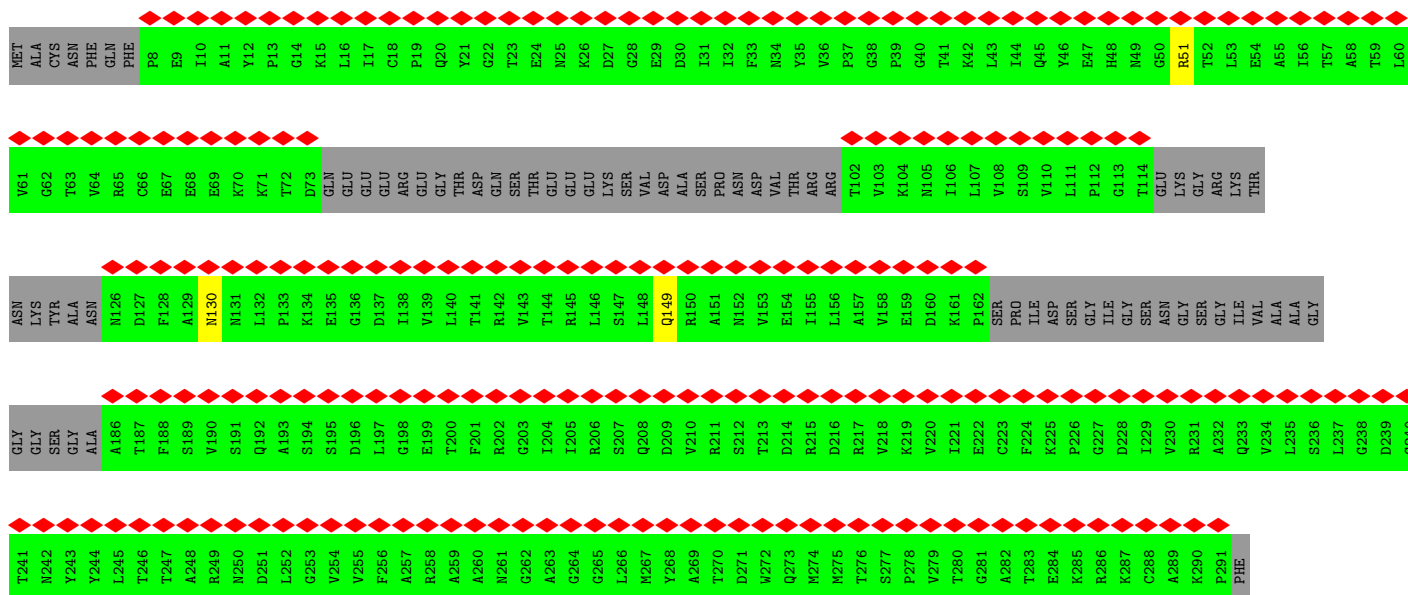
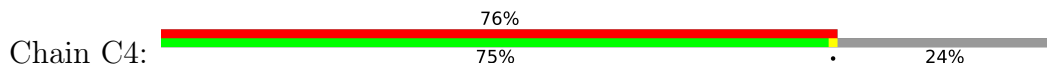


• Molecule 73: Exosome complex component RRP4

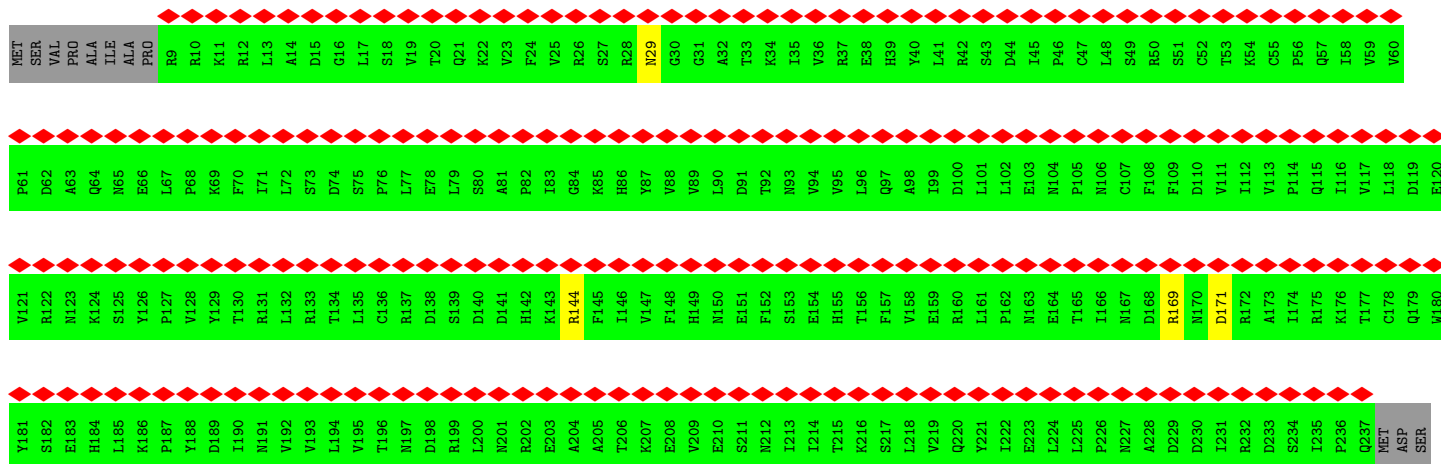


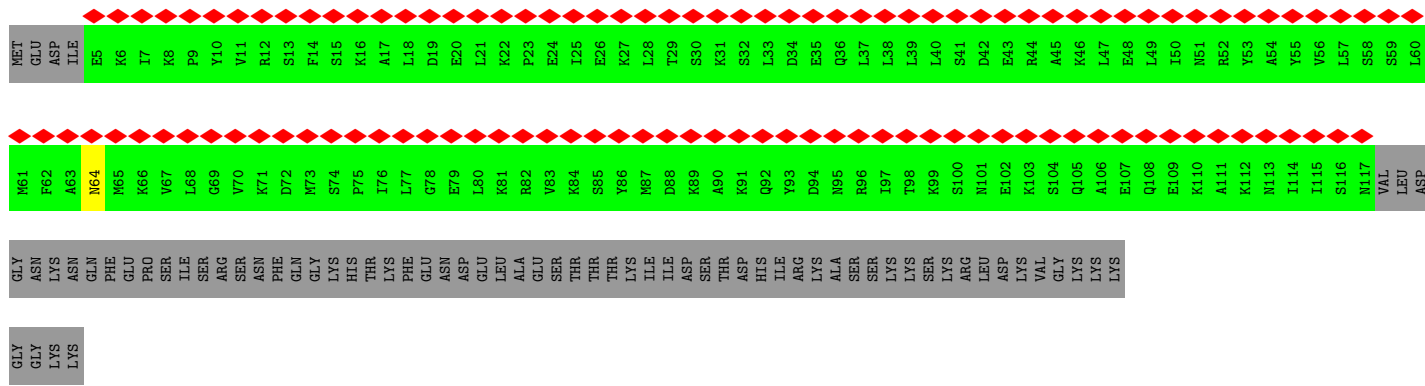


• Molecule 74: Exosome complex component CSL4



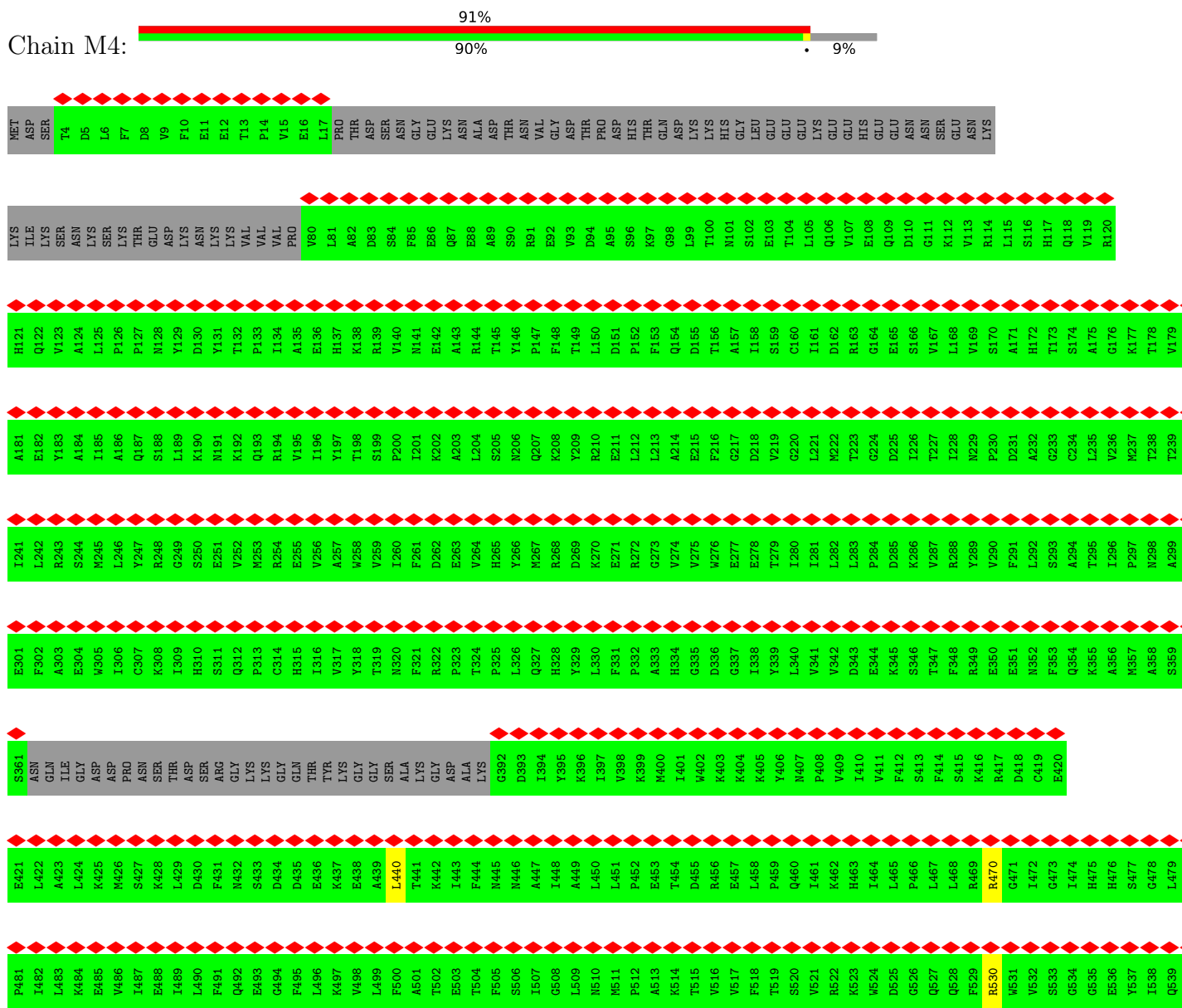
• Molecule 75: Exosome complex exonuclease DIS3





Molecule 78: ATP-dependent RNA helicase DOB1

Chain M4:



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	219545	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	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	0.120	Depositor
Minimum map value	-0.072	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.006	Depositor
Recommended contour level	0.025	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: GTP, ZN, MG, 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	0.61	0/5088	1.20	47/7888 (0.6%)
2	5A	0.44	0/2833	1.13	12/4401 (0.3%)
3	SA	0.56	0/31829	1.17	228/49545 (0.5%)
4	SC	0.39	0/1949	0.66	2/2609 (0.1%)
5	SF	0.37	0/1954	0.65	1/2640 (0.0%)
6	SG	0.38	0/1690	0.61	0/2285
7	SH	0.29	0/1476	0.56	1/1975 (0.1%)
8	SI	0.36	0/1341	0.76	3/1806 (0.2%)
9	SJ	0.30	0/1202	0.58	0/1610
10	SK	0.41	0/1432	0.65	2/1917 (0.1%)
11	SM	0.29	0/1139	0.52	0/1535
12	SO	0.37	0/1109	0.57	0/1495
13	SP	0.37	0/859	0.63	0/1161
14	SR	0.46	0/990	0.63	0/1335
15	ST	0.30	0/914	0.59	0/1229
16	SU	0.34	0/1092	0.55	0/1466
17	SX	0.39	0/1020	0.64	0/1371
18	SY	0.40	0/804	0.57	0/1074
19	SZ	0.44	0/1000	0.66	0/1334
20	Sc	0.38	0/613	0.62	0/828
21	Sd	0.41	0/499	0.60	0/670
22	3B	0.50	0/1914	0.66	1/2582 (0.0%)
22	3C	0.41	0/1787	0.66	2/2413 (0.1%)
23	3D	0.41	0/3020	0.60	2/4066 (0.0%)
24	3E	0.37	0/3088	0.61	1/4193 (0.0%)
25	3F	0.45	0/3569	0.62	0/4806
26	3G	0.42	0/928	0.74	2/1262 (0.2%)
26	3H	0.46	0/928	0.74	2/1262 (0.2%)
27	A4	0.41	0/5282	0.65	2/7154 (0.0%)
28	A5	0.37	0/4021	0.65	4/5462 (0.1%)
29	A8	0.27	0/3328	0.59	2/4565 (0.0%)
30	A9	0.28	0/951	0.65	2/1287 (0.2%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
31	AE	0.33	0/10367	0.57	18/14163 (0.1%)
32	AF	0.33	0/3941	0.59	1/5344 (0.0%)
33	AG	0.36	0/6694	0.62	4/9070 (0.0%)
34	B1	0.43	0/6459	0.63	0/8744
35	B2	0.38	0/6624	0.65	3/8950 (0.0%)
36	B3	0.37	0/6001	0.66	3/8120 (0.0%)
37	B8	0.44	0/3730	0.63	3/5058 (0.1%)
38	BE	0.42	0/7012	0.63	5/9493 (0.1%)
39	B6	0.40	0/3138	0.60	2/4226 (0.0%)
40	5B	0.32	0/486	0.71	1/643 (0.2%)
41	5C	0.40	0/3902	0.61	3/5265 (0.1%)
42	5D	0.34	0/1801	0.57	0/2379
43	5E	0.34	0/1745	0.62	1/2335 (0.0%)
44	5F	0.37	0/1559	0.60	0/2097
45	5G	0.42	0/1993	0.65	2/2689 (0.1%)
46	5H	0.40	0/704	0.59	1/931 (0.1%)
47	5I	0.49	0/3844	0.61	0/5174
48	5J	0.37	0/1147	0.56	0/1531
49	5K	0.44	0/1213	0.63	1/1638 (0.1%)
50	RD	0.30	0/2454	0.56	3/3310 (0.1%)
51	RE	0.34	0/9015	0.58	4/12195 (0.0%)
52	RF	0.32	0/2004	0.62	0/2697
53	RG	0.27	0/1727	0.62	2/2329 (0.1%)
53	RH	0.32	0/1828	0.61	1/2470 (0.0%)
54	RJ	0.41	0/6126	0.59	1/8247 (0.0%)
55	RK	0.38	0/2832	0.61	0/3825
56	RN	0.30	0/4521	0.58	5/6083 (0.1%)
57	RO	0.29	0/3824	0.59	6/5226 (0.1%)
58	RP	0.31	0/12292	0.58	48/16822 (0.3%)
59	RQ	0.35	0/2443	0.62	4/3317 (0.1%)
60	RS	0.30	0/2104	0.58	0/2854
61	RT	0.34	0/1679	0.63	1/2261 (0.0%)
62	RW	0.30	0/760	0.46	1/1059 (0.1%)
63	RZ	0.31	0/6730	0.58	1/9088 (0.0%)
66	R5	0.57	0/2340	0.64	1/3161 (0.0%)
67	R1	0.54	0/1910	0.68	0/2579
68	R3	0.50	0/2628	0.69	2/3569 (0.1%)
69	R6	0.54	0/1722	0.70	0/2339
70	R2	0.51	0/2077	0.69	0/2828
71	M3	0.53	0/1661	0.65	0/2243
72	R0	0.55	0/1828	0.68	0/2486
73	r4	0.52	0/2269	0.66	0/3066
74	C4	0.48	0/1676	0.66	0/2277

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
75	R4	0.42	0/7575	0.61	3/10290 (0.0%)
76	r6	0.35	0/2540	0.51	0/3497
77	R7	0.39	0/903	0.58	0/1210
78	M4	0.49	0/7772	0.66	3/10521 (0.0%)
79	M6	0.43	0/277	0.66	0/371
All	All	0.42	0/259526	0.74	450/359296 (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	2
5	SF	0	1
7	SH	0	2
8	SI	0	2
14	SR	0	1
17	SX	0	1
19	SZ	0	1
20	Sc	0	1
25	3F	0	3
26	3G	0	2
26	3H	0	1
27	A4	0	1
28	A5	0	2
29	A8	0	2
33	AG	0	4
34	B1	0	2
35	B2	0	2
36	B3	0	7
38	BE	0	3
39	B6	0	2
40	5B	0	1
46	5H	0	1
47	5I	0	2
49	5K	0	1
51	RE	0	2
52	RF	0	1
54	RJ	0	1
56	RN	0	1
57	RO	0	2

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Mol	Chain	#Chirality outliers	#Planarity outliers
58	RP	0	9
59	RQ	0	1
62	RW	0	1
63	RZ	0	2
67	R1	0	1
68	R3	0	3
69	R6	0	1
70	R2	0	1
71	M3	0	2
73	r4	0	1
74	C4	0	1
75	R4	0	1
78	M4	0	3
All	All	0	81

There are no bond length outliers.

All (450) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	5A	494	C	C2-N1-C1'	14.08	134.28	118.80
3	SA	185	U	C2-N1-C1'	10.48	130.27	117.70
1	3A	269	C	C2-N1-C1'	10.38	130.22	118.80
3	SA	185	U	N1-C2-O2	10.12	129.88	122.80
3	SA	1473	U	C2-N1-C1'	10.10	129.82	117.70
3	SA	1473	U	N1-C2-O2	9.84	129.69	122.80
2	5A	494	C	C6-N1-C1'	-9.80	109.04	120.80
1	3A	269	C	N1-C2-O2	9.66	124.70	118.90
3	SA	75	U	N1-C2-O2	9.60	129.52	122.80
3	SA	185	U	N3-C2-O2	-9.60	115.48	122.20
3	SA	75	U	C2-N1-C1'	9.53	129.14	117.70
2	5A	494	C	C6-N1-C2	-9.33	116.57	120.30
3	SA	75	U	N3-C2-O2	-9.25	115.72	122.20
3	SA	767	U	N3-C2-O2	-9.15	115.80	122.20
3	SA	1784	C	N3-C2-O2	-9.14	115.50	121.90
3	SA	658	C	N1-C2-O2	9.09	124.35	118.90
3	SA	1473	U	N3-C2-O2	-8.89	115.97	122.20
26	3H	21	LEU	CA-CB-CG	8.80	135.54	115.30
3	SA	658	C	C2-N1-C1'	8.66	128.33	118.80
3	SA	827	C	C2-N1-C1'	8.63	128.29	118.80
22	3C	306	LEU	CA-CB-CG	8.46	134.76	115.30
4	SC	54	LEU	CA-CB-CG	8.43	134.68	115.30
3	SA	190	C	N3-C2-O2	-8.28	116.10	121.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	SA	827	C	N1-C2-O2	8.23	123.84	118.90
3	SA	767	U	C2-N1-C1'	8.19	127.52	117.70
1	3A	269	C	C6-N1-C2	-8.12	117.05	120.30
3	SA	767	U	N1-C2-O2	8.10	128.47	122.80
3	SA	827	C	N3-C2-O2	-8.02	116.28	121.90
2	5A	494	C	C5-C6-N1	8.02	125.01	121.00
3	SA	1472	C	C2-N1-C1'	7.99	127.59	118.80
28	A5	25	ASP	CB-CG-OD1	7.98	125.48	118.30
33	AG	383	LEU	CA-CB-CG	7.85	133.36	115.30
3	SA	1533	C	P-O3'-C3'	7.84	129.11	119.70
3	SA	230	C	C5-C6-N1	7.83	124.91	121.00
1	3A	105	C	C2-N1-C1'	7.80	127.39	118.80
3	SA	820	U	C2-N1-C1'	7.73	126.98	117.70
3	SA	287	G	O4'-C1'-N9	7.72	114.38	108.20
22	3B	306	LEU	CA-CB-CG	7.71	133.03	115.30
26	3G	65	LEU	CA-CB-CG	7.68	132.97	115.30
2	5A	494	C	N1-C2-O2	7.59	123.45	118.90
57	RO	519	PRO	N-CA-CB	7.56	112.37	103.30
1	3A	269	C	C5-C6-N1	7.54	124.77	121.00
3	SA	1664	C	C2-N1-C1'	7.53	127.08	118.80
3	SA	648	G	C4-N9-C1'	7.52	136.28	126.50
3	SA	648	G	N3-C4-N9	7.47	130.48	126.00
45	5G	129	ASP	CB-CG-OD1	7.38	124.95	118.30
3	SA	532	U	N3-C2-O2	-7.32	117.08	122.20
40	5B	190	LEU	CA-CB-CG	7.30	132.08	115.30
3	SA	864	U	N1-C2-O2	7.29	127.91	122.80
3	SA	820	U	N1-C2-O2	7.28	127.89	122.80
26	3G	67	LEU	CA-CB-CG	7.23	131.92	115.30
3	SA	185	U	C6-N1-C1'	-7.22	111.10	121.20
3	SA	864	U	C2-N1-C1'	7.19	126.33	117.70
3	SA	139	C	P-O3'-C3'	7.16	128.29	119.70
3	SA	302	U	C2-N1-C1'	7.15	126.28	117.70
3	SA	1472	C	N1-C2-O2	7.11	123.16	118.90
3	SA	136	C	N1-C2-O2	7.10	123.16	118.90
56	RN	522	LEU	CA-CB-CG	7.06	131.55	115.30
3	SA	864	U	N3-C2-O2	-7.04	117.27	122.20
3	SA	1267	G	N3-C4-C5	-7.02	125.09	128.60
1	3A	102	U	N3-C2-O2	-7.01	117.29	122.20
30	A9	452	LEU	CA-CB-CG	7.01	131.43	115.30
3	SA	536	C	N1-C2-O2	6.98	123.09	118.90
3	SA	1451	C	N3-C2-O2	-6.94	117.04	121.90
3	SA	1657	U	C2-N1-C1'	6.93	126.02	117.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	SA	648	G	C8-N9-C1'	-6.89	118.04	127.00
3	SA	1566	U	N3-C2-O2	-6.88	117.38	122.20
3	SA	1053	G	O5'-P-OP1	-6.88	99.51	105.70
1	3A	314	C	C2-N1-C1'	6.86	126.35	118.80
3	SA	569	C	C6-N1-C2	-6.84	117.56	120.30
28	A5	569	PRO	N-CA-CB	6.82	111.49	103.30
8	SI	118	LEU	CA-CB-CG	6.82	130.98	115.30
3	SA	1784	C	C6-N1-C2	-6.80	117.58	120.30
3	SA	1675	C	N1-C2-O2	6.78	122.97	118.90
1	3A	46	U	N3-C2-O2	-6.78	117.45	122.20
3	SA	773	C	O4'-C1'-N1	6.77	113.62	108.20
1	3A	104	C	C2-N1-C1'	6.77	126.25	118.80
1	3A	269	C	C6-N1-C1'	-6.77	112.68	120.80
2	5A	10	C	N3-C2-O2	-6.74	117.18	121.90
3	SA	784	C	N3-C2-O2	-6.73	117.19	121.90
3	SA	1476	C	C2-N1-C1'	6.73	126.21	118.80
3	SA	747	C	N1-C2-O2	6.73	122.94	118.90
3	SA	1803	G	P-O3'-C3'	6.71	127.75	119.70
3	SA	507	U	C2-N1-C1'	6.70	125.75	117.70
3	SA	1476	C	C6-N1-C2	-6.69	117.62	120.30
3	SA	532	U	N1-C2-O2	6.69	127.48	122.80
3	SA	487	G	C2-N3-C4	6.68	115.24	111.90
1	3A	27	U	N1-C2-O2	6.67	127.47	122.80
3	SA	1267	G	N3-C4-N9	6.66	129.99	126.00
57	RO	141	PRO	N-CA-CB	6.66	111.29	103.30
58	RP	923	PRO	N-CA-CB	6.65	111.28	103.30
3	SA	1267	G	C4-N9-C1'	6.65	135.14	126.50
3	SA	815	G	N3-C4-C5	-6.64	125.28	128.60
1	3A	269	C	N3-C2-O2	-6.63	117.26	121.90
3	SA	1066	C	N3-C2-O2	-6.61	117.27	121.90
3	SA	815	G	C4-N9-C1'	6.61	135.09	126.50
3	SA	258	C	C6-N1-C2	-6.59	117.66	120.30
1	3A	104	C	C6-N1-C2	-6.59	117.66	120.30
3	SA	189	C	C2-N1-C1'	6.58	126.04	118.80
3	SA	658	C	C6-N1-C2	-6.58	117.67	120.30
50	RD	1223	PRO	N-CA-CB	6.57	111.19	103.30
57	RO	110	PRO	N-CA-CB	6.57	111.18	103.30
3	SA	532	U	C2-N1-C1'	6.56	125.57	117.70
2	5A	10	C	N1-C2-O2	6.55	122.83	118.90
24	3E	253	ASP	CB-CG-OD1	6.53	124.18	118.30
3	SA	658	C	N3-C2-O2	-6.52	117.33	121.90
3	SA	1451	C	N1-C2-O2	6.52	122.81	118.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	SA	1473	U	C6-N1-C1'	-6.52	112.07	121.20
3	SA	1657	U	N1-C2-O2	6.51	127.36	122.80
35	B2	443	LEU	CA-CB-CG	6.51	130.27	115.30
3	SA	136	C	C2-N1-C1'	6.50	125.96	118.80
3	SA	747	C	C2-N1-C1'	6.50	125.95	118.80
26	3H	22	ASP	CB-CG-OD1	6.50	124.15	118.30
3	SA	1216	C	N3-C2-O2	-6.49	117.36	121.90
3	SA	1440	C	C2-N1-C1'	6.47	125.92	118.80
3	SA	1441	C	N3-C2-O2	-6.45	117.38	121.90
2	5A	57	C	C5-C6-N1	6.45	124.22	121.00
3	SA	1784	C	N1-C2-O2	6.44	122.76	118.90
3	SA	189	C	N1-C2-O2	6.42	122.75	118.90
3	SA	453	U	C2-N1-C1'	6.40	125.38	117.70
3	SA	777	C	C2-N1-C1'	6.38	125.82	118.80
1	3A	46	U	N1-C2-O2	6.36	127.25	122.80
3	SA	1664	C	N1-C2-O2	6.36	122.71	118.90
58	RP	707	PRO	N-CA-CB	6.34	110.91	103.30
3	SA	1440	C	C6-N1-C2	-6.33	117.77	120.30
1	3A	27	U	C2-N1-C1'	6.31	125.27	117.70
3	SA	339	C	C2-N1-C1'	6.30	125.73	118.80
32	AF	277	LEU	CA-CB-CG	6.29	129.76	115.30
1	3A	102	U	N1-C2-O2	6.26	127.18	122.80
3	SA	827	C	C6-N1-C2	-6.26	117.80	120.30
3	SA	1441	C	C6-N1-C2	-6.26	117.80	120.30
41	5C	74	LEU	CA-CB-CG	6.25	129.67	115.30
3	SA	230	C	C2-N1-C1'	6.24	125.66	118.80
3	SA	1476	C	C5-C6-N1	6.24	124.12	121.00
3	SA	190	C	C6-N1-C2	-6.24	117.81	120.30
3	SA	1657	U	N3-C2-O2	-6.22	117.84	122.20
3	SA	1472	C	N3-C2-O2	-6.20	117.56	121.90
58	RP	2116	PRO	N-CA-CB	6.20	110.74	103.30
1	3A	105	C	C6-N1-C2	-6.20	117.82	120.30
3	SA	229	U	C2-N1-C1'	6.19	125.13	117.70
3	SA	507	U	N1-C2-O2	6.19	127.13	122.80
1	3A	42	U	C5-C6-N1	6.19	125.79	122.70
3	SA	50	C	C2-N1-C1'	6.18	125.60	118.80
3	SA	176	C	C6-N1-C2	-6.18	117.83	120.30
3	SA	1527	C	C2-N1-C1'	6.16	125.58	118.80
1	3A	248	G	P-O3'-C3'	6.16	127.09	119.70
3	SA	230	C	N1-C2-O2	6.13	122.58	118.90
3	SA	1053	G	C8-N9-C4	-6.13	103.95	106.40
3	SA	815	G	N3-C4-N9	6.12	129.68	126.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	SA	35	U	N3-C2-O2	-6.11	117.92	122.20
3	SA	1473	U	C5-C6-N1	6.11	125.76	122.70
3	SA	75	U	C6-N1-C1'	-6.09	112.67	121.20
3	SA	1448	G	N1-C6-O6	-6.08	116.25	119.90
3	SA	777	C	C6-N1-C2	-6.07	117.87	120.30
58	RP	2092	PRO	N-CA-CB	6.05	110.56	103.30
78	M4	940	LEU	CA-CB-CG	-6.05	101.38	115.30
31	AE	1412	PRO	N-CA-CB	6.05	110.56	103.30
3	SA	262	U	N1-C2-O2	6.04	127.03	122.80
59	RQ	644	PRO	N-CA-CB	6.03	110.54	103.30
1	3A	27	U	N3-C2-O2	-6.03	117.98	122.20
3	SA	487	G	C8-N9-C4	-6.02	103.99	106.40
3	SA	1566	U	N1-C2-O2	6.02	127.02	122.80
41	5C	389	LEU	CA-CB-CG	6.02	129.15	115.30
1	3A	260	U	C2-N1-C1'	6.01	124.92	117.70
58	RP	616	PRO	N-CA-CB	6.01	110.51	103.30
10	SK	118	LEU	CA-CB-CG	6.00	129.11	115.30
3	SA	1448	G	C5-C6-O6	6.00	132.20	128.60
38	BE	756	LEU	CA-CB-CG	6.00	129.10	115.30
38	BE	782	PRO	N-CA-CB	6.00	110.50	103.30
3	SA	1440	C	N1-C2-O2	6.00	122.50	118.90
3	SA	1441	C	N1-C2-O2	5.99	122.50	118.90
58	RP	567	PRO	N-CA-CB	5.98	110.47	103.30
58	RP	629	PRO	N-CA-CB	5.98	110.47	103.30
1	3A	105	C	N1-C2-O2	5.98	122.49	118.90
38	BE	750	PRO	N-CA-CB	5.98	110.47	103.30
31	AE	992	PRO	N-CA-CB	5.97	110.47	103.30
3	SA	873	U	C2-N1-C1'	5.96	124.86	117.70
3	SA	1216	C	C6-N1-C2	-5.96	117.91	120.30
3	SA	820	U	N3-C2-O2	-5.95	118.03	122.20
3	SA	332	U	N1-C2-O2	5.94	126.96	122.80
3	SA	302	U	N1-C2-O2	5.94	126.96	122.80
3	SA	873	U	N1-C2-O2	5.94	126.96	122.80
3	SA	1269	U	N3-C2-O2	-5.93	118.05	122.20
58	RP	718	PRO	N-CA-CB	5.93	110.42	103.30
3	SA	962	C	N3-C2-O2	-5.93	117.75	121.90
1	3A	260	U	N1-C2-O2	5.92	126.94	122.80
58	RP	1089	PRO	N-CA-CB	5.92	110.40	103.30
56	RN	201	PRO	N-CA-CB	5.91	110.39	103.30
3	SA	484	C	P-O3'-C3'	5.91	126.79	119.70
35	B2	785	PRO	N-CA-CB	5.90	110.38	103.30
58	RP	293	PRO	N-CA-CB	5.90	110.38	103.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	SA	280	U	P-O3'-C3'	5.90	126.78	119.70
3	SA	648	G	N3-C4-C5	-5.89	125.65	128.60
58	RP	1633	PRO	N-CA-CB	5.89	110.37	103.30
3	SA	230	C	C6-N1-C2	-5.89	117.94	120.30
7	SH	171	LYS	C-N-CA	5.89	136.43	121.70
3	SA	773	C	P-O3'-C3'	5.89	126.77	119.70
3	SA	1594	G	P-O3'-C3'	5.89	126.76	119.70
3	SA	1709	C	N3-C2-O2	-5.89	117.78	121.90
63	RZ	658	PRO	N-CA-CB	5.88	110.36	103.30
56	RN	412	PRO	N-CA-CB	5.87	110.35	103.30
50	RD	1205	PRO	N-CA-CB	5.87	110.34	103.30
58	RP	2290	PRO	N-CA-CB	5.87	110.34	103.30
58	RP	1183	PRO	N-CA-CB	5.87	110.34	103.30
58	RP	798	PRO	N-CA-CB	5.85	110.32	103.30
3	SA	302	U	N3-C2-O2	-5.85	118.11	122.20
58	RP	1382	PRO	N-CA-CB	5.84	110.31	103.30
58	RP	268	PRO	N-CA-CB	5.84	110.30	103.30
3	SA	1269	U	C2-N1-C1'	5.83	124.69	117.70
3	SA	1709	C	N1-C2-O2	5.82	122.39	118.90
3	SA	658	C	C6-N1-C1'	-5.82	113.82	120.80
58	RP	676	PRO	N-CA-CB	5.82	110.28	103.30
57	RO	75	PRO	N-CA-CB	5.81	110.28	103.30
58	RP	786	PRO	N-CA-CB	5.81	110.28	103.30
3	SA	1527	C	C6-N1-C2	-5.80	117.98	120.30
39	B6	334	LEU	CA-CB-CG	5.79	128.62	115.30
58	RP	1149	PRO	N-CA-CB	5.79	110.25	103.30
1	3A	248	G	O4'-C1'-N9	5.79	112.83	108.20
3	SA	542	A	P-O3'-C3'	5.79	126.65	119.70
58	RP	1487	PRO	N-CA-CB	5.79	110.24	103.30
3	SA	332	U	N3-C2-O2	-5.78	118.15	122.20
58	RP	954	PRO	N-CA-CB	5.78	110.24	103.30
1	3A	204	U	N3-C2-O2	-5.78	118.15	122.20
3	SA	332	U	C2-N1-C1'	5.78	124.64	117.70
58	RP	936	PRO	N-CA-CB	5.78	110.23	103.30
1	3A	105	C	C5-C6-N1	5.78	123.89	121.00
3	SA	0	U	P-O3'-C3'	5.78	126.63	119.70
31	AE	1252	PRO	N-CA-CB	5.77	110.23	103.30
3	SA	773	C	C2-N1-C1'	-5.77	112.46	118.80
56	RN	400	PRO	N-CA-CB	5.76	110.22	103.30
3	SA	781	U	P-O3'-C3'	5.76	126.61	119.70
58	RP	1322	PRO	N-CA-CB	5.76	110.21	103.30
58	RP	443	PRO	N-CA-CB	5.75	110.21	103.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
58	RP	592	PRO	N-CA-CB	5.75	110.20	103.30
3	SA	1472	C	C6-N1-C1'	-5.75	113.90	120.80
58	RP	686	PRO	N-CA-CB	5.75	110.20	103.30
59	RQ	801	PRO	N-CA-CB	5.74	110.19	103.30
3	SA	827	C	C6-N1-C1'	-5.74	113.92	120.80
3	SA	1510	U	N1-C2-O2	5.74	126.82	122.80
2	5A	494	C	N3-C2-O2	-5.74	117.89	121.90
31	AE	890	PRO	N-CA-CB	5.73	110.18	103.30
30	A9	414	PRO	N-CA-CB	5.73	110.18	103.30
57	RO	144	PRO	N-CA-CB	5.73	110.18	103.30
58	RP	511	PRO	N-CA-CB	5.73	110.18	103.30
31	AE	962	PRO	N-CA-CB	5.73	110.18	103.30
58	RP	1116	PRO	N-CA-CB	5.73	110.18	103.30
31	AE	1021	PRO	N-CA-CB	5.73	110.17	103.30
31	AE	1498	PRO	N-CA-CB	5.73	110.17	103.30
58	RP	454	PRO	N-CA-CB	5.73	110.17	103.30
3	SA	487	G	N3-C4-C5	-5.72	125.74	128.60
3	SA	448	C	C6-N1-C2	-5.72	118.01	120.30
28	A5	481	LEU	CA-CB-CG	5.72	128.45	115.30
31	AE	1375	PRO	N-CA-CB	5.72	110.16	103.30
49	5K	146	LEU	CA-CB-CG	5.72	128.45	115.30
3	SA	278	U	P-O3'-C3'	5.71	126.56	119.70
31	AE	1297	PRO	N-CA-CB	5.71	110.15	103.30
1	3A	247	U	C2-N1-C1'	5.71	124.55	117.70
3	SA	1664	C	C6-N1-C1'	-5.70	113.96	120.80
37	B8	521	LEU	CA-CB-CG	5.70	128.40	115.30
58	RP	2287	PRO	N-CA-CB	5.69	110.13	103.30
33	AG	601	LEU	CA-CB-CG	5.69	128.38	115.30
58	RP	1576	PRO	N-CA-CB	5.69	110.13	103.30
57	RO	37	PRO	N-CA-CB	5.69	110.12	103.30
59	RQ	662	PRO	N-CA-CB	5.68	110.11	103.30
31	AE	1283	PRO	N-CA-CB	5.67	110.11	103.30
58	RP	331	PRO	N-CA-CB	5.67	110.11	103.30
58	RP	1016	PRO	N-CA-CB	5.67	110.10	103.30
59	RQ	354	PRO	N-CA-CB	5.67	110.10	103.30
58	RP	1025	PRO	N-CA-CB	5.66	110.09	103.30
58	RP	1102	PRO	N-CA-CB	5.66	110.09	103.30
3	SA	784	C	N1-C2-O2	5.66	122.29	118.90
3	SA	1717	G	C4-N9-C1'	5.66	133.85	126.50
62	RW	26	PRO	N-CA-CB	5.65	110.08	103.30
38	BE	614	LEU	CA-CB-CG	5.64	128.28	115.30
38	BE	909	LEU	CA-CB-CG	5.64	128.27	115.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	SA	1733	C	N1-C2-O2	5.64	122.28	118.90
29	A8	637	LEU	CA-CB-CG	5.63	128.26	115.30
3	SA	197	A	O4'-C1'-N9	5.63	112.70	108.20
58	RP	879	PRO	N-CA-CB	5.63	110.06	103.30
3	SA	149	C	C2-N1-C1'	5.63	124.99	118.80
3	SA	908	U	N1-C2-O2	5.63	126.74	122.80
3	SA	281	G	N1-C6-O6	-5.62	116.53	119.90
56	RN	507	LEU	CA-CB-CG	5.62	128.22	115.30
3	SA	262	U	N3-C2-O2	-5.61	118.27	122.20
3	SA	536	C	N3-C2-O2	-5.61	117.97	121.90
31	AE	1600	PRO	N-CA-CB	5.61	110.03	103.30
1	3A	46	U	C2-N1-C1'	5.60	124.42	117.70
36	B3	698	LEU	CA-CB-CG	5.60	128.18	115.30
1	3A	147	C	C5-C6-N1	5.60	123.80	121.00
3	SA	1661	U	N3-C2-O2	-5.60	118.28	122.20
36	B3	525	LEU	CA-CB-CG	5.59	128.15	115.30
53	RH	148	LEU	CA-CB-CG	5.59	128.15	115.30
3	SA	883	C	C6-N1-C2	-5.58	118.07	120.30
50	RD	1514	LEU	CA-CB-CG	5.58	128.13	115.30
58	RP	2242	PRO	N-CA-CB	5.58	109.99	103.30
58	RP	1400	PRO	N-CA-CB	5.58	109.99	103.30
58	RP	1582	PRO	N-CA-CB	5.58	109.99	103.30
3	SA	107	C	C2-N1-C1'	5.57	124.92	118.80
3	SA	686	C	N1-C2-O2	5.57	122.24	118.90
3	SA	536	C	C2-N1-C1'	5.56	124.92	118.80
3	SA	747	C	N3-C2-O2	-5.56	118.01	121.90
3	SA	1440	C	C5-C6-N1	5.56	123.78	121.00
31	AE	1546	PRO	N-CA-CB	5.56	109.97	103.30
58	RP	1346	PRO	N-CA-CB	5.56	109.97	103.30
3	SA	658	C	C5-C6-N1	5.56	123.78	121.00
1	3A	204	U	N1-C2-O2	5.55	126.69	122.80
58	RP	937	PRO	N-CA-CB	5.54	109.95	103.30
31	AE	1371	PRO	N-CA-CB	5.54	109.95	103.30
31	AE	935	PRO	N-CA-CB	5.54	109.94	103.30
53	RG	96	LEU	CA-CB-CG	5.54	128.03	115.30
3	SA	1568	C	P-O3'-C3'	5.53	126.34	119.70
58	RP	771	PRO	N-CA-CB	5.53	109.93	103.30
3	SA	196	G	N1-C6-O6	-5.53	116.58	119.90
31	AE	1376	PRO	N-CA-CB	5.52	109.93	103.30
58	RP	959	PRO	N-CA-CB	5.52	109.93	103.30
58	RP	1592	PRO	N-CA-CB	5.51	109.92	103.30
3	SA	176	C	C6-N1-C1'	5.51	127.41	120.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	SA	267	U	N3-C2-O2	-5.50	118.35	122.20
37	B8	530	LEU	CA-CB-CG	5.50	127.95	115.30
23	3D	219	LEU	CA-CB-CG	5.50	127.95	115.30
10	SK	128	LEU	CA-CB-CG	5.49	127.92	115.30
33	AG	449	LEU	CA-CB-CG	5.48	127.91	115.30
46	5H	441	PRO	N-CA-CB	5.48	109.88	103.30
3	SA	908	U	N3-C2-O2	-5.48	118.36	122.20
37	B8	449	ASP	CB-CG-OD1	5.48	123.23	118.30
43	5E	314	LEU	CA-CB-CG	5.47	127.89	115.30
3	SA	1510	U	N3-C2-O2	-5.47	118.37	122.20
58	RP	2131	PRO	N-CA-CB	5.47	109.86	103.30
68	R3	360	LEU	CB-CG-CD2	-5.46	101.72	111.00
3	SA	686	C	C2-N1-C1'	5.46	124.80	118.80
27	A4	563	LEU	CA-CB-CG	5.46	127.85	115.30
53	RG	50	LEU	CA-CB-CG	5.44	127.80	115.30
3	SA	1216	C	N1-C2-O2	5.43	122.16	118.90
3	SA	1490	C	N1-C2-O2	5.43	122.16	118.90
1	3A	314	C	C6-N1-C2	-5.42	118.13	120.30
3	SA	211	U	C2-N1-C1'	5.42	124.21	117.70
3	SA	1267	G	C8-N9-C1'	-5.42	119.95	127.00
3	SA	1161	C	C5-C6-N1	5.42	123.71	121.00
1	3A	41	C	C6-N1-C2	-5.41	118.14	120.30
3	SA	75	U	C5-C6-N1	5.40	125.40	122.70
1	3A	147	C	C6-N1-C2	-5.40	118.14	120.30
51	RE	531	LEU	CA-CB-CG	5.39	127.71	115.30
1	3A	311	G	C4-N9-C1'	5.39	133.51	126.50
3	SA	88	U	N3-C2-O2	-5.38	118.44	122.20
41	5C	270	LEU	CA-CB-CG	5.38	127.67	115.30
3	SA	650	U	C5-C6-N1	5.37	125.39	122.70
4	SC	172	LEU	CA-CB-CG	5.37	127.64	115.30
2	5A	479	G	N1-C6-O6	-5.37	116.68	119.90
3	SA	185	U	C5-C6-N1	5.36	125.38	122.70
3	SA	192	U	C2-N1-C1'	5.36	124.14	117.70
58	RP	579	PRO	N-CA-CB	5.36	109.74	103.30
3	SA	901	G	C4-N9-C1'	5.36	133.47	126.50
3	SA	1254	U	N1-C2-O2	5.36	126.55	122.80
3	SA	916	U	N1-C2-O2	5.35	126.55	122.80
3	SA	815	G	C8-N9-C1'	-5.34	120.05	127.00
8	SI	77	LEU	CA-CB-CG	5.34	127.59	115.30
1	3A	104	C	C5-C6-N1	5.32	123.66	121.00
3	SA	777	C	N1-C2-O2	5.31	122.09	118.90
3	SA	1067	C	C6-N1-C2	-5.31	118.18	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	SA	335	U	P-O3'-C3'	5.30	126.06	119.70
3	SA	482	U	N3-C2-O2	-5.30	118.49	122.20
3	SA	767	U	C6-N1-C1'	-5.30	113.79	121.20
28	A5	51	LEU	CA-CB-CG	5.30	127.48	115.30
3	SA	648	G	C6-C5-N7	-5.28	127.23	130.40
35	B2	551	LEU	CA-CB-CG	5.28	127.44	115.30
3	SA	136	C	N3-C2-O2	-5.28	118.20	121.90
1	3A	308	U	N1-C2-O2	5.28	126.49	122.80
1	3A	44	U	N3-C2-O2	-5.26	118.52	122.20
3	SA	633	U	N3-C2-O2	-5.26	118.52	122.20
31	AE	1391	PRO	N-CA-CB	5.25	109.60	103.30
58	RP	1538	PRO	N-CA-CB	5.25	109.60	103.30
51	RE	1087	LEU	CA-CB-CG	5.25	127.37	115.30
3	SA	1161	C	C6-N1-C2	-5.24	118.21	120.30
3	SA	870	C	C6-N1-C2	-5.23	118.21	120.30
75	R4	171	ASP	CB-CG-OD2	5.23	123.01	118.30
5	SF	193	GLY	N-CA-C	5.23	126.18	113.10
3	SA	453	U	N3-C2-O2	-5.22	118.54	122.20
3	SA	302	U	C5-C6-N1	5.22	125.31	122.70
54	RJ	1021	LEU	CA-CB-CG	5.22	127.31	115.30
3	SA	35	U	N1-C2-O2	5.22	126.45	122.80
3	SA	820	U	C6-N1-C1'	-5.22	113.90	121.20
3	SA	1052	U	O4'-C1'-N1	5.21	112.37	108.20
66	R5	229	LEU	CA-CB-CG	-5.21	103.31	115.30
39	B6	327	LEU	CB-CG-CD1	5.21	119.86	111.00
1	3A	260	U	N3-C2-O2	-5.20	118.56	122.20
51	RE	655	LEU	CA-CB-CG	5.20	127.25	115.30
3	SA	1554	U	N1-C2-O2	5.19	126.43	122.80
3	SA	1646	C	N1-C2-O2	5.19	122.01	118.90
3	SA	916	U	N3-C2-O2	-5.19	118.57	122.20
3	SA	921	U	C2-N1-C1'	5.19	123.92	117.70
3	SA	448	C	C2-N1-C1'	5.18	124.50	118.80
3	SA	1609	U	N3-C2-O2	-5.17	118.58	122.20
75	R4	551	ASP	CB-CG-OD2	5.17	122.95	118.30
3	SA	1783	C	C6-N1-C2	-5.17	118.23	120.30
33	AG	520	LEU	CA-CB-CG	5.17	127.19	115.30
3	SA	196	G	C5-C6-O6	5.17	131.70	128.60
3	SA	309	C	N1-C2-O2	5.17	122.00	118.90
1	3A	107	C	P-O3'-C3'	5.16	125.89	119.70
2	5A	550	C	N1-C2-O2	5.16	122.00	118.90
3	SA	448	C	C5-C6-N1	5.15	123.58	121.00
2	5A	57	C	C6-N1-C2	-5.15	118.24	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	SA	1267	G	C2-N3-C4	5.15	114.47	111.90
23	3D	40	ASP	CB-CG-OD1	5.14	122.92	118.30
3	SA	873	U	N3-C2-O2	-5.13	118.61	122.20
3	SA	1540	G	N3-C4-C5	-5.13	126.03	128.60
45	5G	209	LEU	CA-CB-CG	5.13	127.10	115.30
1	3A	268	U	N3-C2-O2	-5.12	118.62	122.20
3	SA	331	A	C8-N9-C4	-5.12	103.75	105.80
3	SA	453	U	C5-C6-N1	5.12	125.26	122.70
1	3A	107	C	OP1-P-O3'	5.11	116.44	105.20
1	3A	32	G	C2-N3-C4	5.11	114.45	111.90
3	SA	1440	C	N3-C2-O2	-5.10	118.33	121.90
3	SA	262	U	C2-N1-C1'	5.09	123.81	117.70
1	3A	314	C	C5-C6-N1	5.08	123.54	121.00
61	RT	226	LEU	CA-CB-CG	5.08	126.99	115.30
22	3C	233	LEU	CA-CB-CG	5.08	126.99	115.30
78	M4	440	LEU	CA-CB-CG	5.08	126.98	115.30
3	SA	1510	U	C2-N1-C1'	5.08	123.79	117.70
3	SA	1064	G	C4-N9-C1'	5.07	133.09	126.50
78	M4	919	LEU	CB-CG-CD2	-5.07	102.38	111.00
1	3A	46	U	C5-C6-N1	5.07	125.23	122.70
75	R4	786	LEU	CA-CB-CG	5.07	126.95	115.30
3	SA	1191	U	C2-N1-C1'	5.06	123.77	117.70
31	AE	403	LEU	CA-CB-CG	5.06	126.94	115.30
1	3A	105	C	C6-N1-C1'	-5.06	114.73	120.80
3	SA	280	U	OP2-P-O3'	5.06	116.33	105.20
3	SA	1703	C	N1-C2-O2	5.05	121.93	118.90
31	AE	571	LEU	CA-CB-CG	-5.05	103.69	115.30
51	RE	429	LEU	CA-CB-CG	5.05	126.91	115.30
8	SI	64	VAL	CA-CB-CG1	5.04	118.47	110.90
3	SA	507	U	C6-N1-C1'	-5.04	114.14	121.20
3	SA	575	C	N1-C2-O2	5.03	121.92	118.90
29	A8	637	LEU	CB-CG-CD2	-5.03	102.44	111.00
68	R3	303	ASP	CB-CG-OD1	5.03	122.83	118.30
36	B3	379	LEU	CA-CB-CG	5.03	126.87	115.30
3	SA	1439	C	C6-N1-C2	-5.03	118.29	120.30
58	RP	202	LYS	C-N-CA	5.03	134.27	121.70
3	SA	1594	G	OP2-P-O3'	5.02	116.25	105.20
3	SA	1269	U	N1-C2-O2	5.02	126.32	122.80
3	SA	14	C	N3-C2-O2	-5.02	118.39	121.90
3	SA	1686	C	C6-N1-C2	-5.02	118.29	120.30
3	SA	965	U	C2-N1-C1'	5.01	123.72	117.70
3	SA	1623	C	C6-N1-C2	-5.01	118.30	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	3A	269	C	C2-N3-C4	5.01	122.41	119.90
1	3A	75	C	C6-N1-C2	-5.01	118.30	120.30
3	SA	-5	G	C4-N9-C1'	5.01	133.01	126.50
3	SA	453	U	N1-C2-O2	5.01	126.30	122.80
27	A4	134	LEU	CA-CB-CG	5.00	126.81	115.30
3	SA	1633	A	C4-N9-C1'	5.00	135.30	126.30
3	SA	1706	C	C6-N1-C2	-5.00	118.30	120.30

There are no chirality outliers.

All (81) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
25	3F	141	LEU	Peptide
25	3F	173	GLU	Peptide
25	3F	237	ASP	Peptide
26	3G	59	GLU	Peptide
26	3G	9	PHE	Peptide
26	3H	59	GLU	Peptide
40	5B	192	PRO	Peptide
46	5H	576	LEU	Peptide
47	5I	185	ILE	Peptide
47	5I	87	SER	Peptide
49	5K	68	ASP	Peptide
27	A4	353	GLU	Peptide
28	A5	436	THR	Peptide
28	A5	50	PHE	Peptide
29	A8	256	SER	Peptide
29	A8	529	HIS	Peptide
33	AG	119	LEU	Peptide
33	AG	140	LYS	Peptide
33	AG	557	ILE	Peptide
33	AG	780	GLU	Peptide
34	B1	519	LEU	Peptide
34	B1	709	THR	Peptide
35	B2	160	ARG	Peptide
35	B2	552	ASP	Peptide
36	B3	220	ILE	Peptide
36	B3	236	THR	Peptide
36	B3	410	ASN	Peptide
36	B3	437	VAL	Peptide
36	B3	50	ARG	Peptide
36	B3	567	VAL	Peptide

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Mol	Chain	Res	Type	Group
36	B3	594	GLY	Peptide
39	B6	322	LEU	Peptide
39	B6	326	PHE	Peptide
38	BE	591	PHE	Peptide
38	BE	811	LEU	Peptide
38	BE	94	TYR	Peptide
74	C4	149	GLN	Peptide
71	M3	141	LEU	Peptide
71	M3	216	ASP	Peptide
78	M4	541	SER	Peptide
78	M4	573	LYS	Peptide
78	M4	874	GLN	Peptide
67	R1	166	TYR	Peptide
70	R2	136	HIS	Peptide
68	R3	335	ASP	Peptide
68	R3	352	ALA	Peptide
68	R3	54	ILE	Peptide
75	R4	504	PRO	Peptide
69	R6	188	GLU	Peptide
51	RE	1028	ARG	Peptide
51	RE	1094	LYS	Peptide
52	RF	171	PHE	Peptide
54	RJ	948	ILE	Peptide
56	RN	327	GLY	Peptide
57	RO	493	TYR	Peptide
57	RO	53	ARG	Peptide
58	RP	1739	HIS	Peptide
58	RP	1745	ILE	Peptide
58	RP	1907	ASN	Peptide
58	RP	1995	ARG	Peptide
58	RP	2009	LYS	Peptide
58	RP	203	CYS	Peptide
58	RP	2113	ASP	Peptide
58	RP	2114	ASP	Peptide
58	RP	33	ASN	Peptide
59	RQ	728	ARG	Peptide
62	RW	171	GLU	Peptide
63	RZ	1001	SER	Peptide
63	RZ	1069	SER	Peptide
4	SC	16	GLN	Peptide
4	SC	18	LYS	Peptide
5	SF	207	LEU	Peptide

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Mol	Chain	Res	Type	Group
7	SH	147	LEU	Peptide
7	SH	152	ASP	Peptide
8	SI	134	GLU	Peptide
8	SI	64	VAL	Peptide
14	SR	123	ARG	Peptide
17	SX	108	ALA	Peptide
19	SZ	34	ASN	Peptide
20	Sc	49	HIS	Peptide
73	r4	92	ASN	Peptide

5.2 Too-close contacts [i](#)

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

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
4	SC	240/255 (94%)	210 (88%)	30 (12%)	0	100	100
5	SF	245/261 (94%)	198 (81%)	47 (19%)	0	100	100
6	SG	211/225 (94%)	194 (92%)	17 (8%)	0	100	100
7	SH	178/236 (75%)	159 (89%)	15 (8%)	4 (2%)	6	37
8	SI	161/190 (85%)	137 (85%)	24 (15%)	0	100	100
9	SJ	144/200 (72%)	126 (88%)	18 (12%)	0	100	100
10	SK	172/197 (87%)	154 (90%)	17 (10%)	1 (1%)	25	63
11	SM	135/156 (86%)	117 (87%)	18 (13%)	0	100	100
12	SO	132/151 (87%)	123 (93%)	9 (7%)	0	100	100
13	SP	114/137 (83%)	96 (84%)	18 (16%)	0	100	100
14	SR	123/143 (86%)	110 (89%)	13 (11%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
15	ST	107/146 (73%)	91 (85%)	16 (15%)	0	100	100
16	SU	136/144 (94%)	123 (90%)	13 (10%)	0	100	100
17	SX	125/130 (96%)	114 (91%)	11 (9%)	0	100	100
18	SY	102/145 (70%)	88 (86%)	14 (14%)	0	100	100
19	SZ	121/135 (90%)	106 (88%)	15 (12%)	0	100	100
20	Sc	78/82 (95%)	66 (85%)	12 (15%)	0	100	100
21	Sd	61/67 (91%)	56 (92%)	5 (8%)	0	100	100
22	3B	238/327 (73%)	215 (90%)	23 (10%)	0	100	100
22	3C	220/327 (67%)	200 (91%)	20 (9%)	0	100	100
23	3D	372/504 (74%)	342 (92%)	30 (8%)	0	100	100
24	3E	433/511 (85%)	392 (90%)	40 (9%)	1 (0%)	47	79
25	3F	431/573 (75%)	394 (91%)	37 (9%)	0	100	100
26	3G	119/126 (94%)	114 (96%)	5 (4%)	0	100	100
26	3H	119/126 (94%)	110 (92%)	9 (8%)	0	100	100
27	A4	643/776 (83%)	568 (88%)	75 (12%)	0	100	100
28	A5	501/643 (78%)	447 (89%)	52 (10%)	2 (0%)	34	71
29	A8	534/713 (75%)	407 (76%)	127 (24%)	0	100	100
30	A9	126/575 (22%)	111 (88%)	15 (12%)	0	100	100
31	AE	1516/1769 (86%)	1374 (91%)	138 (9%)	4 (0%)	41	75
32	AF	483/513 (94%)	440 (91%)	43 (9%)	0	100	100
33	AG	811/896 (90%)	726 (90%)	84 (10%)	1 (0%)	51	84
34	B1	785/900 (87%)	709 (90%)	75 (10%)	1 (0%)	51	84
35	B2	814/943 (86%)	716 (88%)	98 (12%)	0	100	100
36	B3	733/817 (90%)	585 (80%)	147 (20%)	1 (0%)	51	84
37	B8	453/594 (76%)	397 (88%)	56 (12%)	0	100	100
38	BE	886/939 (94%)	804 (91%)	81 (9%)	1 (0%)	51	84
39	B6	369/440 (84%)	341 (92%)	26 (7%)	2 (0%)	29	67
40	5B	56/214 (26%)	51 (91%)	5 (9%)	0	100	100
41	5C	474/554 (86%)	424 (90%)	50 (10%)	0	100	100
42	5D	201/250 (80%)	175 (87%)	26 (13%)	0	100	100
43	5E	205/593 (35%)	187 (91%)	18 (9%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
44	5F	180/183 (98%)	169 (94%)	11 (6%)	0	100	100
45	5G	237/290 (82%)	215 (91%)	22 (9%)	0	100	100
46	5H	91/610 (15%)	81 (89%)	9 (10%)	1 (1%)	14	51
47	5I	457/489 (94%)	413 (90%)	44 (10%)	0	100	100
48	5J	130/217 (60%)	117 (90%)	13 (10%)	0	100	100
49	5K	148/189 (78%)	134 (90%)	14 (10%)	0	100	100
50	RD	310/1729 (18%)	281 (91%)	25 (8%)	4 (1%)	12	48
51	RE	1080/1237 (87%)	998 (92%)	81 (8%)	1 (0%)	51	84
52	RF	233/297 (78%)	205 (88%)	26 (11%)	2 (1%)	17	55
53	RG	212/252 (84%)	191 (90%)	21 (10%)	0	100	100
53	RH	226/252 (90%)	207 (92%)	19 (8%)	0	100	100
54	RJ	726/1183 (61%)	670 (92%)	56 (8%)	0	100	100
55	RK	358/367 (98%)	332 (93%)	26 (7%)	0	100	100
56	RN	568/810 (70%)	513 (90%)	55 (10%)	0	100	100
57	RO	518/552 (94%)	462 (89%)	50 (10%)	6 (1%)	13	49
58	RP	1948/2493 (78%)	1778 (91%)	156 (8%)	14 (1%)	22	61
59	RQ	333/899 (37%)	287 (86%)	42 (13%)	4 (1%)	13	49
60	RS	247/480 (52%)	224 (91%)	23 (9%)	0	100	100
61	RT	207/326 (64%)	188 (91%)	19 (9%)	0	100	100
62	RW	149/206 (72%)	135 (91%)	13 (9%)	1 (1%)	22	61
63	RZ	831/1267 (66%)	737 (89%)	91 (11%)	3 (0%)	34	71
66	R5	297/305 (97%)	275 (93%)	22 (7%)	0	100	100
67	R1	242/246 (98%)	224 (93%)	18 (7%)	0	100	100
68	R3	332/394 (84%)	304 (92%)	27 (8%)	1 (0%)	41	75
69	R6	222/223 (100%)	209 (94%)	13 (6%)	0	100	100
70	R2	264/265 (100%)	250 (95%)	14 (5%)	0	100	100
71	M3	209/250 (84%)	192 (92%)	17 (8%)	0	100	100
72	R0	235/240 (98%)	216 (92%)	19 (8%)	0	100	100
73	r4	287/359 (80%)	263 (92%)	24 (8%)	0	100	100
74	C4	214/292 (73%)	198 (92%)	16 (8%)	0	100	100
75	R4	942/1001 (94%)	875 (93%)	67 (7%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
76	r6	404/733 (55%)	367 (91%)	37 (9%)	0	100	100
77	R7	111/184 (60%)	108 (97%)	3 (3%)	0	100	100
78	M4	972/1073 (91%)	908 (93%)	64 (7%)	0	100	100
79	M6	36/186 (19%)	32 (89%)	4 (11%)	0	100	100
All	All	28063/37702 (74%)	25255 (90%)	2753 (10%)	55 (0%)	50	79

All (55) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
28	A5	569	PRO
50	RD	1223	PRO
57	RO	141	PRO
57	RO	519	PRO
58	RP	707	PRO
58	RP	718	PRO
58	RP	922	MET
58	RP	923	PRO
58	RP	925	VAL
58	RP	2115	ALA
59	RQ	257	ILE
59	RQ	353	ASN
63	RZ	583	VAL
63	RZ	676	ILE
63	RZ	682	VAL
33	AG	558	THR
34	B1	710	ILE
52	RF	122	ASN
52	RF	172	TYR
57	RO	110	PRO
58	RP	727	VAL
58	RP	1149	PRO
7	SH	154	ARG
7	SH	173	PRO
31	AE	1370	TYR
58	RP	616	PRO
7	SH	149	LYS
31	AE	1390	ASN
31	AE	1568	GLU
36	B3	71	PRO
39	B6	327	LEU
50	RD	1204	VAL

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Mol	Chain	Res	Type
58	RP	76	THR
58	RP	685	LEU
10	SK	118	LEU
39	B6	328	ASP
46	5H	440	ILE
50	RD	1222	LYS
57	RO	143	PHE
58	RP	1088	LYS
59	RQ	643	GLU
68	R3	337	GLU
58	RP	615	VAL
58	RP	928	ILE
62	RW	26	PRO
24	3E	68	VAL
38	BE	749	ALA
50	RD	1180	VAL
51	RE	1032	PRO
57	RO	28	ILE
28	A5	568	GLU
7	SH	153	VAL
57	RO	140	ALA
31	AE	1448	ILE
59	RQ	354	PRO

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	213/224 (95%)	210 (99%)	3 (1%)	67 81
5	SF	199/222 (90%)	197 (99%)	2 (1%)	76 86
6	SG	180/191 (94%)	178 (99%)	2 (1%)	73 85
7	SH	153/201 (76%)	151 (99%)	2 (1%)	69 82
8	SI	146/170 (86%)	144 (99%)	2 (1%)	67 81
9	SJ	122/161 (76%)	118 (97%)	4 (3%)	38 62

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
10	SK	150/166 (90%)	149 (99%)	1 (1%)	84	90
11	SM	124/137 (90%)	124 (100%)	0	100	100
12	SO	117/128 (91%)	117 (100%)	0	100	100
13	SP	88/105 (84%)	86 (98%)	2 (2%)	50	70
14	SR	105/119 (88%)	105 (100%)	0	100	100
15	ST	99/129 (77%)	99 (100%)	0	100	100
16	SU	111/116 (96%)	111 (100%)	0	100	100
17	SX	108/111 (97%)	107 (99%)	1 (1%)	78	88
18	SY	86/120 (72%)	86 (100%)	0	100	100
19	SZ	103/113 (91%)	103 (100%)	0	100	100
20	Sc	69/71 (97%)	69 (100%)	0	100	100
21	Sd	56/60 (93%)	55 (98%)	1 (2%)	59	77
22	3B	201/240 (84%)	199 (99%)	2 (1%)	76	86
22	3C	189/240 (79%)	188 (100%)	1 (0%)	88	93
23	3D	322/435 (74%)	320 (99%)	2 (1%)	86	92
24	3E	265/433 (61%)	264 (100%)	1 (0%)	91	94
25	3F	382/503 (76%)	379 (99%)	3 (1%)	81	89
26	3G	100/104 (96%)	99 (99%)	1 (1%)	76	86
26	3H	100/104 (96%)	100 (100%)	0	100	100
27	A4	587/713 (82%)	581 (99%)	6 (1%)	76	86
28	A5	431/574 (75%)	428 (99%)	3 (1%)	84	90
29	A8	174/657 (26%)	173 (99%)	1 (1%)	86	92
30	A9	89/533 (17%)	86 (97%)	3 (3%)	37	61
31	AE	770/1633 (47%)	761 (99%)	9 (1%)	71	84
32	AF	431/454 (95%)	426 (99%)	5 (1%)	71	84
33	AG	750/826 (91%)	748 (100%)	2 (0%)	92	95
34	B1	694/789 (88%)	691 (100%)	3 (0%)	91	94
35	B2	712/832 (86%)	705 (99%)	7 (1%)	76	86
36	B3	659/719 (92%)	655 (99%)	4 (1%)	86	92
37	B8	407/529 (77%)	403 (99%)	4 (1%)	76	86
38	BE	741/819 (90%)	737 (100%)	4 (0%)	88	93

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
39	B6	323/414 (78%)	319 (99%)	4 (1%)	71	84
40	5B	56/196 (29%)	55 (98%)	1 (2%)	59	77
41	5C	418/480 (87%)	416 (100%)	2 (0%)	88	93
42	5D	198/234 (85%)	197 (100%)	1 (0%)	88	93
43	5E	193/535 (36%)	192 (100%)	1 (0%)	88	93
44	5F	171/172 (99%)	168 (98%)	3 (2%)	59	77
45	5G	214/258 (83%)	213 (100%)	1 (0%)	88	93
46	5H	63/538 (12%)	63 (100%)	0	100	100
47	5I	416/443 (94%)	413 (99%)	3 (1%)	84	90
48	5J	124/200 (62%)	123 (99%)	1 (1%)	81	89
49	5K	133/169 (79%)	133 (100%)	0	100	100
50	RD	226/1544 (15%)	222 (98%)	4 (2%)	59	77
51	RE	994/1125 (88%)	987 (99%)	7 (1%)	84	90
52	RF	221/274 (81%)	220 (100%)	1 (0%)	88	93
53	RG	195/222 (88%)	192 (98%)	3 (2%)	65	80
53	RH	206/222 (93%)	204 (99%)	2 (1%)	76	86
54	RJ	654/1039 (63%)	642 (98%)	12 (2%)	59	77
55	RK	307/312 (98%)	304 (99%)	3 (1%)	76	86
56	RN	435/732 (59%)	431 (99%)	4 (1%)	78	88
57	RO	329/506 (65%)	327 (99%)	2 (1%)	86	92
58	RP	556/2307 (24%)	550 (99%)	6 (1%)	73	85
59	RQ	206/808 (26%)	204 (99%)	2 (1%)	76	86
60	RS	225/421 (53%)	225 (100%)	0	100	100
61	RT	178/282 (63%)	178 (100%)	0	100	100
63	RZ	717/1140 (63%)	712 (99%)	5 (1%)	84	90
66	R5	255/266 (96%)	255 (100%)	0	100	100
67	R1	210/218 (96%)	207 (99%)	3 (1%)	67	81
68	R3	282/349 (81%)	281 (100%)	1 (0%)	91	94
69	R6	196/197 (100%)	196 (100%)	0	100	100
70	R2	237/240 (99%)	237 (100%)	0	100	100
71	M3	181/219 (83%)	180 (99%)	1 (1%)	86	92

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
72	R0	194/209 (93%)	194 (100%)	0	100	100
73	r4	243/311 (78%)	242 (100%)	1 (0%)	91	94
74	C4	174/240 (72%)	172 (99%)	2 (1%)	73	85
75	R4	812/901 (90%)	808 (100%)	4 (0%)	88	93
76	r6	150/671 (22%)	150 (100%)	0	100	100
77	R7	99/168 (59%)	98 (99%)	1 (1%)	76	86
78	M4	810/953 (85%)	804 (99%)	6 (1%)	84	90
79	M6	25/168 (15%)	25 (100%)	0	100	100
All	All	21859/33364 (66%)	21691 (99%)	168 (1%)	82	89

All (168) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
4	SC	22	ASP
4	SC	59	ASP
4	SC	162	ARG
5	SF	52	LEU
5	SF	81	THR
6	SG	54	LYS
6	SG	125	THR
7	SH	46	LYS
7	SH	214	LYS
8	SI	34	LEU
8	SI	83	LYS
9	SJ	25	ARG
9	SJ	49	ARG
9	SJ	62	THR
9	SJ	200	LYS
10	SK	17	ARG
13	SP	89	THR
13	SP	124	ASP
17	SX	79	PHE
21	Sd	38	ARG
22	3B	233	LEU
22	3B	305	THR
22	3C	297	ARG
23	3D	218	LYS
23	3D	267	ASP
24	3E	370	SER

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Mol	Chain	Res	Type
25	3F	169	LYS
25	3F	225	LYS
25	3F	405	VAL
26	3G	30	LEU
27	A4	45	THR
27	A4	67	LEU
27	A4	231	VAL
27	A4	313	LYS
27	A4	519	THR
27	A4	550	VAL
28	A5	28	ARG
28	A5	194	LEU
28	A5	339	LYS
29	A8	664	LYS
30	A9	457	LYS
30	A9	476	LYS
30	A9	502	ARG
31	AE	132	THR
31	AE	156	LYS
31	AE	197	ASP
31	AE	321	LYS
31	AE	374	ARG
31	AE	404	PHE
31	AE	723	LEU
31	AE	732	PHE
31	AE	1713	LEU
32	AF	95	LEU
32	AF	165	THR
32	AF	199	ARG
32	AF	257	CYS
32	AF	432	TYR
33	AG	336	ARG
33	AG	565	ARG
34	B1	163	THR
34	B1	192	ASP
34	B1	398	ARG
35	B2	75	ARG
35	B2	175	ASP
35	B2	286	ILE
35	B2	333	ARG
35	B2	343	TRP
35	B2	447	LEU

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Mol	Chain	Res	Type
35	B2	576	VAL
36	B3	65	THR
36	B3	466	TRP
36	B3	618	ASN
36	B3	753	HIS
37	B8	282	ASN
37	B8	384	ILE
37	B8	410	ASP
37	B8	542	ARG
38	BE	218	LEU
38	BE	484	ILE
38	BE	510	LEU
38	BE	890	LYS
39	B6	174	PHE
39	B6	299	LYS
39	B6	352	ARG
39	B6	358	LEU
40	5B	188	LYS
41	5C	291	THR
41	5C	442	ILE
42	5D	58	ARG
43	5E	538	LYS
44	5F	5	LEU
44	5F	13	LEU
44	5F	34	ARG
45	5G	116	ARG
47	5I	83	LEU
47	5I	238	THR
47	5I	255	THR
48	5J	119	ARG
50	RD	1466	ARG
50	RD	1503	LYS
50	RD	1565	LYS
50	RD	1685	ARG
51	RE	223	ARG
51	RE	245	LYS
51	RE	288	THR
51	RE	546	THR
51	RE	781	ASP
51	RE	899	LEU
51	RE	1236	THR
52	RF	158	TRP

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Mol	Chain	Res	Type
53	RG	40	ARG
53	RG	95	CYS
53	RG	171	LEU
53	RH	78	LYS
53	RH	118	ARG
54	RJ	92	ARG
54	RJ	113	ARG
54	RJ	114	ARG
54	RJ	214	ARG
54	RJ	230	MET
54	RJ	566	ARG
54	RJ	769	TYR
54	RJ	833	ARG
54	RJ	866	ARG
54	RJ	948	ILE
54	RJ	973	ARG
54	RJ	1033	ARG
55	RK	77	ARG
55	RK	135	TRP
55	RK	171	ASP
56	RN	116	ARG
56	RN	468	ARG
56	RN	486	LYS
56	RN	588	PHE
57	RO	291	THR
57	RO	408	LYS
58	RP	36	LYS
58	RP	114	CYS
58	RP	154	CYS
58	RP	1819	PHE
58	RP	1875	LEU
58	RP	1995	ARG
59	RQ	728	ARG
59	RQ	808	PHE
63	RZ	386	LYS
63	RZ	452	ARG
63	RZ	584	ASP
63	RZ	586	ARG
63	RZ	1109	ARG
67	R1	77	ASN
67	R1	86	ARG
67	R1	225	ARG

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Mol	Chain	Res	Type
68	R3	73	ASN
71	M3	55	ASN
73	r4	212	ASN
74	C4	51	ARG
74	C4	130	ASN
75	R4	29	ASN
75	R4	144	ARG
75	R4	169	ARG
75	R4	775	ASN
77	R7	64	ASN
78	M4	470	ARG
78	M4	530	ARG
78	M4	543	ARG
78	M4	614	ASN
78	M4	642	ASN
78	M4	844	MET

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (291) such sidechains are listed below:

Mol	Chain	Res	Type
4	SC	101	HIS
4	SC	211	HIS
5	SF	142	HIS
6	SG	95	ASN
6	SG	131	GLN
7	SH	176	GLN
7	SH	182	GLN
7	SH	201	GLN
8	SI	174	ASN
8	SI	180	GLN
9	SJ	32	GLN
9	SJ	44	HIS
10	SK	112	GLN
11	SM	8	GLN
11	SM	106	ASN
14	SR	77	GLN
15	ST	71	GLN
17	SX	39	GLN
17	SX	80	ASN
18	SY	99	ASN
19	SZ	29	HIS
19	SZ	107	GLN

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Mol	Chain	Res	Type
20	Sc	9	HIS
20	Sc	19	HIS
22	3B	291	GLN
22	3C	91	HIS
22	3C	216	ASN
22	3C	256	ASN
22	3C	291	GLN
23	3D	24	GLN
23	3D	65	ASN
23	3D	85	ASN
23	3D	172	ASN
23	3D	213	ASN
24	3E	261	GLN
24	3E	286	ASN
25	3F	128	GLN
25	3F	181	ASN
25	3F	226	HIS
25	3F	230	ASN
25	3F	310	ASN
25	3F	321	HIS
25	3F	366	GLN
25	3F	463	GLN
25	3F	471	GLN
25	3F	547	HIS
25	3F	561	ASN
26	3G	32	GLN
26	3G	38	ASN
26	3G	75	ASN
26	3H	5	ASN
26	3H	18	GLN
27	A4	34	HIS
27	A4	108	ASN
27	A4	309	GLN
27	A4	317	ASN
27	A4	359	ASN
27	A4	529	ASN
28	A5	27	GLN
28	A5	168	HIS
28	A5	293	ASN
28	A5	316	ASN
28	A5	333	ASN
28	A5	491	GLN

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Mol	Chain	Res	Type
28	A5	495	GLN
28	A5	499	ASN
29	A8	504	ASN
29	A8	657	ASN
29	A8	677	ASN
30	A9	425	ASN
30	A9	474	HIS
31	AE	14	ASN
31	AE	219	ASN
31	AE	628	ASN
31	AE	634	ASN
31	AE	709	ASN
32	AF	24	GLN
32	AF	44	HIS
32	AF	72	GLN
32	AF	133	HIS
32	AF	217	ASN
32	AF	315	ASN
32	AF	391	ASN
32	AF	403	ASN
32	AF	481	GLN
33	AG	33	ASN
33	AG	50	ASN
33	AG	120	ASN
33	AG	166	ASN
33	AG	169	GLN
33	AG	190	GLN
33	AG	393	ASN
33	AG	439	ASN
33	AG	489	ASN
33	AG	579	ASN
33	AG	606	HIS
34	B1	45	ASN
34	B1	128	ASN
34	B1	421	ASN
34	B1	464	GLN
34	B1	597	ASN
34	B1	707	ASN
34	B1	734	GLN
34	B1	837	ASN
34	B1	842	ASN
35	B2	20	ASN

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Mol	Chain	Res	Type
35	B2	264	ASN
35	B2	327	HIS
35	B2	390	GLN
35	B2	629	ASN
36	B3	210	ASN
36	B3	337	HIS
36	B3	585	ASN
36	B3	616	HIS
36	B3	667	GLN
36	B3	696	ASN
36	B3	757	GLN
36	B3	766	HIS
36	B3	767	HIS
37	B8	159	HIS
37	B8	162	ASN
37	B8	242	ASN
37	B8	282	ASN
37	B8	283	HIS
37	B8	296	GLN
37	B8	310	GLN
37	B8	352	GLN
37	B8	362	HIS
37	B8	381	ASN
37	B8	438	ASN
37	B8	492	ASN
37	B8	593	HIS
38	BE	96	ASN
38	BE	192	ASN
38	BE	421	ASN
38	BE	481	ASN
38	BE	490	GLN
38	BE	532	ASN
38	BE	820	GLN
38	BE	877	ASN
38	BE	903	GLN
39	B6	10	GLN
39	B6	90	GLN
39	B6	287	ASN
39	B6	336	ASN
39	B6	383	GLN
40	5B	207	ASN
40	5B	212	ASN

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Mol	Chain	Res	Type
41	5C	36	GLN
41	5C	101	ASN
41	5C	151	ASN
41	5C	162	ASN
41	5C	251	HIS
41	5C	253	ASN
41	5C	278	ASN
41	5C	394	HIS
41	5C	424	GLN
41	5C	435	ASN
42	5D	102	GLN
42	5D	105	ASN
42	5D	112	GLN
42	5D	206	GLN
43	5E	303	GLN
44	5F	8	HIS
44	5F	59	ASN
44	5F	74	HIS
45	5G	5	GLN
45	5G	181	ASN
46	5H	573	GLN
46	5H	587	GLN
47	5I	20	GLN
47	5I	23	GLN
47	5I	27	ASN
47	5I	46	ASN
47	5I	61	GLN
47	5I	109	HIS
47	5I	134	ASN
47	5I	207	ASN
47	5I	228	ASN
47	5I	242	ASN
47	5I	260	GLN
47	5I	276	ASN
47	5I	293	ASN
47	5I	371	ASN
47	5I	466	HIS
48	5J	118	GLN
48	5J	135	HIS
48	5J	184	ASN
48	5J	195	GLN
49	5K	46	GLN

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Mol	Chain	Res	Type
49	5K	138	ASN
50	RD	1485	GLN
50	RD	1515	ASN
50	RD	1525	ASN
51	RE	261	ASN
51	RE	333	ASN
51	RE	407	ASN
51	RE	414	HIS
51	RE	443	HIS
51	RE	582	GLN
51	RE	588	GLN
51	RE	647	ASN
51	RE	811	GLN
51	RE	1073	ASN
51	RE	1078	HIS
51	RE	1203	ASN
51	RE	1228	ASN
52	RF	57	ASN
52	RF	122	ASN
52	RF	136	ASN
52	RF	148	HIS
52	RF	187	HIS
53	RG	105	ASN
54	RJ	222	ASN
54	RJ	254	HIS
54	RJ	314	GLN
54	RJ	1037	GLN
54	RJ	1074	GLN
55	RK	317	GLN
56	RN	432	HIS
56	RN	467	ASN
56	RN	515	HIS
56	RN	569	GLN
56	RN	631	GLN
56	RN	783	HIS
57	RO	256	ASN
57	RO	260	ASN
57	RO	304	ASN
57	RO	306	GLN
57	RO	331	ASN
57	RO	434	ASN
57	RO	472	HIS

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Mol	Chain	Res	Type
58	RP	33	ASN
58	RP	112	GLN
58	RP	1787	ASN
58	RP	1865	ASN
58	RP	1957	GLN
59	RQ	303	GLN
59	RQ	876	GLN
60	RS	269	ASN
60	RS	290	ASN
60	RS	300	ASN
60	RS	426	GLN
61	RT	127	GLN
61	RT	142	ASN
63	RZ	385	GLN
63	RZ	794	GLN
63	RZ	884	GLN
63	RZ	1114	ASN
63	RZ	1232	ASN
67	R1	30	ASN
67	R1	64	GLN
67	R1	77	ASN
68	R3	73	ASN
68	R3	153	GLN
68	R3	239	GLN
68	R3	287	ASN
69	R6	81	HIS
69	R6	216	ASN
70	R2	150	ASN
70	R2	183	ASN
70	R2	219	ASN
71	M3	55	ASN
71	M3	235	ASN
73	r4	212	ASN
75	R4	29	ASN
75	R4	170	ASN
75	R4	197	ASN
75	R4	555	HIS
75	R4	775	ASN
75	R4	855	HIS
75	R4	857	GLN
76	r6	83	ASN
76	r6	604	GLN

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Mol	Chain	Res	Type
76	r6	612	ASN
77	R7	64	ASN
77	R7	95	ASN
77	R7	113	ASN
78	M4	191	ASN
78	M4	445	ASN
78	M4	475	HIS
78	M4	539	GLN
78	M4	588	ASN
78	M4	614	ASN
78	M4	669	ASN
78	M4	786	GLN
78	M4	832	ASN
78	M4	874	GLN
78	M4	929	ASN
78	M4	946	GLN
78	M4	1043	ASN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	3A	202/333 (60%)	78 (38%)	4 (1%)
2	5A	110/700 (15%)	42 (38%)	0
3	SA	1315/1812 (72%)	510 (38%)	20 (1%)
All	All	1627/2845 (57%)	630 (38%)	24 (1%)

All (630) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	3A	3	C
1	3A	4	G
1	3A	23	U
1	3A	24	U
1	3A	25	U
1	3A	28	A
1	3A	30	A
1	3A	31	G
1	3A	33	A
1	3A	34	A
1	3A	35	U
1	3A	36	C

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Mol	Chain	Res	Type
1	3A	38	U
1	3A	46	U
1	3A	48	A
1	3A	49	C
1	3A	51	C
1	3A	52	U
1	3A	53	U
1	3A	72	C
1	3A	80	U
1	3A	81	U
1	3A	82	G
1	3A	87	G
1	3A	90	C
1	3A	91	C
1	3A	101	G
1	3A	103	A
1	3A	104	C
1	3A	105	C
1	3A	107	C
1	3A	108	A
1	3A	109	G
1	3A	111	G
1	3A	115	G
1	3A	116	A
1	3A	118	A
1	3A	141	U
1	3A	144	G
1	3A	147	C
1	3A	160	G
1	3A	163	U
1	3A	165	G
1	3A	199	G
1	3A	203	U
1	3A	206	C
1	3A	207	A
1	3A	243	U
1	3A	244	U
1	3A	245	U
1	3A	246	A
1	3A	247	U
1	3A	248	G
1	3A	249	G

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Mol	Chain	Res	Type
1	3A	252	C
1	3A	254	A
1	3A	256	G
1	3A	261	U
1	3A	262	G
1	3A	263	A
1	3A	265	C
1	3A	266	C
1	3A	267	A
1	3A	272	A
1	3A	290	G
1	3A	296	G
1	3A	305	G
1	3A	307	G
1	3A	309	G
1	3A	310	G
1	3A	311	G
1	3A	312	U
1	3A	314	C
1	3A	319	G
1	3A	322	A
1	3A	324	U
1	3A	325	C
1	3A	329	C
2	5A	7	A
2	5A	8	A
2	5A	9	G
2	5A	10	C
2	5A	11	A
2	5A	14	U
2	5A	15	G
2	5A	16	A
2	5A	58	U
2	5A	61	U
2	5A	64	U
2	5A	70	A
2	5A	82	A
2	5A	83	U
2	5A	84	G
2	5A	85	G
2	5A	86	C
2	5A	89	C

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Mol	Chain	Res	Type
2	5A	90	G
2	5A	91	U
2	5A	279	A
2	5A	280	A
2	5A	281	G
2	5A	468	A
2	5A	470	U
2	5A	471	C
2	5A	481	U
2	5A	482	A
2	5A	483	U
2	5A	495	G
2	5A	497	A
2	5A	534	A
2	5A	539	A
2	5A	540	U
2	5A	541	U
2	5A	544	C
2	5A	546	G
2	5A	548	A
2	5A	552	G
2	5A	585	C
2	5A	586	A
2	5A	590	G
3	SA	-5	G
3	SA	-4	A
3	SA	-3	U
3	SA	-1	G
3	SA	0	U
3	SA	1	U
3	SA	5	U
3	SA	6	G
3	SA	17	C
3	SA	18	C
3	SA	20	G
3	SA	21	U
3	SA	22	A
3	SA	23	G
3	SA	25	C
3	SA	26	A
3	SA	34	G
3	SA	40	A

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Mol	Chain	Res	Type
3	SA	42	G
3	SA	43	A
3	SA	44	U
3	SA	45	U
3	SA	46	A
3	SA	47	A
3	SA	57	G
3	SA	60	U
3	SA	66	U
3	SA	68	A
3	SA	69	G
3	SA	72	A
3	SA	73	U
3	SA	74	U
3	SA	76	A
3	SA	81	G
3	SA	104	A
3	SA	107	C
3	SA	108	A
3	SA	109	G
3	SA	114	C
3	SA	115	G
3	SA	116	U
3	SA	117	U
3	SA	125	U
3	SA	126	A
3	SA	127	G
3	SA	128	U
3	SA	129	U
3	SA	130	C
3	SA	131	C
3	SA	132	U
3	SA	133	U
3	SA	134	U
3	SA	135	A
3	SA	136	C
3	SA	137	U
3	SA	138	A
3	SA	140	A
3	SA	145	A
3	SA	146	U
3	SA	153	G

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Mol	Chain	Res	Type
3	SA	155	U
3	SA	156	A
3	SA	162	A
3	SA	169	A
3	SA	170	U
3	SA	176	C
3	SA	177	U
3	SA	178	U
3	SA	179	A
3	SA	180	A
3	SA	181	A
3	SA	182	A
3	SA	184	C
3	SA	185	U
3	SA	186	C
3	SA	187	G
3	SA	189	C
3	SA	191	C
3	SA	192	U
3	SA	194	U
3	SA	195	G
3	SA	196	G
3	SA	200	A
3	SA	202	A
3	SA	203	U
3	SA	204	G
3	SA	211	U
3	SA	215	A
3	SA	231	U
3	SA	232	U
3	SA	233	C
3	SA	234	G
3	SA	235	G
3	SA	238	U
3	SA	239	C
3	SA	240	U
3	SA	241	U
3	SA	242	U
3	SA	248	U
3	SA	249	U
3	SA	250	C
3	SA	256	A

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Mol	Chain	Res	Type
3	SA	259	U
3	SA	260	U
3	SA	261	U
3	SA	262	U
3	SA	265	A
3	SA	267	U
3	SA	271	A
3	SA	272	U
3	SA	276	C
3	SA	278	U
3	SA	279	G
3	SA	280	U
3	SA	281	G
3	SA	288	A
3	SA	302	U
3	SA	306	U
3	SA	313	U
3	SA	314	C
3	SA	316	A
3	SA	320	U
3	SA	321	C
3	SA	322	G
3	SA	323	A
3	SA	331	A
3	SA	332	U
3	SA	333	A
3	SA	336	G
3	SA	337	G
3	SA	351	C
3	SA	352	A
3	SA	354	C
3	SA	426	G
3	SA	430	G
3	SA	433	C
3	SA	435	C
3	SA	437	A
3	SA	438	A
3	SA	439	U
3	SA	440	U
3	SA	444	C
3	SA	445	A
3	SA	448	C

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Mol	Chain	Res	Type
3	SA	452	A
3	SA	453	U
3	SA	454	U
3	SA	468	A
3	SA	471	A
3	SA	475	A
3	SA	477	A
3	SA	484	C
3	SA	485	A
3	SA	487	G
3	SA	488	G
3	SA	492	A
3	SA	493	U
3	SA	494	U
3	SA	495	C
3	SA	496	G
3	SA	499	U
3	SA	500	C
3	SA	501	U
3	SA	504	U
3	SA	505	A
3	SA	507	U
3	SA	508	U
3	SA	510	G
3	SA	513	U
3	SA	514	G
3	SA	515	A
3	SA	516	G
3	SA	519	C
3	SA	525	A
3	SA	532	U
3	SA	534	A
3	SA	539	G
3	SA	540	G
3	SA	541	A
3	SA	542	A
3	SA	543	C
3	SA	544	A
3	SA	545	A
3	SA	548	G
3	SA	551	G
3	SA	552	G

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Mol	Chain	Res	Type
3	SA	563	U
3	SA	564	G
3	SA	565	C
3	SA	570	A
3	SA	572	C
3	SA	573	C
3	SA	574	G
3	SA	575	C
3	SA	579	A
3	SA	580	A
3	SA	582	U
3	SA	583	C
3	SA	584	C
3	SA	585	A
3	SA	587	C
3	SA	594	A
3	SA	595	G
3	SA	601	A
3	SA	602	U
3	SA	603	U
3	SA	623	A
3	SA	624	G
3	SA	635	A
3	SA	638	U
3	SA	648	G
3	SA	649	U
3	SA	658	C
3	SA	667	U
3	SA	670	U
3	SA	674	C
3	SA	686	C
3	SA	687	G
3	SA	690	G
3	SA	694	U
3	SA	695	U
3	SA	696	C
3	SA	697	C
3	SA	698	U
3	SA	699	U
3	SA	700	C
3	SA	702	G
3	SA	744	U

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Mol	Chain	Res	Type
3	SA	746	A
3	SA	747	C
3	SA	748	U
3	SA	749	U
3	SA	750	U
3	SA	751	G
3	SA	752	A
3	SA	754	A
3	SA	755	A
3	SA	756	A
3	SA	757	A
3	SA	758	U
3	SA	759	U
3	SA	760	A
3	SA	763	G
3	SA	765	G
3	SA	766	U
3	SA	771	A
3	SA	772	G
3	SA	773	C
3	SA	774	A
3	SA	775	G
3	SA	778	G
3	SA	779	U
3	SA	780	A
3	SA	781	U
3	SA	782	U
3	SA	783	G
3	SA	784	C
3	SA	785	U
3	SA	787	G
3	SA	789	A
3	SA	790	U
3	SA	791	A
3	SA	792	U
3	SA	794	U
3	SA	795	U
3	SA	796	A
3	SA	797	G
3	SA	798	C
3	SA	802	G
3	SA	803	A

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Mol	Chain	Res	Type
3	SA	804	A
3	SA	811	A
3	SA	812	A
3	SA	813	U
3	SA	815	G
3	SA	816	G
3	SA	820	U
3	SA	821	U
3	SA	822	U
3	SA	827	C
3	SA	828	U
3	SA	842	C
3	SA	850	A
3	SA	858	G
3	SA	859	A
3	SA	860	U
3	SA	862	A
3	SA	863	A
3	SA	864	U
3	SA	865	A
3	SA	873	U
3	SA	875	G
3	SA	876	G
3	SA	881	A
3	SA	898	A
3	SA	906	A
3	SA	912	U
3	SA	913	G
3	SA	914	G
3	SA	921	U
3	SA	928	U
3	SA	929	A
3	SA	931	C
3	SA	933	A
3	SA	935	U
3	SA	944	A
3	SA	951	A
3	SA	960	U
3	SA	966	A
3	SA	969	C
3	SA	1039	A
3	SA	1052	U

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Mol	Chain	Res	Type
3	SA	1053	G
3	SA	1056	U
3	SA	1057	U
3	SA	1058	U
3	SA	1059	U
3	SA	1060	U
3	SA	1063	U
3	SA	1064	G
3	SA	1076	A
3	SA	1114	G
3	SA	1118	G
3	SA	1119	G
3	SA	1122	G
3	SA	1125	A
3	SA	1127	G
3	SA	1128	C
3	SA	1131	A
3	SA	1132	A
3	SA	1133	A
3	SA	1134	C
3	SA	1135	U
3	SA	1136	U
3	SA	1140	G
3	SA	1144	U
3	SA	1145	U
3	SA	1146	G
3	SA	1158	C
3	SA	1164	G
3	SA	1176	G
3	SA	1178	G
3	SA	1191	U
3	SA	1192	C
3	SA	1193	A
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	1204	A
3	SA	1205	C

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Mol	Chain	Res	Type
3	SA	1206	U
3	SA	1210	C
3	SA	1211	A
3	SA	1212	G
3	SA	1213	G
3	SA	1216	C
3	SA	1217	A
3	SA	1218	G
3	SA	1219	A
3	SA	1220	C
3	SA	1223	A
3	SA	1228	G
3	SA	1229	G
3	SA	1233	G
3	SA	1235	C
3	SA	1236	A
3	SA	1252	C
3	SA	1254	U
3	SA	1256	A
3	SA	1257	U
3	SA	1258	U
3	SA	1259	U
3	SA	1260	U
3	SA	1262	U
3	SA	1263	G
3	SA	1264	G
3	SA	1266	U
3	SA	1267	G
3	SA	1268	G
3	SA	1269	U
3	SA	1270	G
3	SA	1272	U
3	SA	1273	G
3	SA	1274	C
3	SA	1435	G
3	SA	1436	A
3	SA	1437	U
3	SA	1441	C
3	SA	1443	U
3	SA	1453	G
3	SA	1454	G
3	SA	1470	C

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Mol	Chain	Res	Type
3	SA	1471	A
3	SA	1472	C
3	SA	1473	U
3	SA	1474	G
3	SA	1476	C
3	SA	1483	A
3	SA	1488	G
3	SA	1489	U
3	SA	1490	C
3	SA	1491	U
3	SA	1492	A
3	SA	1493	A
3	SA	1506	G
3	SA	1525	A
3	SA	1534	G
3	SA	1535	U
3	SA	1537	C
3	SA	1538	U
3	SA	1539	G
3	SA	1540	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	1558	U
3	SA	1559	A
3	SA	1560	U
3	SA	1569	A
3	SA	1573	A
3	SA	1574	G
3	SA	1577	A
3	SA	1584	G
3	SA	1590	G
3	SA	1595	U
3	SA	1596	C
3	SA	1600	A
3	SA	1601	G
3	SA	1602	C
3	SA	1607	G
3	SA	1614	A

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Mol	Chain	Res	Type
3	SA	1618	C
3	SA	1619	C
3	SA	1622	G
3	SA	1628	U
3	SA	1630	U
3	SA	1631	A
3	SA	1633	A
3	SA	1639	C
3	SA	1640	C
3	SA	1651	A
3	SA	1654	G
3	SA	1655	A
3	SA	1656	U
3	SA	1657	U
3	SA	1658	G
3	SA	1662	G
3	SA	1663	G
3	SA	1676	U
3	SA	1679	G
3	SA	1680	G
3	SA	1681	A
3	SA	1682	U
3	SA	1683	C
3	SA	1689	A
3	SA	1697	G
3	SA	1698	G
3	SA	1700	C
3	SA	1701	A
3	SA	1703	C
3	SA	1704	U
3	SA	1707	A
3	SA	1708	U
3	SA	1709	C
3	SA	1710	U
3	SA	1711	C
3	SA	1712	A
3	SA	1713	G
3	SA	1717	G
3	SA	1718	G
3	SA	1719	A
3	SA	1724	U
3	SA	1725	U

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Mol	Chain	Res	Type
3	SA	1726	G
3	SA	1727	G
3	SA	1728	A
3	SA	1731	A
3	SA	1734	U
3	SA	1736	G
3	SA	1737	G
3	SA	1738	U
3	SA	1742	U
3	SA	1743	U
3	SA	1744	A
3	SA	1746	A
3	SA	1749	A
3	SA	1753	A
3	SA	1754	A
3	SA	1755	A
3	SA	1778	G
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	1796	C
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 (24) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	3A	24	U
1	3A	102	U
1	3A	107	C
1	3A	248	G
3	SA	0	U
3	SA	68	A
3	SA	136	C
3	SA	139	C

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Mol	Chain	Res	Type
3	SA	278	U
3	SA	280	U
3	SA	335	U
3	SA	484	C
3	SA	503	G
3	SA	542	A
3	SA	773	C
3	SA	781	U
3	SA	1052	U
3	SA	1063	U
3	SA	1490	C
3	SA	1533	C
3	SA	1568	C
3	SA	1594	G
3	SA	1754	A
3	SA	1803	G

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

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	$\# Z > 2$
83	ADP	RZ	1301	-	24,29,29	0.96	1 (4%)	29,45,45	1.37	4 (13%)
81	GTP	RJ	1201	82	26,34,34	1.20	1 (3%)	32,54,54	1.70	7 (21%)

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
83	ADP	RZ	1301	-	-	4/12/32/32	0/3/3/3
81	GTP	RJ	1201	82	-	5/18/38/38	0/3/3/3

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
81	RJ	1201	GTP	C5-C6	-4.23	1.38	1.47
83	RZ	1301	ADP	C5-C4	2.45	1.47	1.40

All (11) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
81	RJ	1201	GTP	PA-O3A-PB	-4.49	117.41	132.83
81	RJ	1201	GTP	PB-O3B-PG	-4.12	118.69	132.83
83	RZ	1301	ADP	N3-C2-N1	-3.40	123.36	128.68
81	RJ	1201	GTP	C5-C6-N1	3.36	119.88	113.95
81	RJ	1201	GTP	C8-N7-C5	3.10	108.89	102.99
83	RZ	1301	ADP	C3'-C2'-C1'	3.02	105.52	100.98
81	RJ	1201	GTP	C2-N1-C6	-2.97	119.63	125.10
83	RZ	1301	ADP	C4-C5-N7	-2.93	106.35	109.40
81	RJ	1201	GTP	C3'-C2'-C1'	2.75	105.12	100.98
83	RZ	1301	ADP	PA-O3A-PB	-2.26	125.06	132.83
81	RJ	1201	GTP	O6-C6-C5	-2.00	120.46	124.37

There are no chirality outliers.

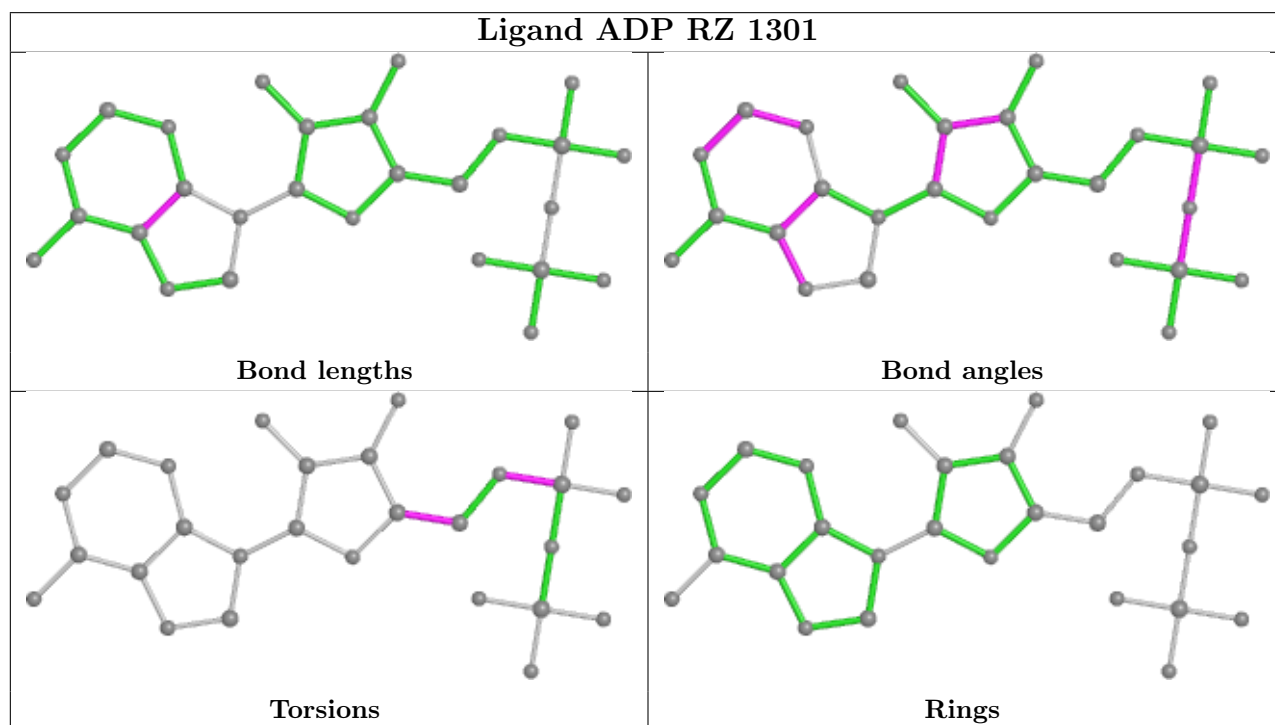
All (9) torsion outliers are listed below:

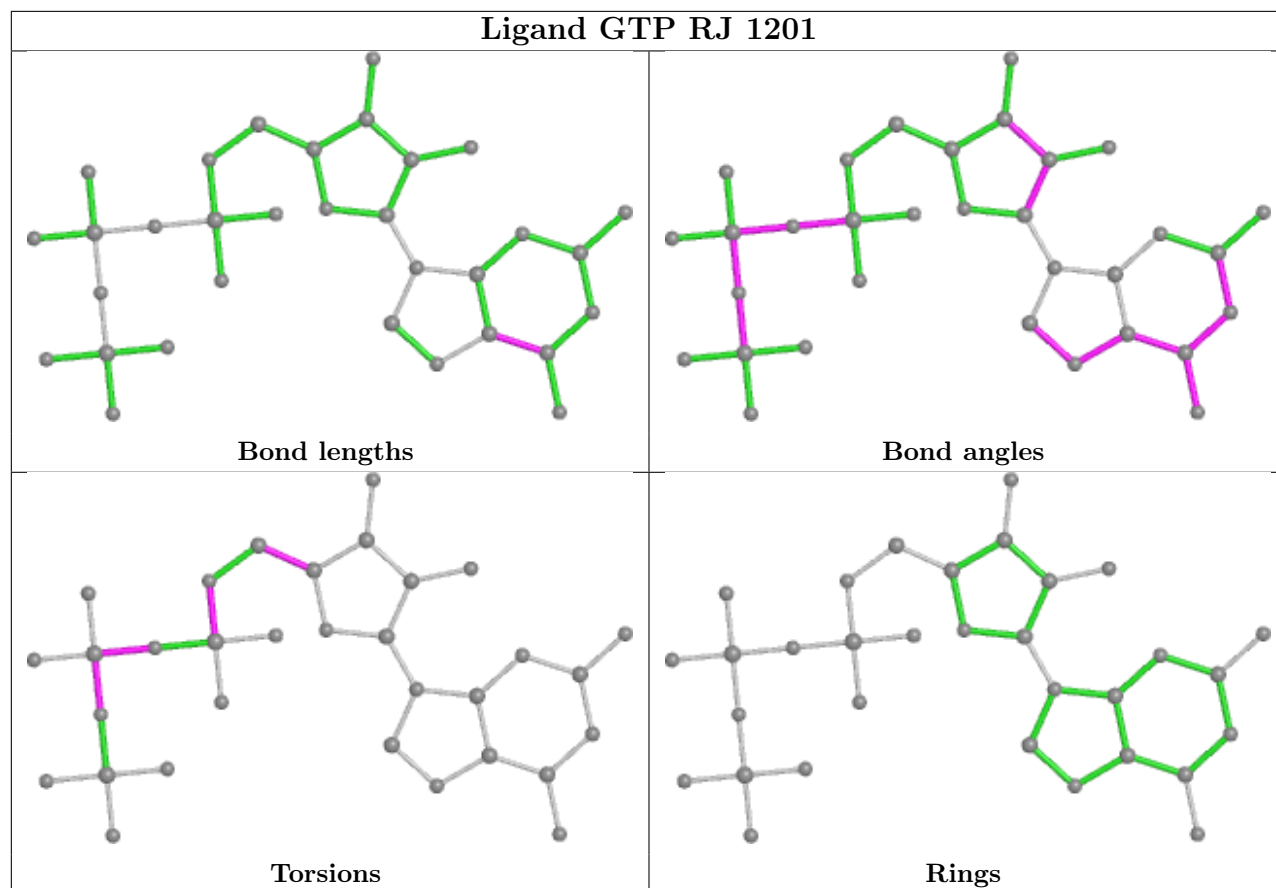
Mol	Chain	Res	Type	Atoms
83	RZ	1301	ADP	C5'-O5'-PA-O2A
83	RZ	1301	ADP	C5'-O5'-PA-O3A
81	RJ	1201	GTP	O4'-C4'-C5'-O5'
81	RJ	1201	GTP	C3'-C4'-C5'-O5'
81	RJ	1201	GTP	PA-O3A-PB-O2B
83	RZ	1301	ADP	O4'-C4'-C5'-O5'
81	RJ	1201	GTP	PG-O3B-PB-O2B
83	RZ	1301	ADP	C3'-C4'-C5'-O5'
81	RJ	1201	GTP	C5'-O5'-PA-O1A

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 than 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.





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.

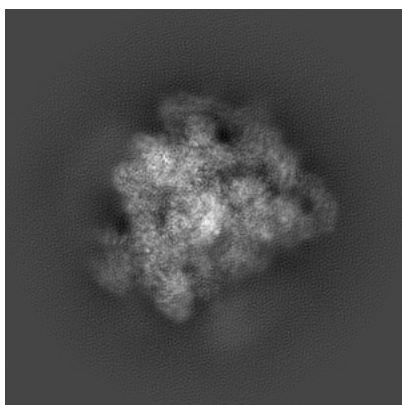
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-30574. These allow visual inspection of the internal detail of the map and identification of artifacts.

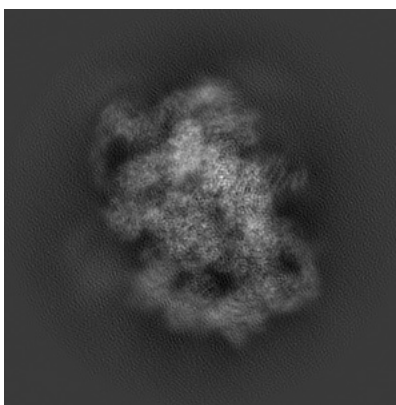
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

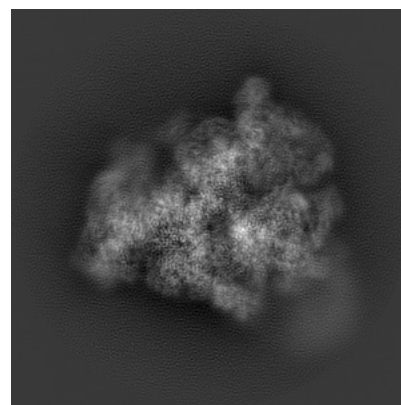
6.1.1 Primary map



X



Y

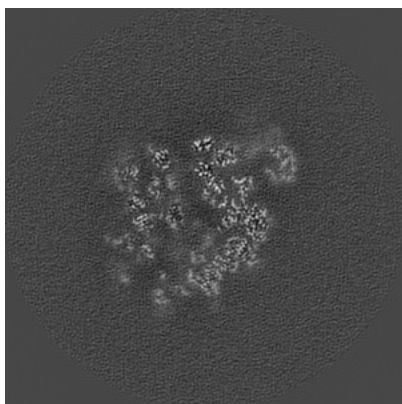


Z

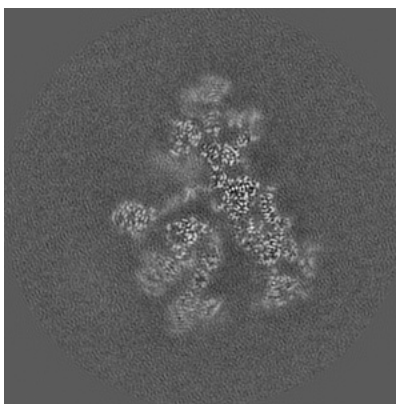
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

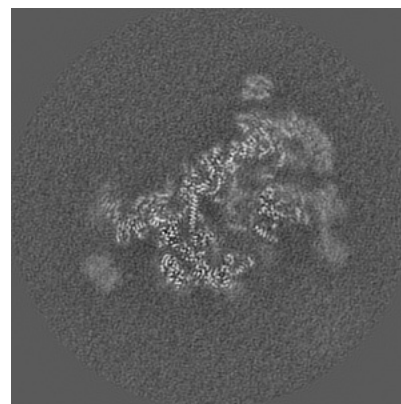
6.2.1 Primary map



X Index: 200



Y Index: 200

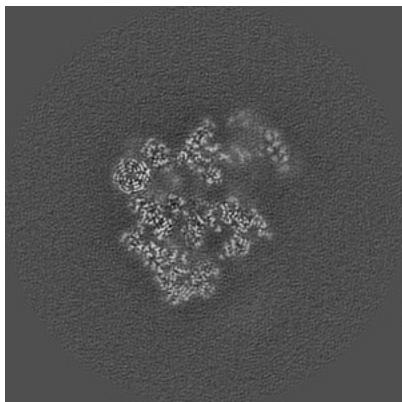


Z Index: 200

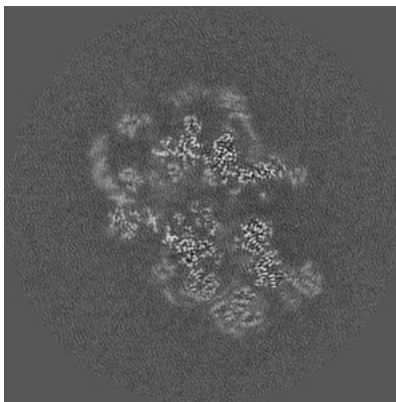
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

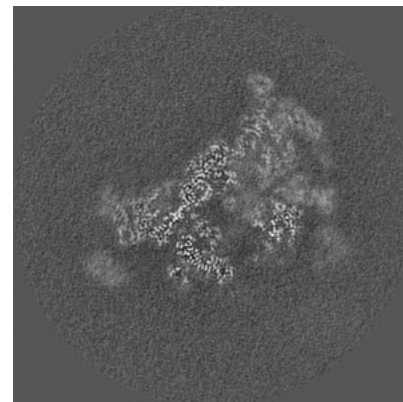
6.3.1 Primary map



X Index: 186



Y Index: 178

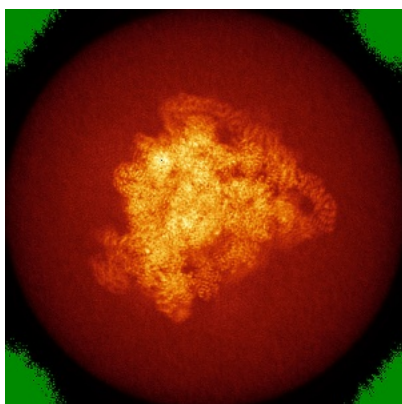


Z Index: 192

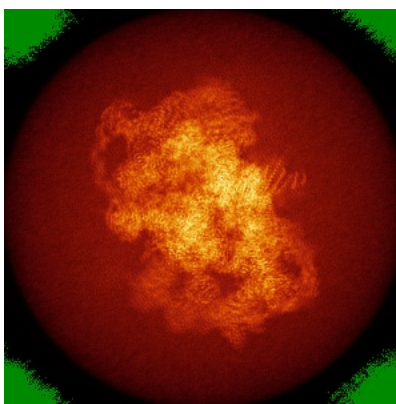
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) [i](#)

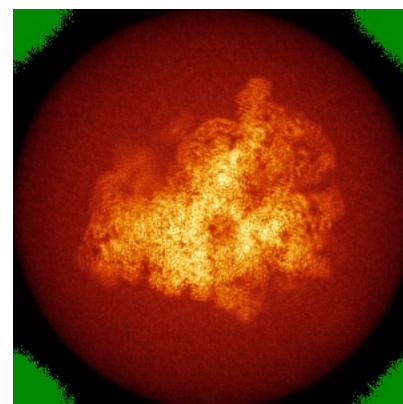
6.4.1 Primary map



X



Y

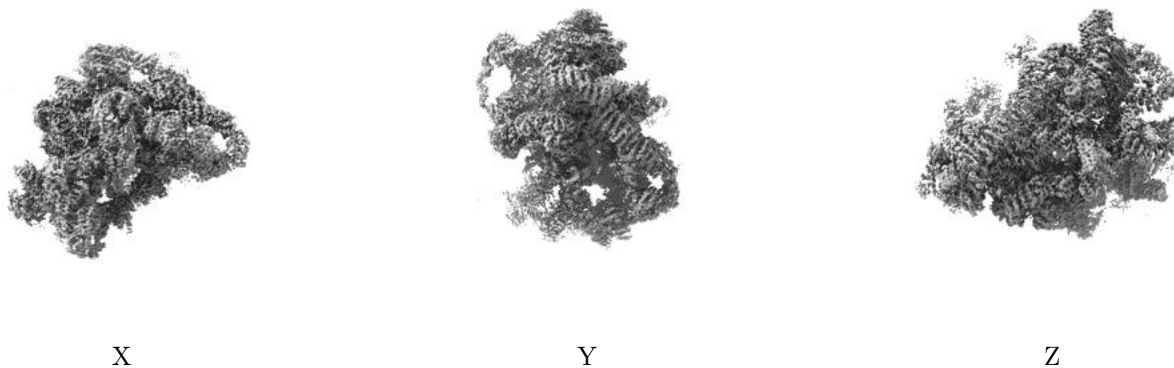


Z

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



The images above show the 3D surface view of the map at the recommended contour level 0.025. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

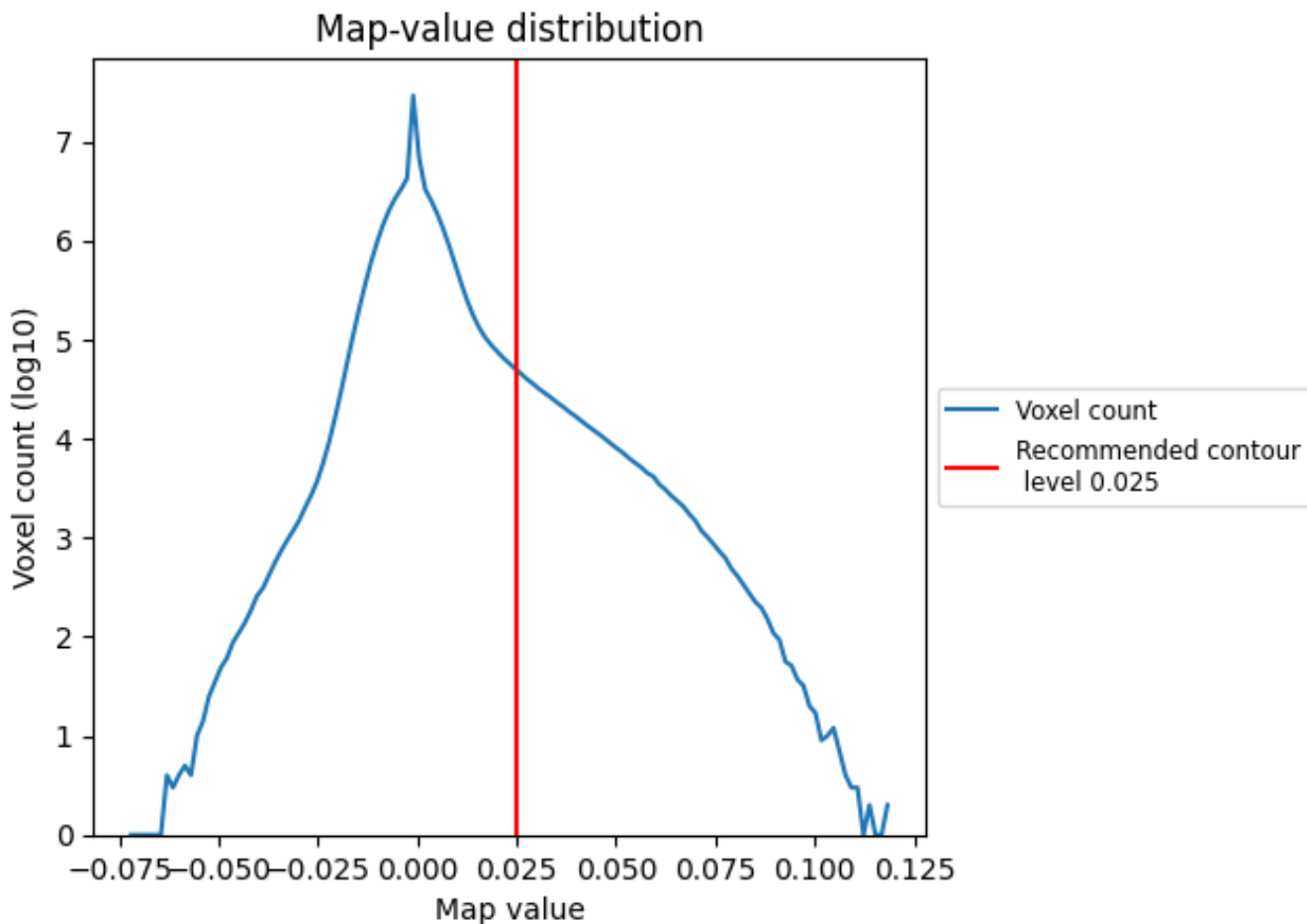
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

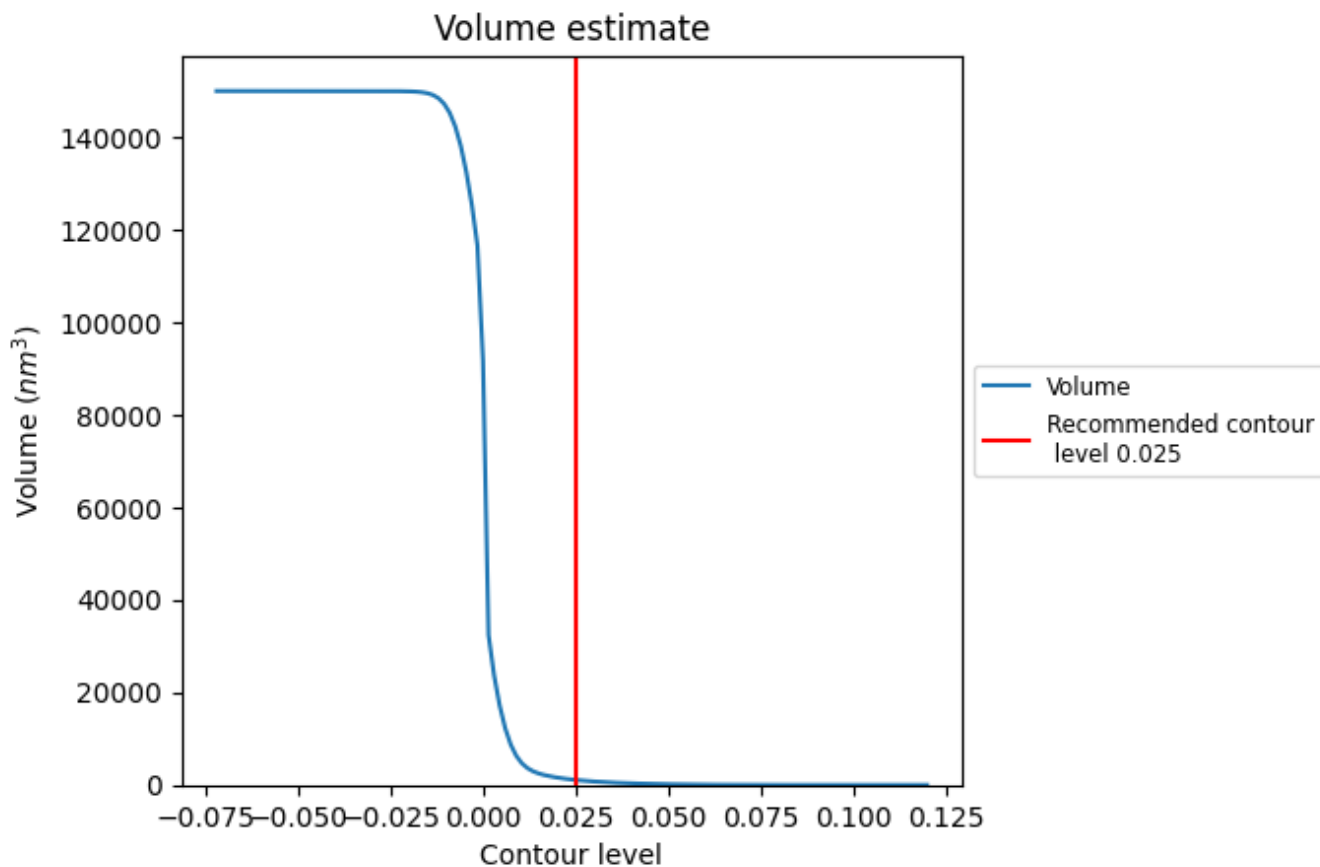
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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.

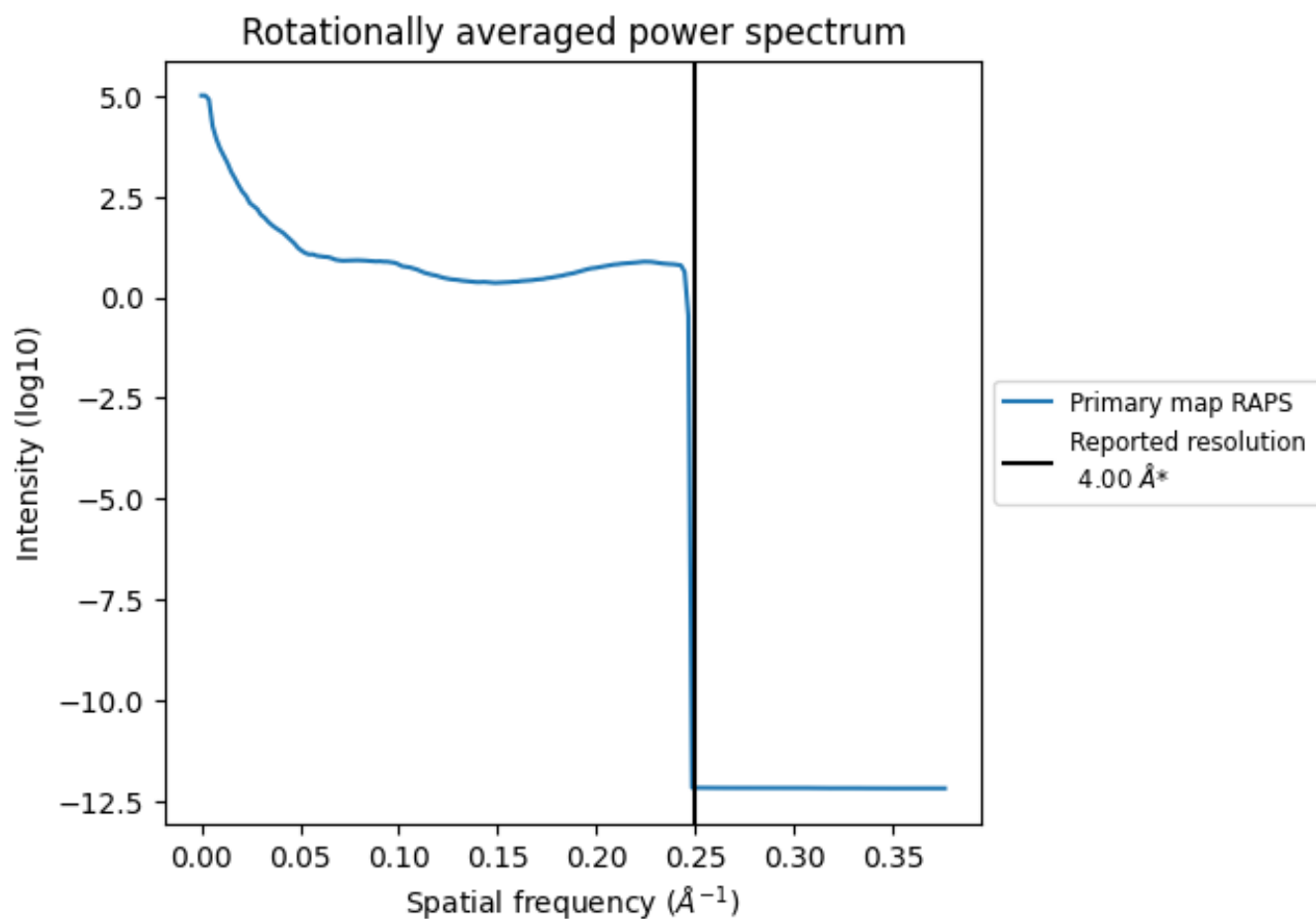
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1074 nm^3 ; this corresponds to an approximate mass of 970 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 0.250 Å⁻¹

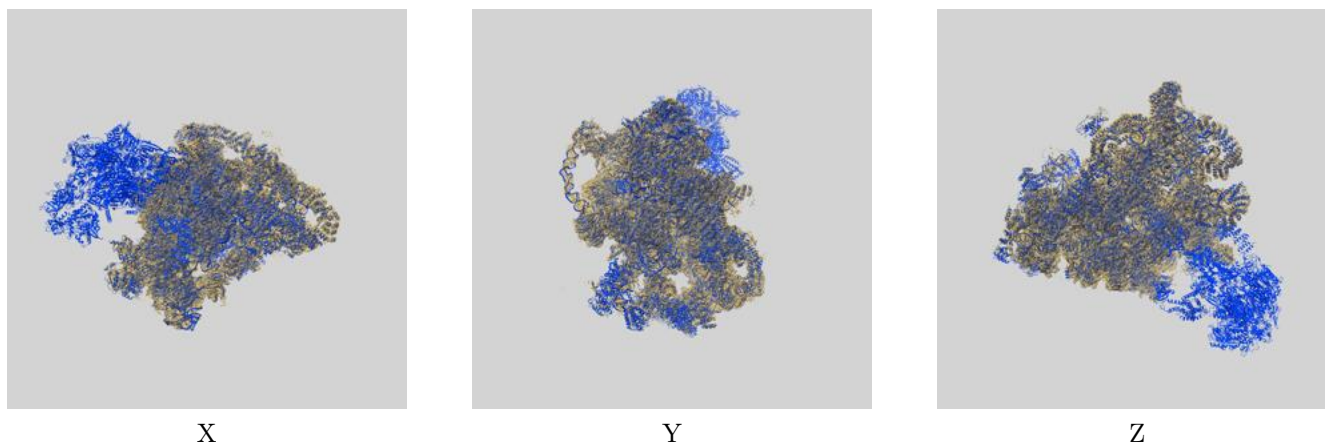
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

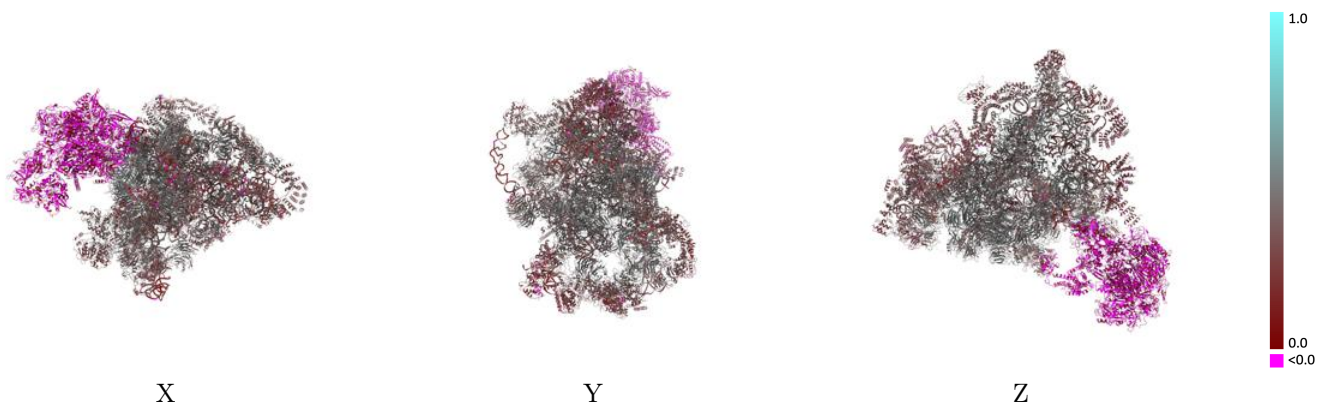
This section contains information regarding the fit between EMDB map EMD-30574 and PDB model 7D4I. Per-residue inclusion information can be found in section 3 on page 20.

9.1 Map-model overlay [i](#)



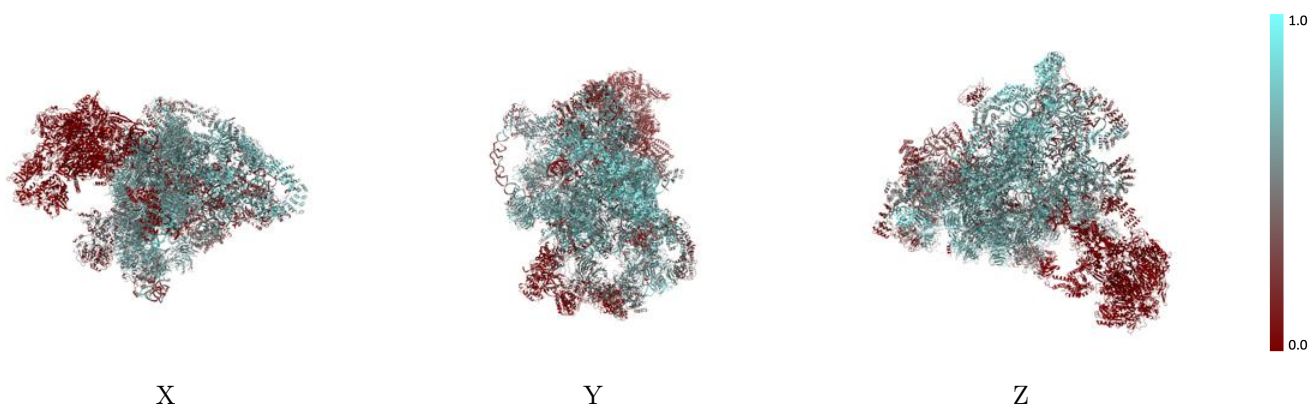
The images above show the 3D surface view of the map at the recommended contour level 0.025 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model [i](#)



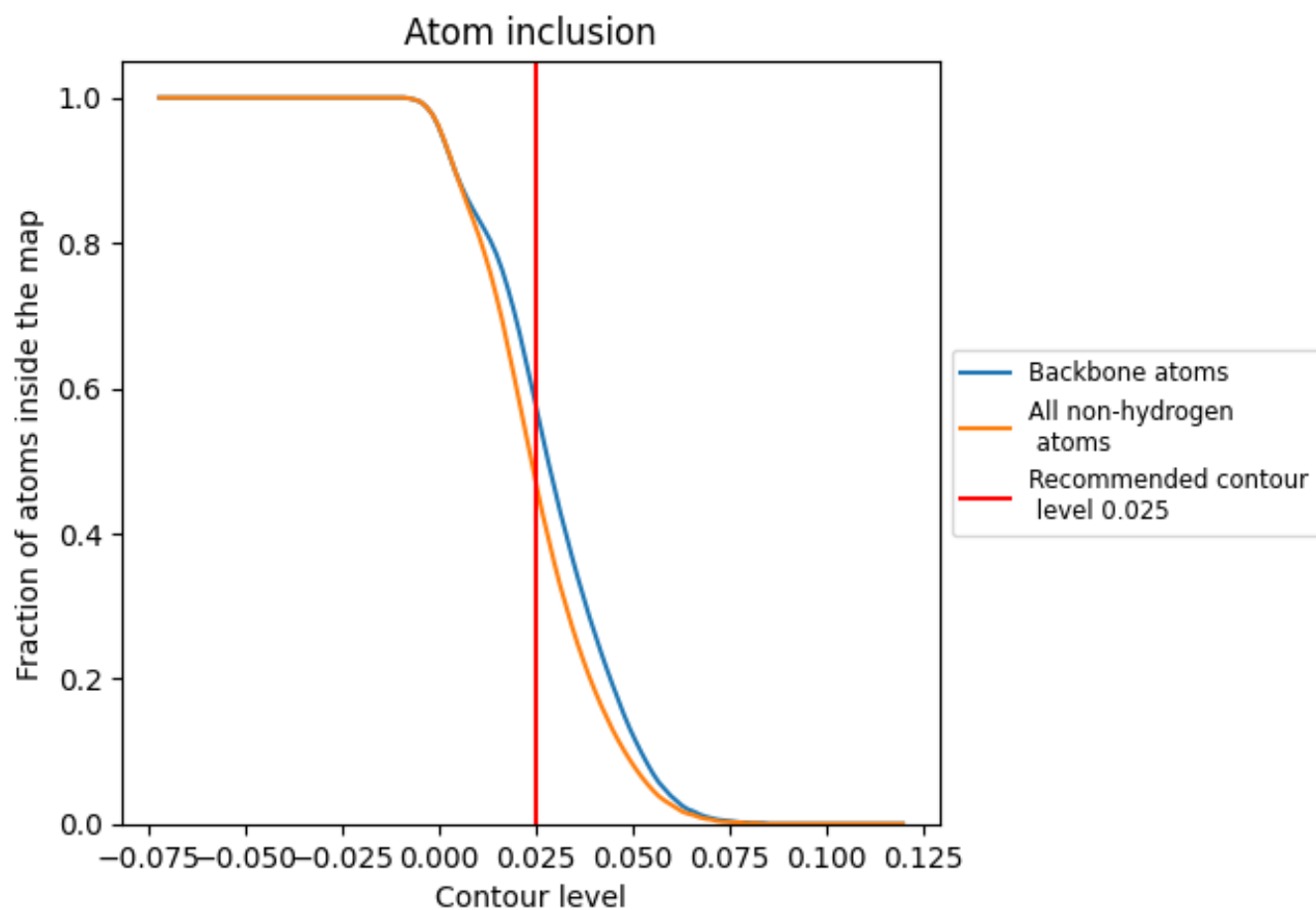
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

9.3 Atom inclusion mapped to coordinate model [i](#)



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 (0.025).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 58% 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 (0.025) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.4720	 0.3390
3A	 0.6880	 0.3800
3B	 0.7030	 0.4820
3C	 0.6510	 0.4460
3D	 0.6820	 0.4450
3E	 0.6470	 0.4270
3F	 0.6890	 0.4600
3G	 0.6460	 0.4550
3H	 0.6860	 0.4620
5A	 0.4290	 0.2980
5B	 0.4730	 0.4040
5C	 0.6100	 0.4530
5D	 0.5590	 0.4350
5E	 0.5350	 0.4230
5F	 0.4980	 0.4190
5G	 0.6040	 0.4540
5H	 0.6420	 0.4620
5I	 0.7000	 0.4760
5J	 0.5670	 0.4540
5K	 0.6690	 0.4760
A4	 0.6530	 0.4270
A5	 0.5790	 0.4240
A8	 0.1930	 0.3060
A9	 0.4450	 0.3310
AE	 0.5490	 0.3640
AF	 0.5390	 0.4190
AG	 0.5810	 0.4120
B1	 0.6430	 0.4640
B2	 0.6440	 0.4170
B3	 0.6320	 0.4210
B6	 0.6330	 0.4130
B8	 0.6830	 0.4570
BE	 0.6630	 0.4540
C4	 0.0000	 0.0140
M3	 0.0000	 0.0020















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Chain	Atom inclusion	Q-score
M4	0.0000	0.0070
M6	0.0000	-0.0180
R0	0.0000	0.0240
R1	0.0000	-0.0040
R2	0.0000	-0.0020
R3	0.0000	-0.0050
R4	0.0000	-0.0040
R5	0.0000	-0.0020
R6	0.0000	0.0200
R7	0.0000	-0.0180
RD	0.0440	0.2830
RE	0.5240	0.3780
RF	0.4600	0.3590
RG	0.1550	0.3120
RH	0.2780	0.3730
RJ	0.6410	0.4430
RK	0.6320	0.4350
RN	0.1620	0.3150
RO	0.2540	0.3260
RP	0.5770	0.3540
RQ	0.4820	0.4150
RS	0.0670	0.2420
RT	0.5490	0.4390
RW	0.5620	0.3770
RZ	0.3570	0.3490
SA	0.6220	0.3510
SC	0.6420	0.4550
SF	0.5580	0.4330
SG	0.6220	0.4540
SH	0.2820	0.3650
SI	0.4950	0.3850
SJ	0.2730	0.3480
SK	0.6780	0.4600
SM	0.1890	0.3280
SO	0.6660	0.4340
SP	0.6450	0.4560
SR	0.6690	0.4730
ST	0.3580	0.3880
SU	0.4630	0.4250
SX	0.6490	0.4510
SY	0.6180	0.4530
SZ	0.6590	0.4520

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Chain	Atom inclusion	Q-score
Sc	 0.6710	 0.4620
Sd	 0.6620	 0.4830
X1	 0.4410	 0.3940
X2	 0.1570	 0.3330
r4	 0.0000	 0.0010
r6	 0.0000	 0.0010