



wwPDB EM Validation Summary Report ⓘ

Mar 20, 2024 – 08:49 AM JST

PDB ID : 6LQT
EMDB ID : EMD-0953
Title : Cryo-EM structure of 90S small subunit preribosomes in transition states (State E)
Authors : Du, Y.; Ye, K.
Deposited on : 2020-01-14
Resolution : 4.90 Å(reported)
Based on initial model : 6LQS

This is a wwPDB EM Validation Summary 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:

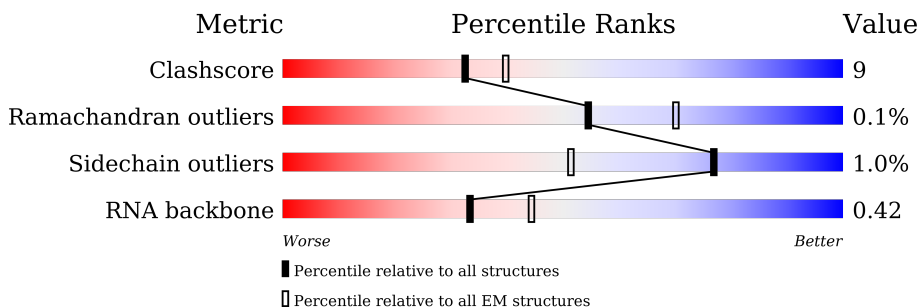
EMDB validation analysis : 0.0.1.dev70
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4.02b-467
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry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

1 Overall quality at a glance

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

The reported resolution of this entry is 4.90 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)
Clashscore	158937	4297
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	1809	
4	SC	255	
5	SF	261	
6	SG	225	
7	SH	236	




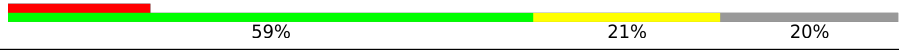
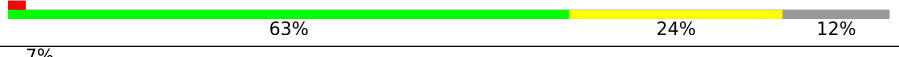



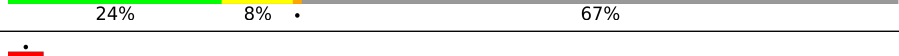
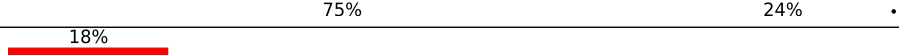
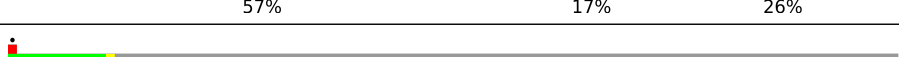
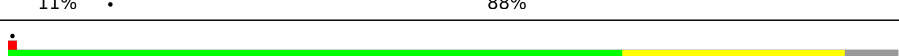

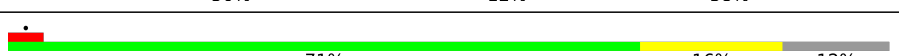

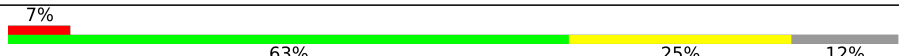


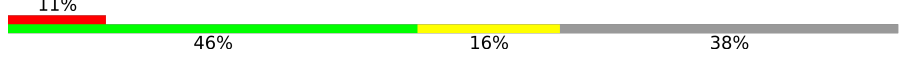

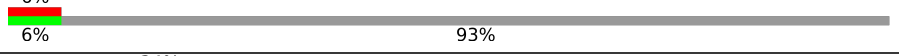
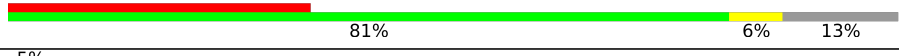

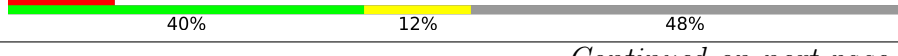

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Mol	Chain	Length	Quality of chain
8	SI	190	5% 57% 27% 14%
9	SJ	200	38% 52% 18% 30%
10	SK	197	68% 60% 19% 13%
11	SM	156	61% 61% 27% 12%
12	SO	151	68% 68% 20% 11%
13	SP	137	6% 69% 18% 14%
14	SR	143	69% 69% 17% 13%
15	SX	130	71% 71% 27% .
16	SY	145	28% 59% 13% 27%
17	SZ	135	7% 67% 21% 9%
18	Sc	82	90% 90% 7% .
19	Sd	67	91% 91% 6% .
20	3B	327	54% 54% 20% 27%
20	3C	327	50% 48% 20% 31%
21	3D	504	7% 60% 14% 25%
22	3E	511	36% 66% 18% 15%
23	3F	572	7% 56% 20% 24%
24	3G	126	33% 74% 22% .
24	3H	126	70% 70% 26% .
25	A4	776	83% 55% 31% 14%
26	A5	643	18% 43% 15% 42%
27	A9	575	6% 5% 94% .
28	AE	1769	19% 6% 76% .
29	AF	513	91% 66% 27% 7%
30	AG	896	80% 62% 29% 8%

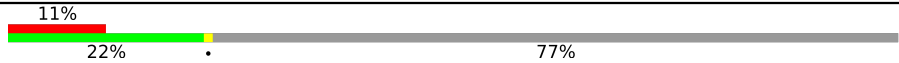
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Mol	Chain	Length	Quality of chain
31	B1	923	
32	B2	943	
33	B3	817	
34	B8	594	
35	BE	939	
36	B6	440	
37	5C	554	
38	5D	250	
39	5E	593	
40	5F	183	
41	5G	290	
42	5H	610	
43	5I	489	
44	5J	217	
45	5K	189	
46	RD	1729	
47	RE	1237	
48	RF	297	
49	RH	252	
50	RJ	1183	
51	RK	367	
52	RN	810	
53	RP	2493	
54	RQ	899	
55	RT	326	

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Mol	Chain	Length	Quality of chain
56	X1	347	 <p>A horizontal bar chart representing the quality of chain. The bar is divided into three segments: a red segment on the left labeled '11%', a green segment in the middle labeled '22%', and a grey segment on the right labeled '77%'. The segments are stacked horizontally, with the red segment starting from the left, followed by the green segment, and then the grey segment.</p>

2 Entry composition

There are 59 unique types of molecules in this entry. The entry contains 175869 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	194	4114	1841	716	1363	194	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	5A	152	3260	1455	593	1060	152	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
3	SA	1155	24609	11001	4356	8097	1155	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	232	1848	1168	339	337	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	250	1930	1232	354	341	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	1457	917	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	164	1310	847	222	241	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	140	1104	689	211	202	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	171	1388	879	268	240	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	118	868	536	164	165	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 S22-B.

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
16	SY	106	Total	C	N	O	S	0	0
			807	515	148	142	2		

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

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

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

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

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

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

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

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

- Molecule 21 is a protein called Nucleolar protein 56.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
21	3D	378	2974	1886	511	568	9	0	0

- Molecule 22 is a protein called Nucleolar protein 58.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
22	3E	432	3041	1895	545	592	9	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
23	3F	437	3498	2227	609	652	10	0	0

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
25	A4	664	5243	3320	912	990	21	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
26	A5	372	2943	1869	494	569	11	0	0

- Molecule 27 is a protein called U3 small nucleolar RNA-associated protein 9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
27	A9	37	299	186	60	51	2	0	0

- Molecule 28 is a protein called U3 small nucleolar RNA-associated protein 10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
28	AE	431	3443	2224	566	641	12	0	0

- Molecule 29 is a protein called U3 small nucleolar RNA-associated protein 15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
29	AF	479	3807	2395	685	715	12	0	0

- Molecule 30 is a protein called NET1-associated nuclear protein 1.

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

- Molecule 31 is a protein called Periodic tryptophan protein 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
31	B1	806	6427	4104	1099	1205	19	0	0

- Molecule 32 is a protein called U3 small nucleolar RNA-associated protein 12.

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

- Molecule 33 is a protein called U3 small nucleolar RNA-associated protein 13.

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

- Molecule 34 is a protein called U3 small nucleolar RNA-associated protein 18.

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

- Molecule 35 is a protein called U3 small nucleolar RNA-associated protein 21.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
35	BE	823	6475	4107	1119	1228	21	0	0

- Molecule 36 is a protein called U3 small nucleolar RNA-associated protein 6.

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

- Molecule 37 is a protein called U3 small nucleolar RNA-associated protein 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
37	5C	458	3612	2276	636	689	11	0	0

- Molecule 38 is a protein called U3 small nucleolar RNA-associated protein 11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
38	5D	70	609	377	126	105	1	0	0

- Molecule 39 is a protein called U3 small nucleolar RNA-associated protein MPP10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
39	5E	193	1564	970	280	310	4	0	0

- Molecule 40 is a protein called U3 small nucleolar ribonucleoprotein protein IMP3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
40	5F	182	1530	967	287	269	7	0	0

- Molecule 41 is a protein called U3 small nucleolar ribonucleoprotein protein IMP4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
41	5G	216	1732	1093	321	312	6	0	0

- Molecule 42 is a protein called Something about silencing protein 10.

Mol	Chain	Residues	Atoms				AltConf	Trace
42	5H	74	Total	C	N	O	0	0
			596	373	122	101		

- Molecule 43 is a protein called Protein SOF1.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	5I	460	Total	C	N	O	S	0	0
			3756	2349	685	706	16		

- Molecule 44 is a protein called rRNA-processing protein FCF2.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	5J	134	Total	C	N	O	S	0	0
			1127	712	205	207	3		

- Molecule 45 is a protein called rRNA-processing protein FCF1.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	5K	166	Total	C	N	O	S	0	0
			1323	849	238	226	10		

- Molecule 46 is a protein called rRNA biogenesis protein RRP5.

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

- Molecule 47 is a protein called U3 small nucleolar RNA-associated protein 22.

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

- Molecule 48 is a protein called Ribosomal RNA-processing protein 7.

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

- Molecule 49 is a protein called Ribosomal RNA small subunit methyltransferase NEP1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
49	RH	219	1719	1090	299	319	11	0	0

- Molecule 50 is a protein called Ribosome biogenesis protein BMS1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
50	RJ	731	5935	3812	1051	1046	26	0	0

- Molecule 51 is a protein called RNA 3'-terminal phosphate cyclase-like protein.

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

- Molecule 52 is a protein called Nucleolar complex protein 14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
52	RN	53	450	273	88	88	1	0	0

- Molecule 53 is a protein called U3 small nucleolar RNA-associated protein 20.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
53	RP	2180	12716	7827	2389	2484	16	0	0

- Molecule 54 is a protein called U3 small nucleolar RNA-associated protein 14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
54	RQ	226	1655	1026	314	313	2	0	0

- Molecule 55 is a protein called Pno1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
55	RT	171	1357	864	249	240	4	0	0

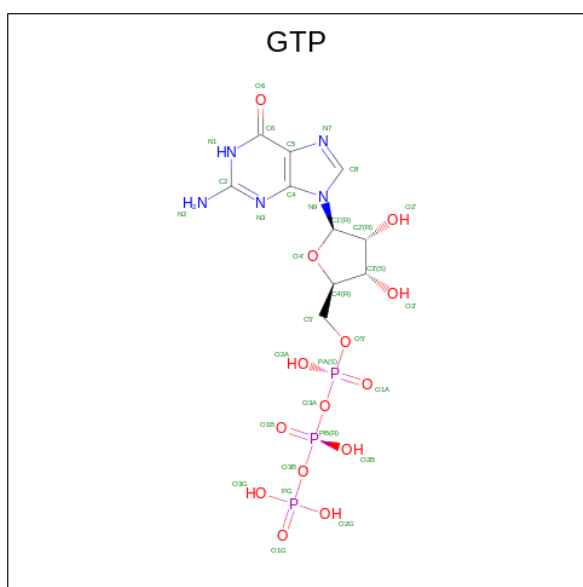
- Molecule 56 is a protein called Unassigned helices.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
56	X1	80	400	240	80	80	0	0

- Molecule 57 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
			Total	Zn	
57	Sc	1	1	1	0
57	5K	1	1	1	0

- Molecule 58 is GUANOSINE-5'-TRIPHOSPHATE (three-letter code: GTP) (formula: C₁₀H₁₆N₅O₁₄P₃).



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

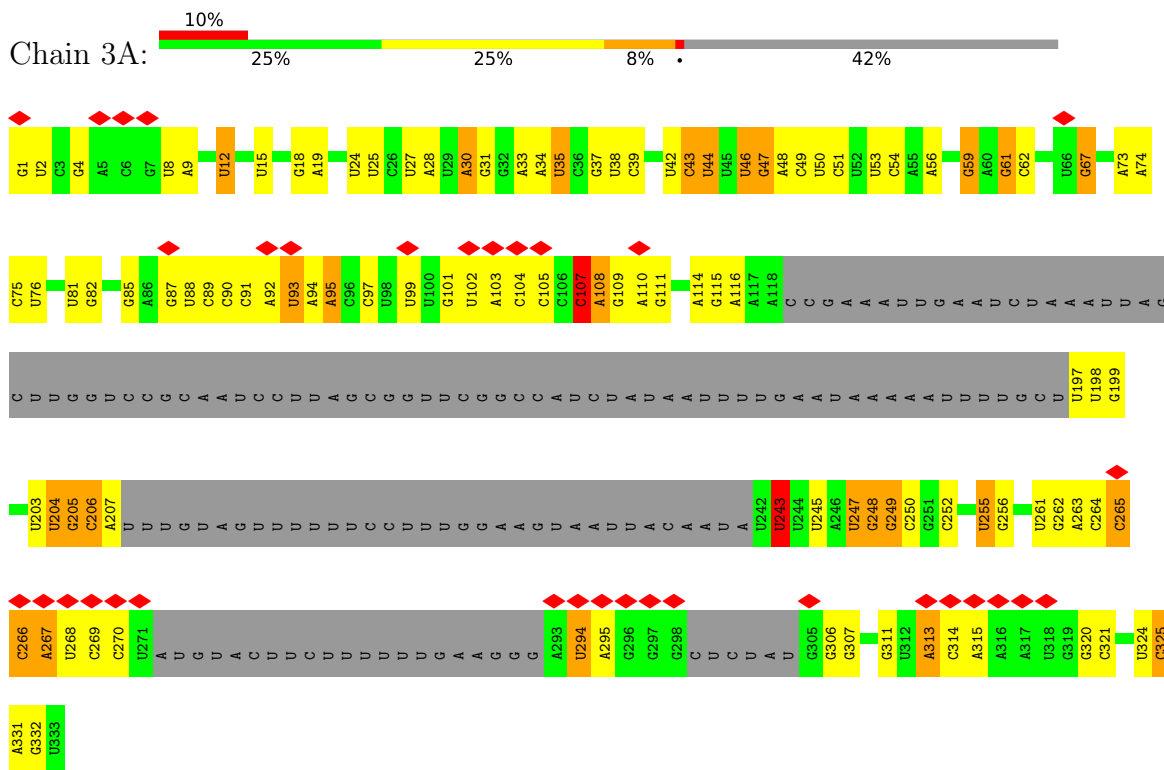
- Molecule 59 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

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

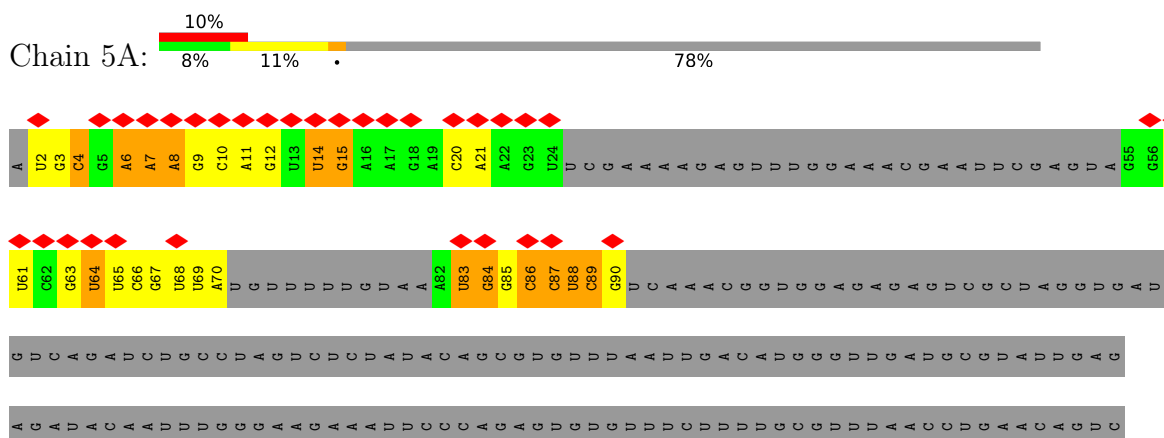
3 Residue-property plots

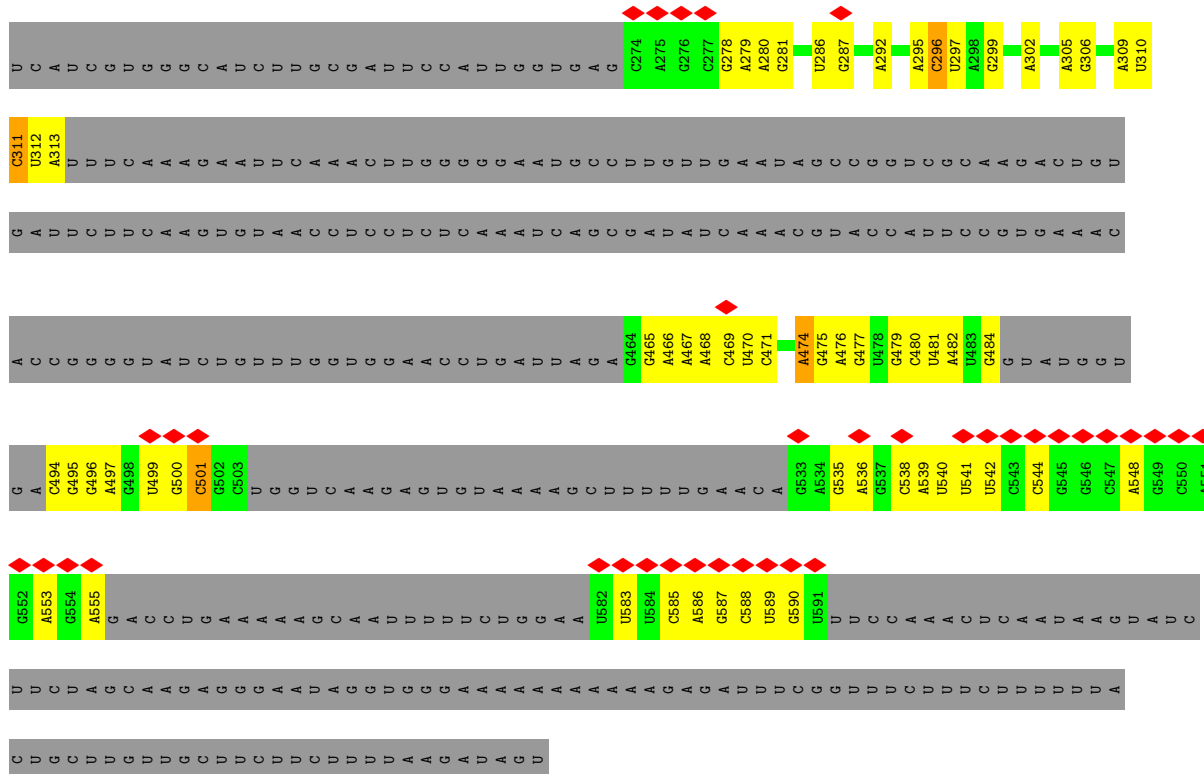
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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

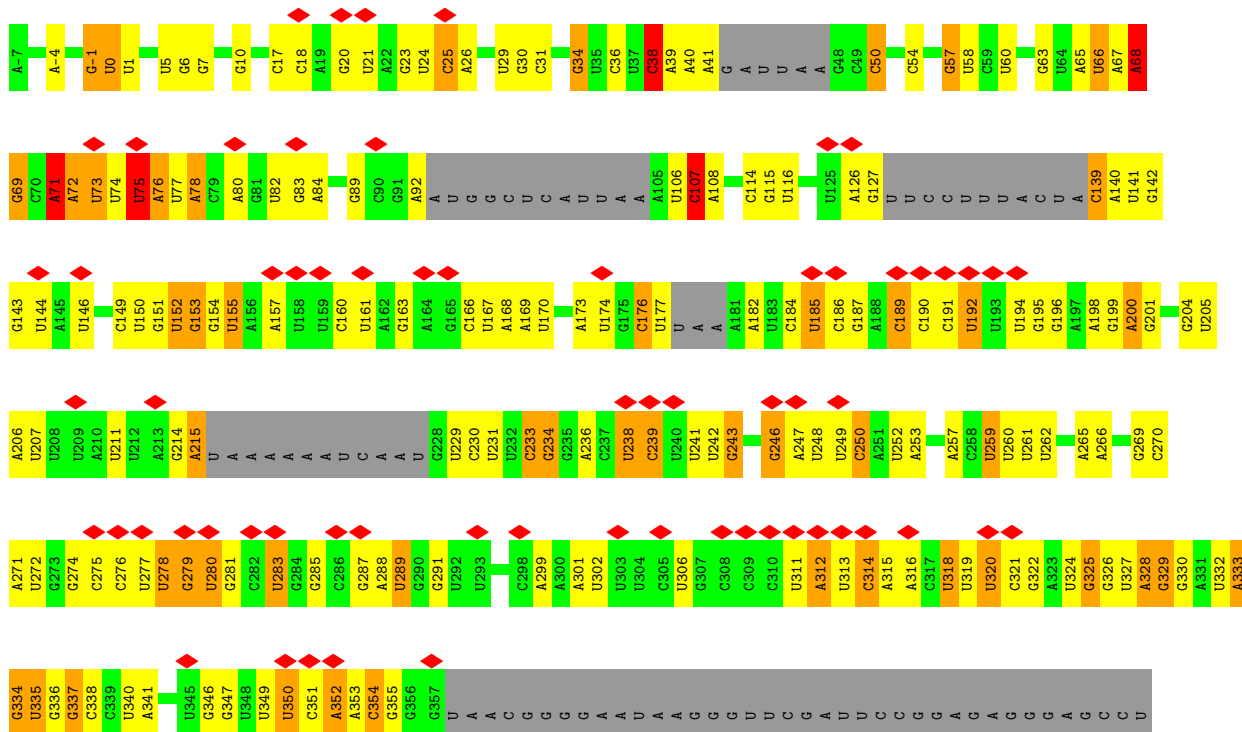
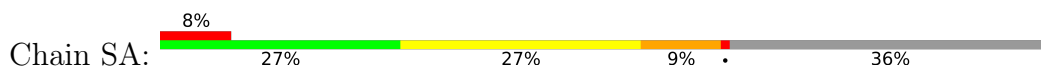


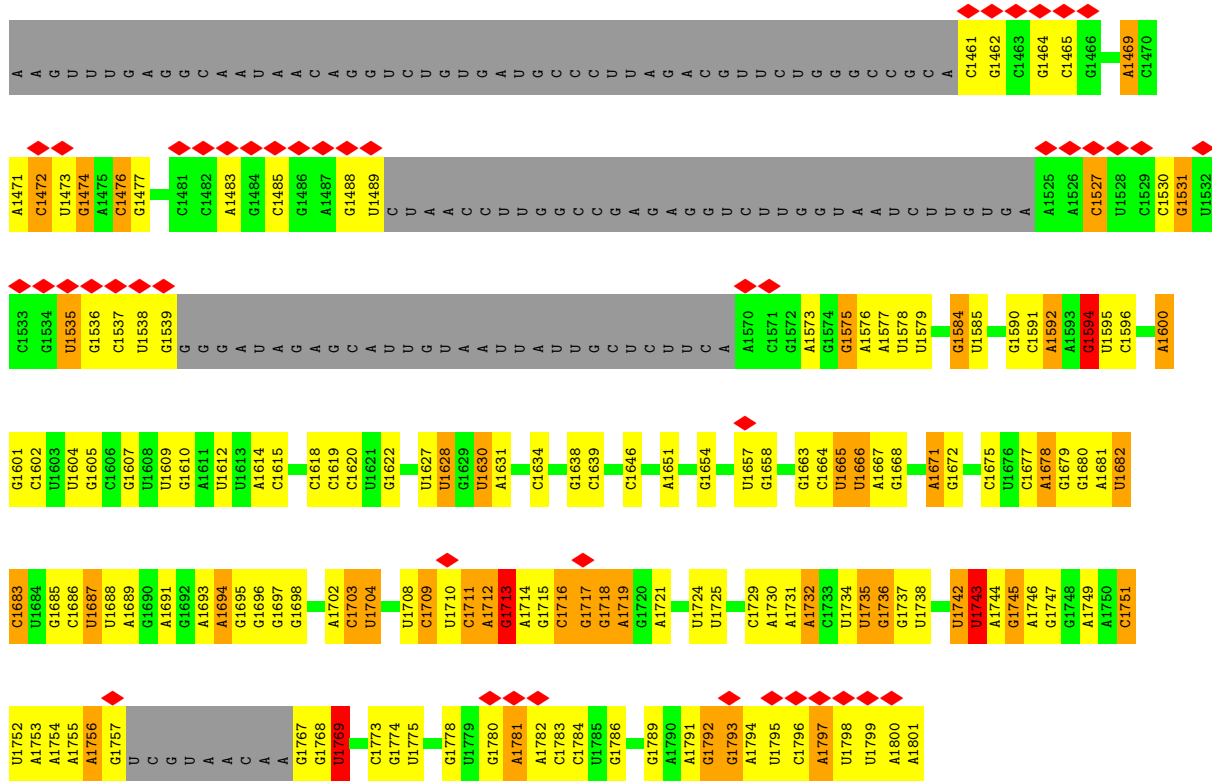
- Molecule 2: 5' ETS



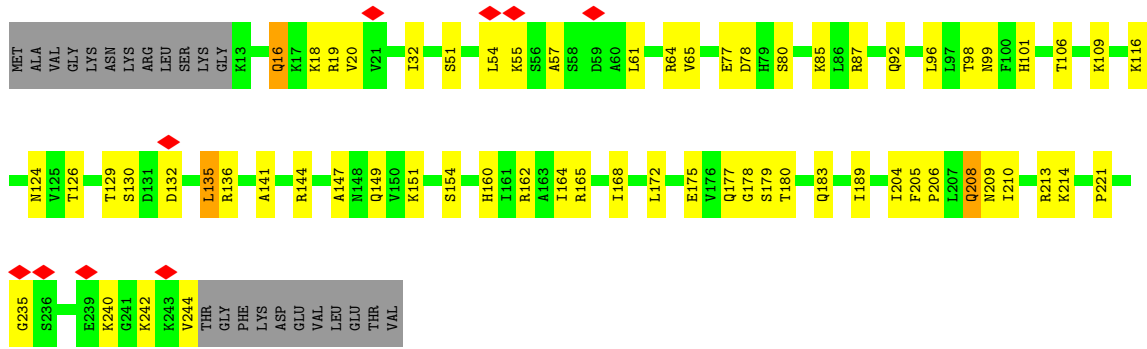


• Molecule 3: 18S pre-rRNA

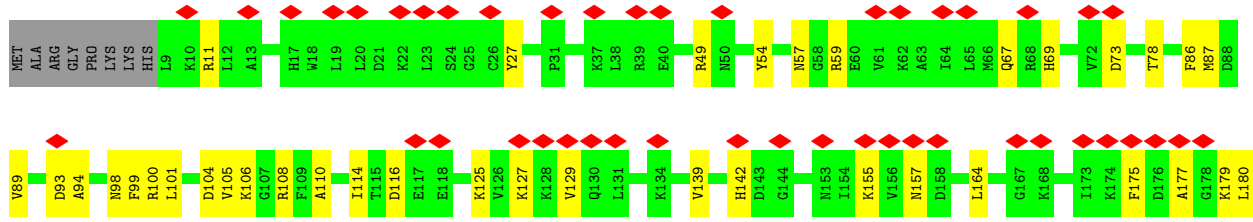
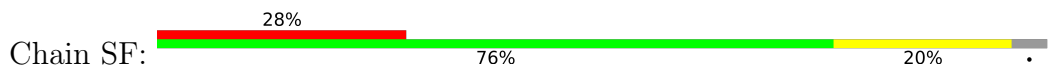


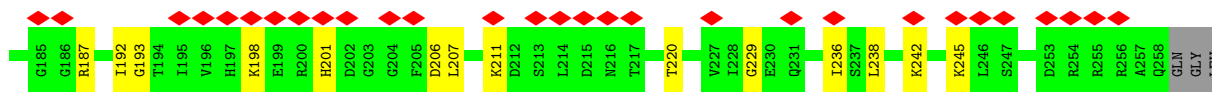


• Molecule 4: 40S ribosomal protein S1-A

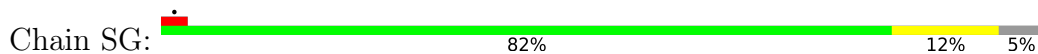


• Molecule 5: 40S ribosomal protein S4-A

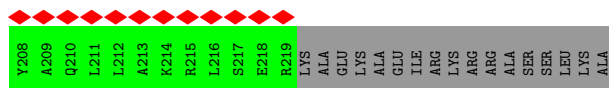
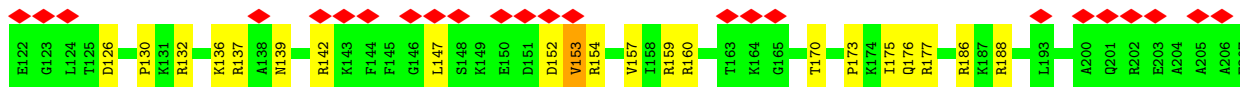
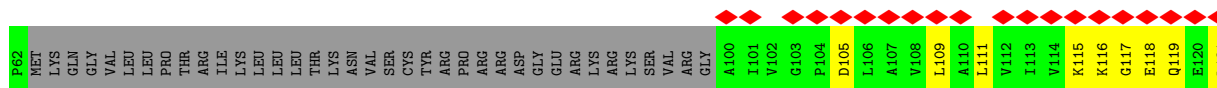
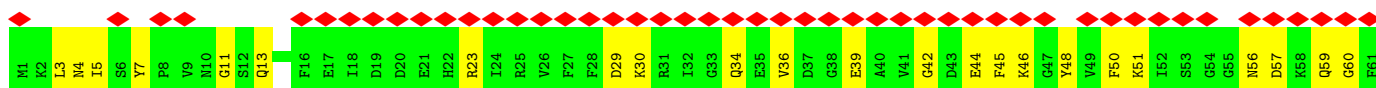




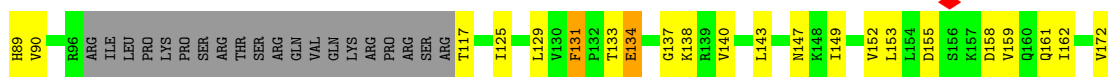
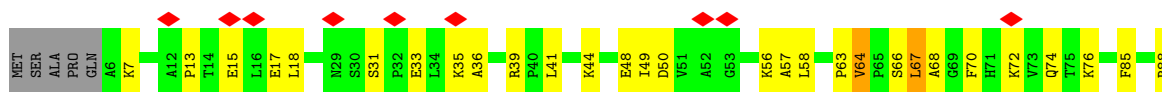
• Molecule 6: 40S ribosomal protein S5



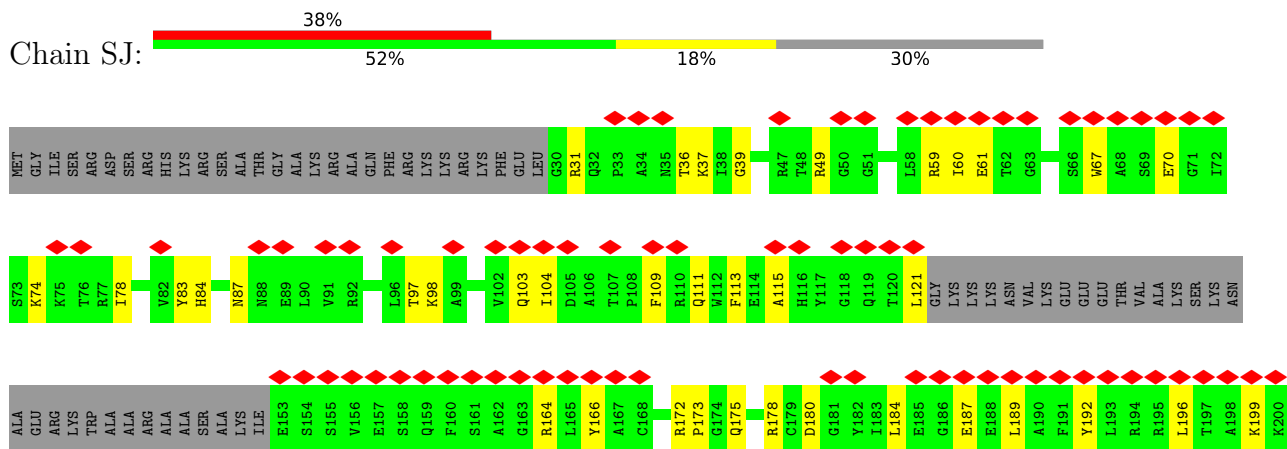
• Molecule 7: 40S ribosomal protein S6-A



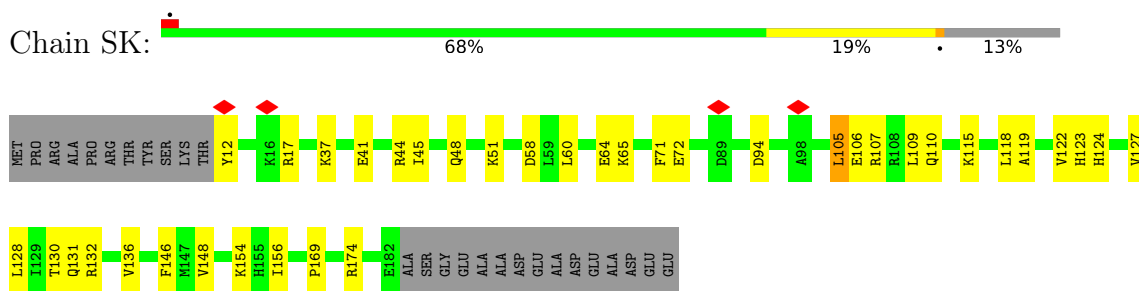
• Molecule 8: 40S ribosomal protein S7-A



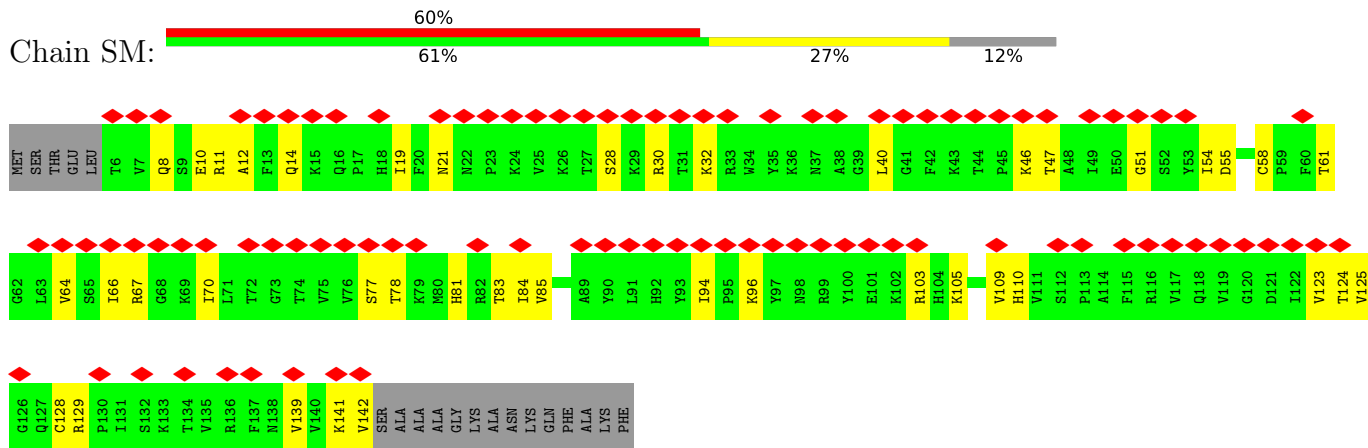
• Molecule 9: 40S ribosomal protein S8-A



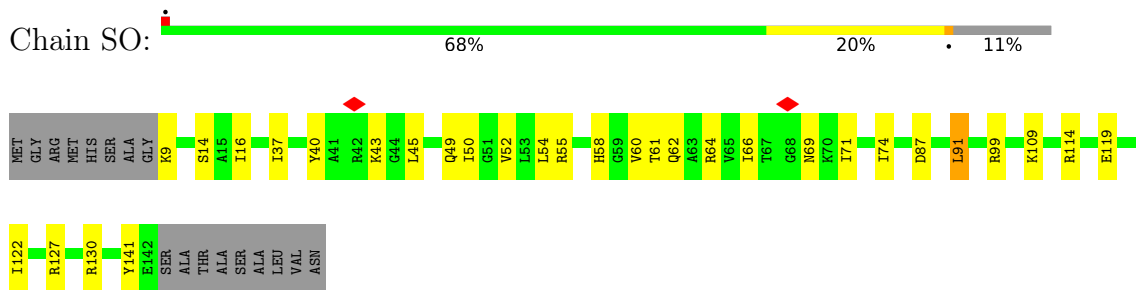
• Molecule 10: 40S ribosomal protein S9-A



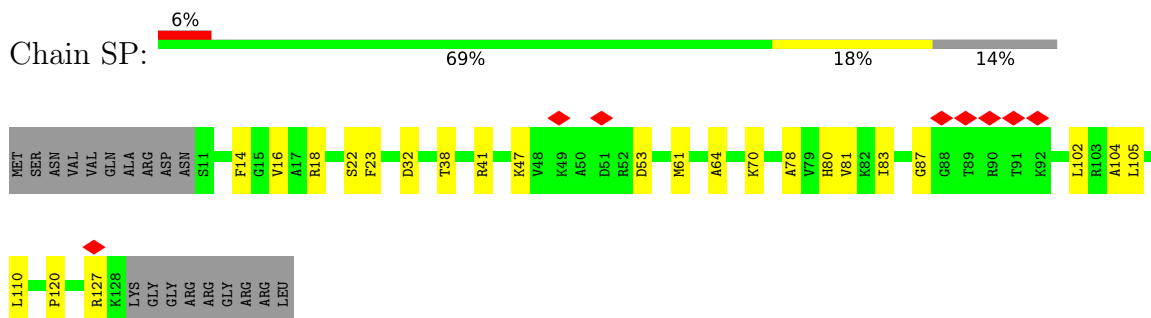
• Molecule 11: 40S ribosomal protein S11-A



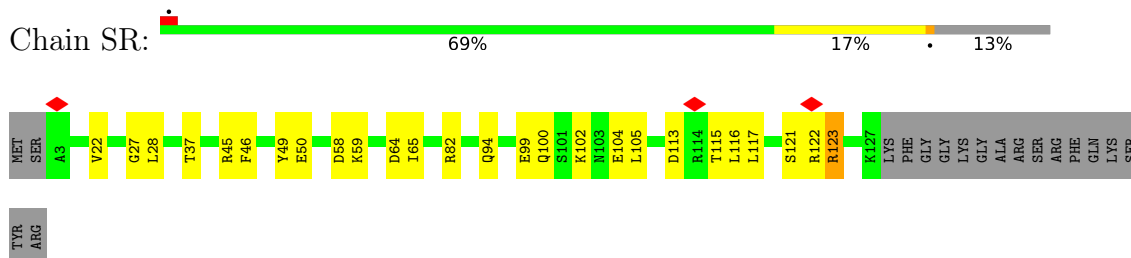
• Molecule 12: 40S ribosomal protein S13



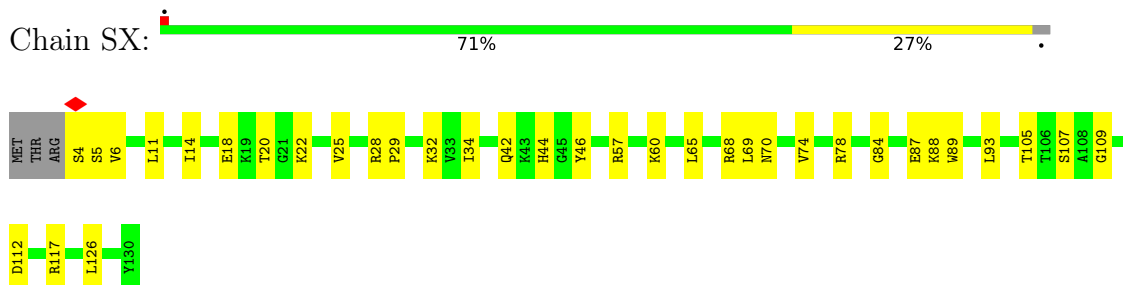
• Molecule 13: 40S ribosomal protein S14-A



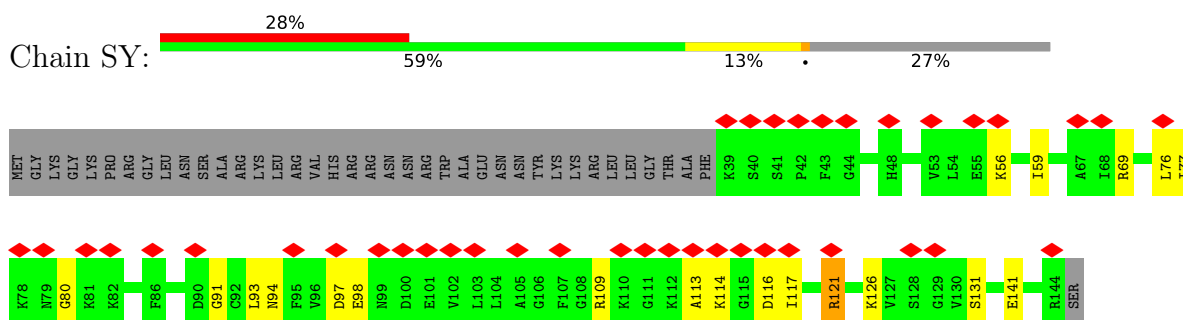
- Molecule 14: 40S ribosomal protein S16-A



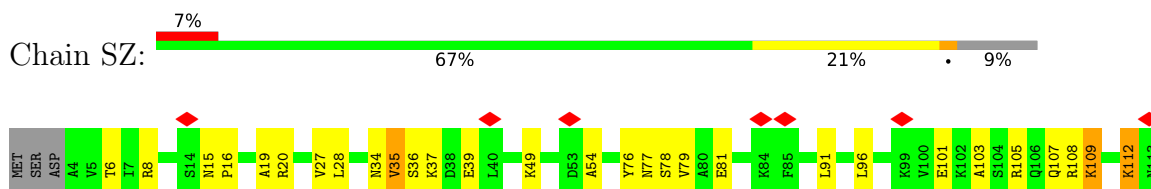
- Molecule 15: 40S ribosomal protein S22-B



- Molecule 16: 40S ribosomal protein S23-A

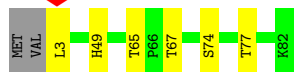


- Molecule 17: 40S ribosomal protein S24-A

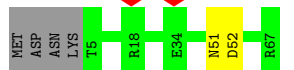




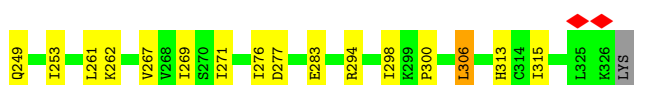
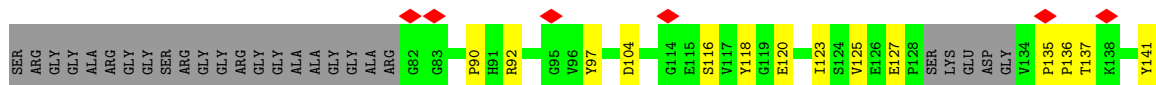
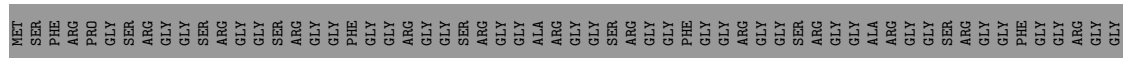
• Molecule 18: 40S ribosomal protein S27-A



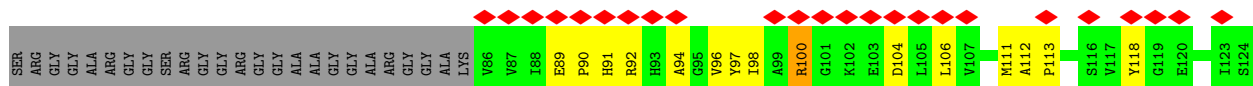
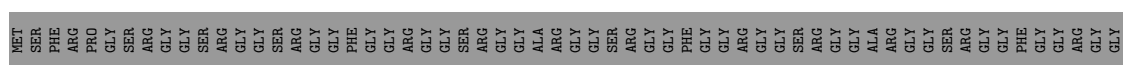
• Molecule 19: 40S ribosomal protein S28-A

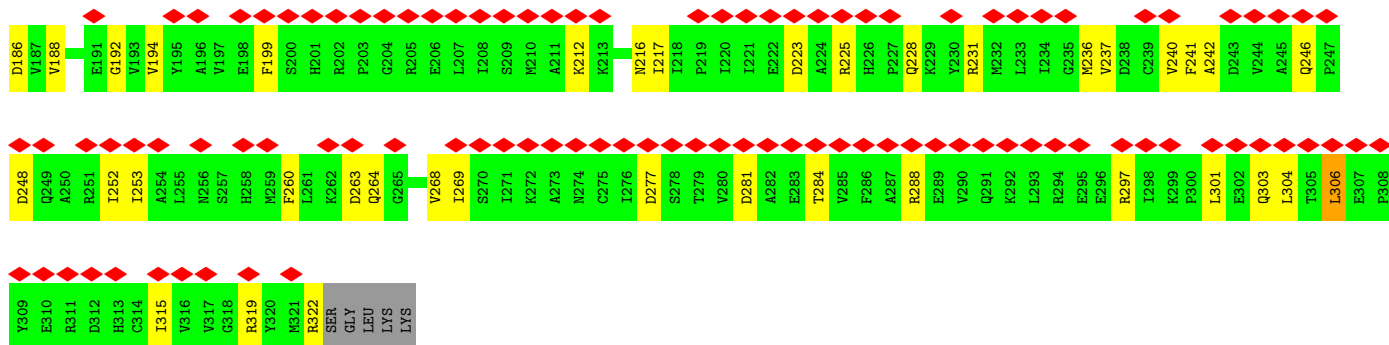


• Molecule 20: rRNA 2'-O-methyltransferase fibrillar

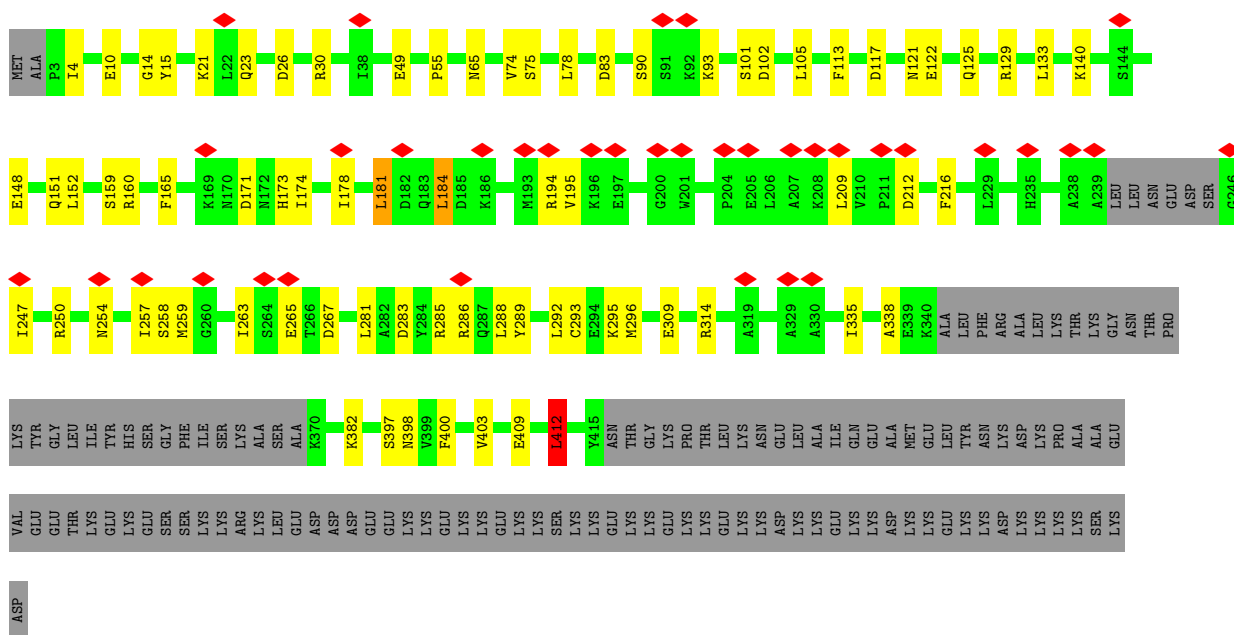


• Molecule 20: rRNA 2'-O-methyltransferase fibrillar

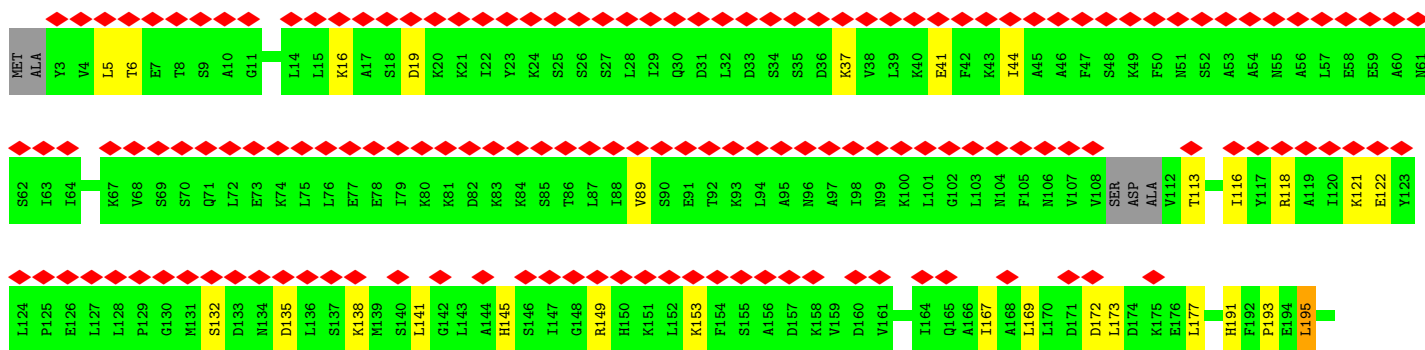


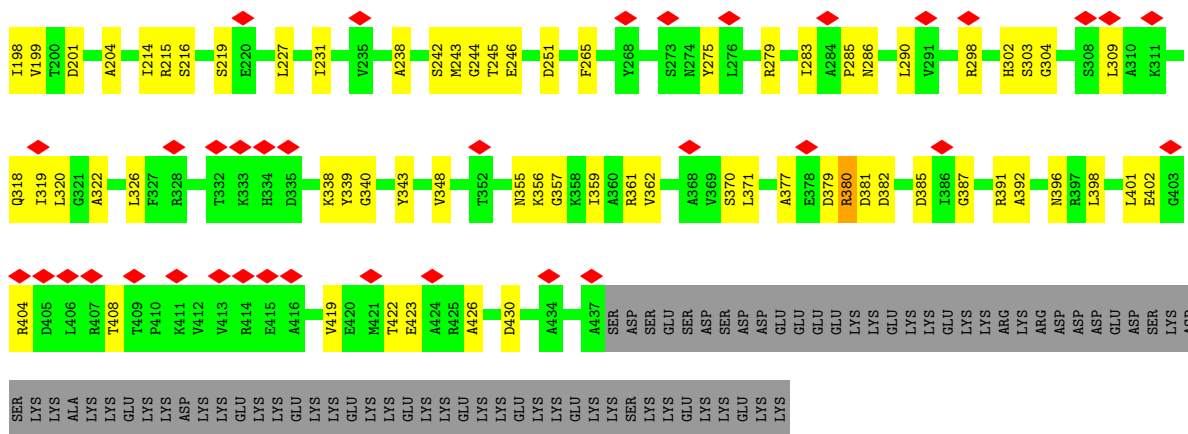


• Molecule 21: Nucleolar protein 56

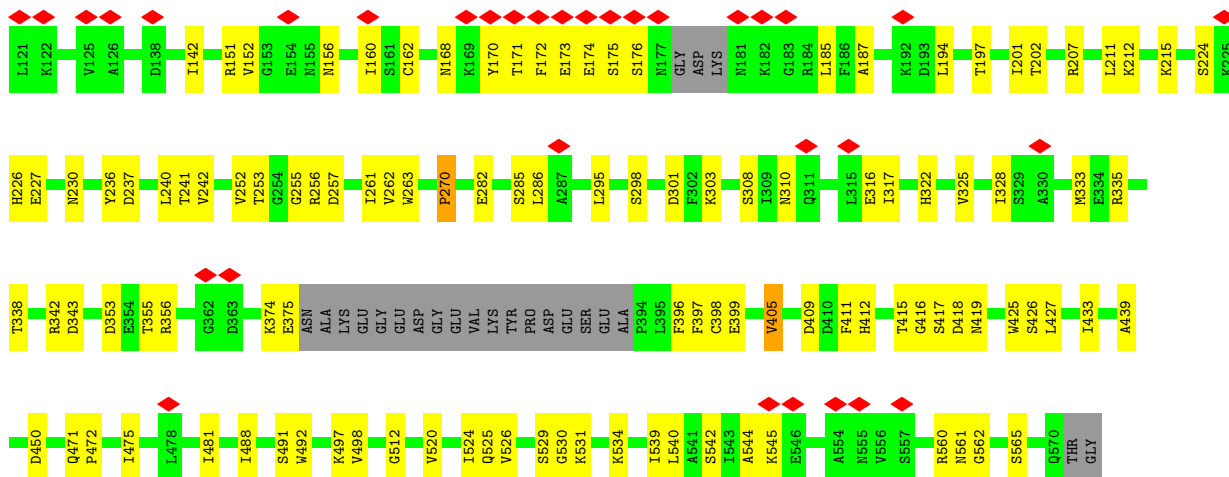
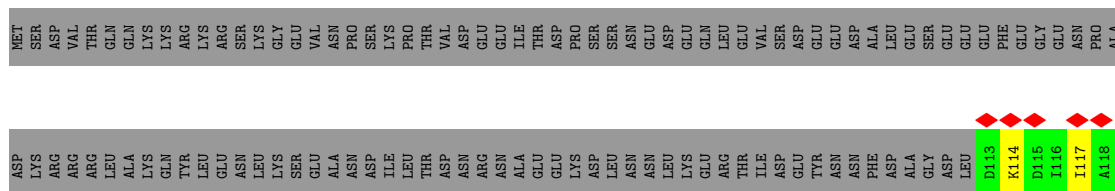


• Molecule 22: Nucleolar protein 58

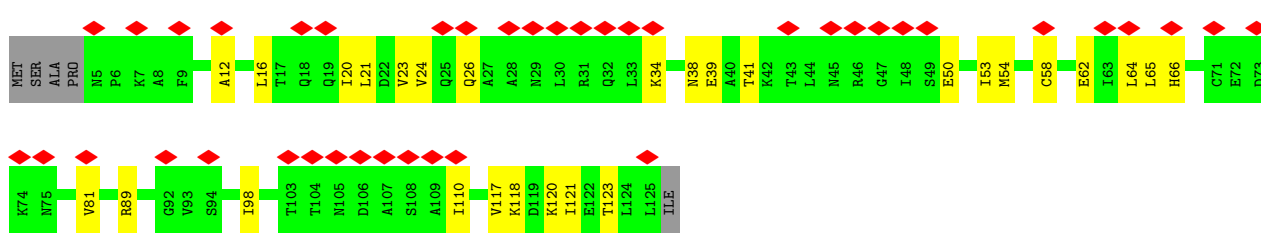
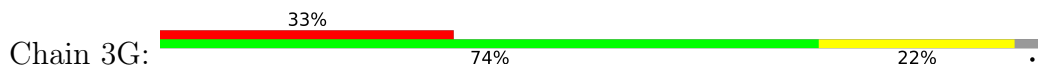




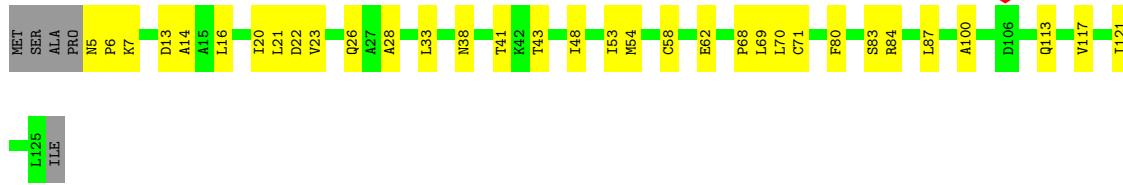
• Molecule 23: Ribosomal RNA-processing protein 9



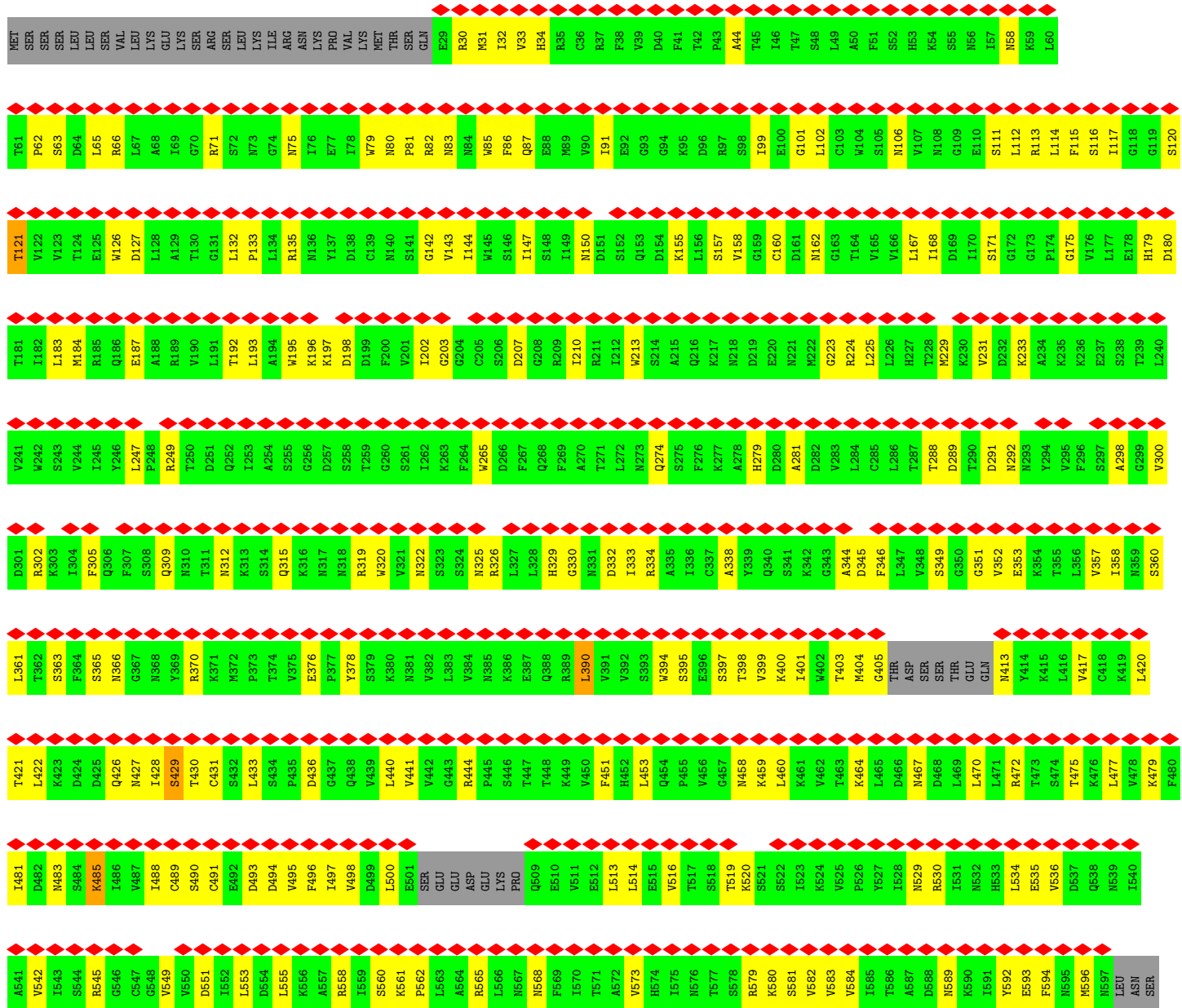
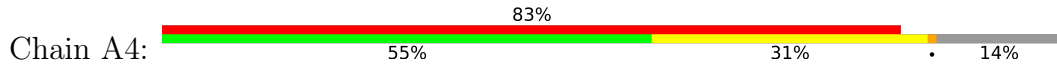
• Molecule 24: 13 kDa ribonucleoprotein-associated protein

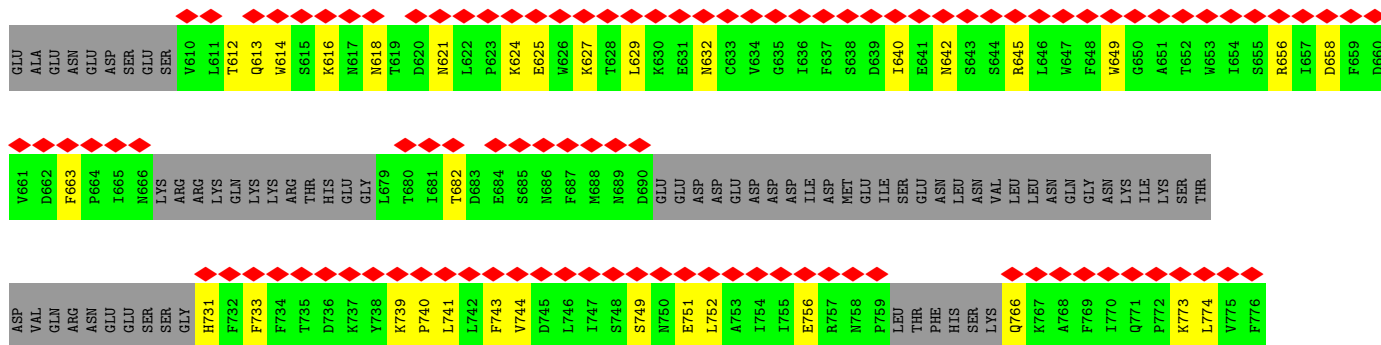


• Molecule 24: 13 kDa ribonucleoprotein-associated protein

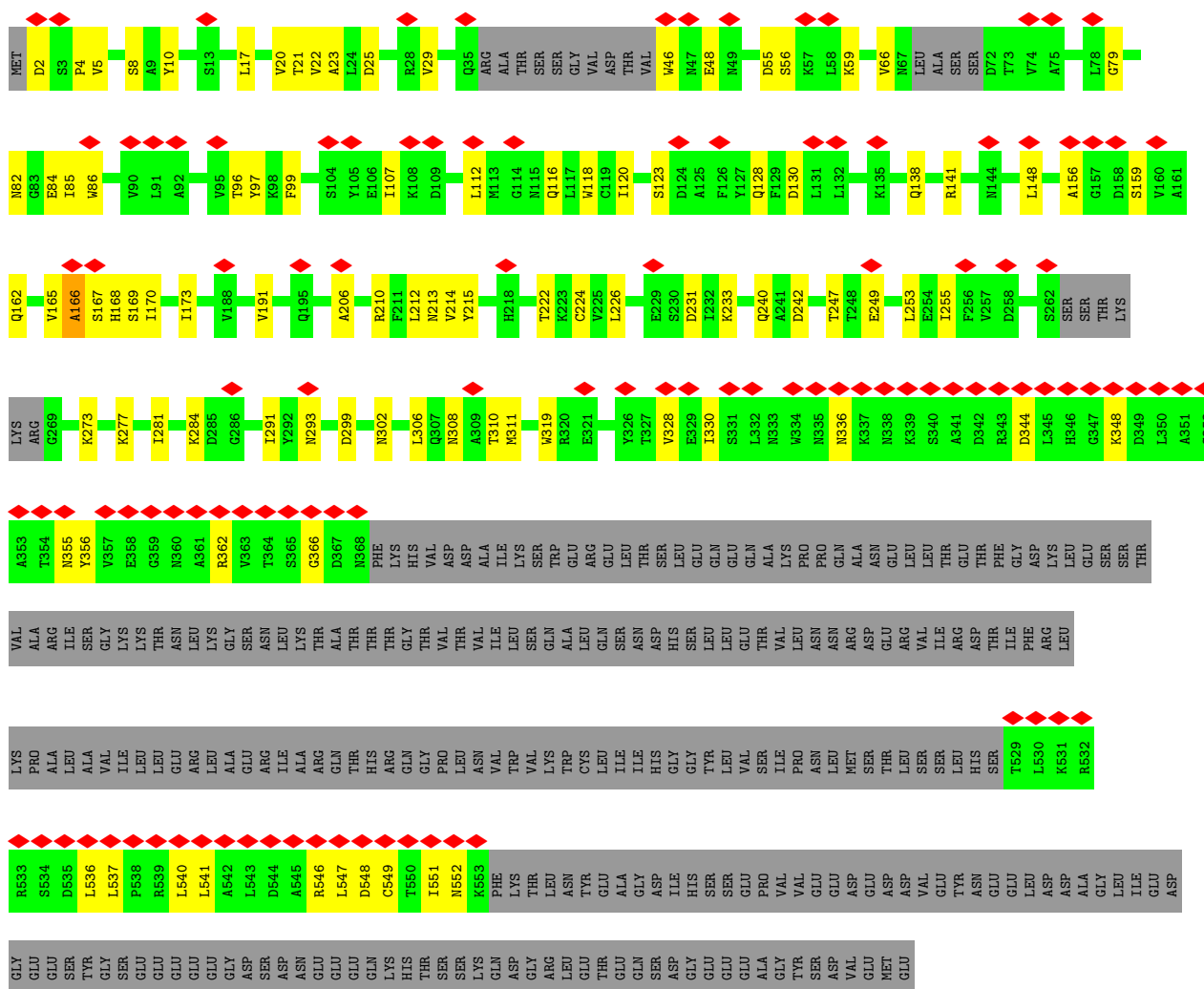


- Molecule 25: U3 small nucleolar RNA-associated protein 4





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



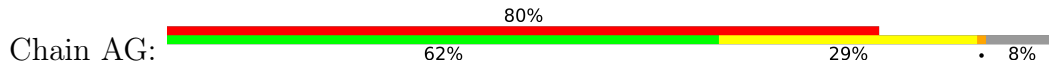
• Molecule 27: U3 small nucleolar RNA-associated protein 9



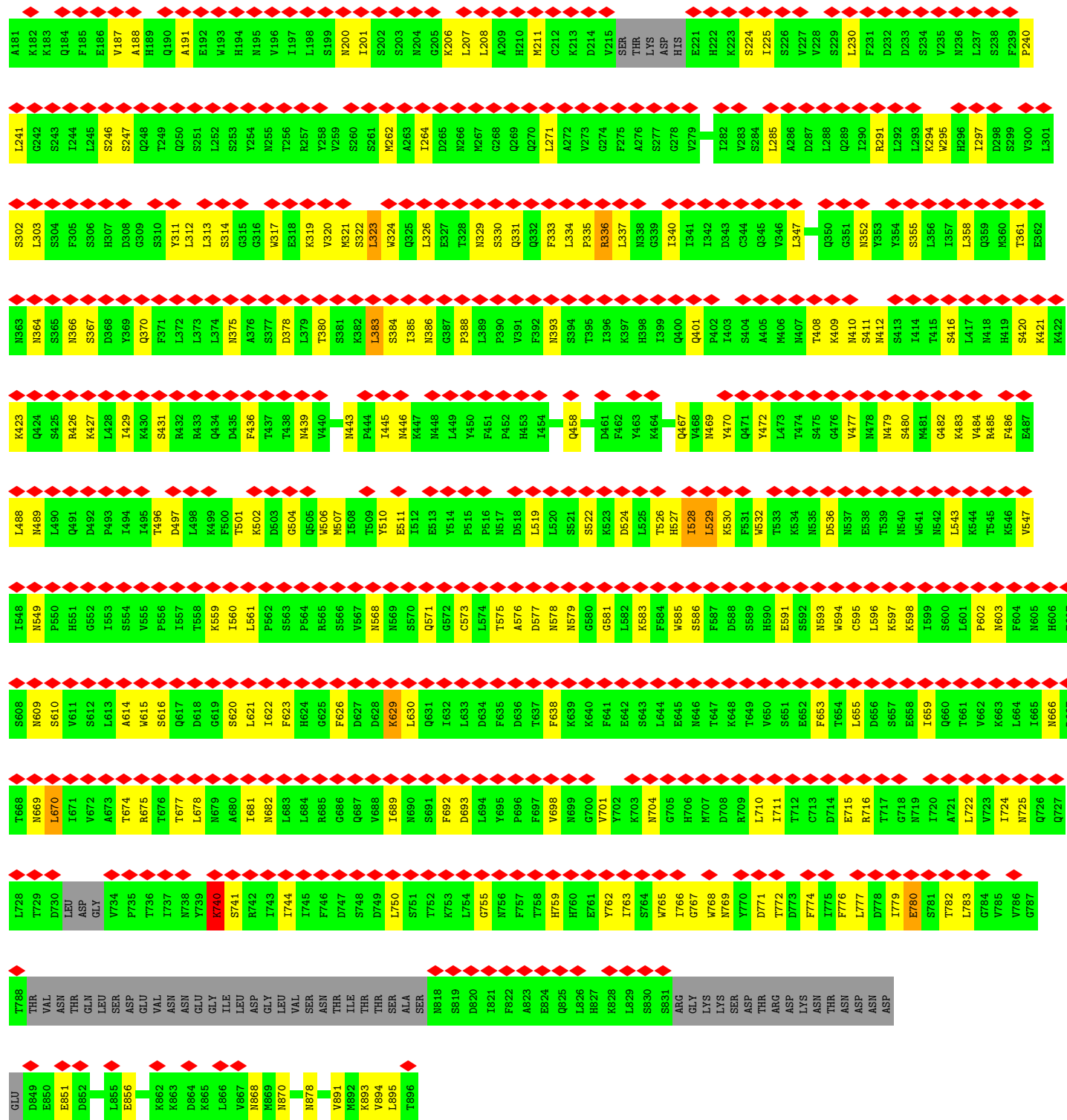


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T61	R62	V63	Q64	I65	F66	S67	S68	R69	T70	R71	Q72	V73	I74	K75	T76	F77	S78	R79	F80	K81	D82	T83	V84	Y85	S86	A87	S88	F89	R90	S91	D92	G93	K94	L95	L96	C97	A98	G99	V100	A101	T102	G103	L104	L104	V105	S106	V107	I108	T109	D110	S110	Y111	M112	P113	R114	T115	S116	L117	L118	S119	L120
M121	A122	S123	T124	H125	P126	T127	H128	V129	T130	K131	F132	H133	T134	Q135	D136	M137	K138	L139	L140	A141	D82	A143	L144	D145	D146	R147	V148	T149	R150	L151	V152	G153	I154	S155	M156	A157	Y158	E159	P160	Q161	L162	E163	L164	T165	G166	A167	T168	D169	Y170	V171	R172	T173	L174	S175	F176	I177	P178	A179	A180		
P181	H182	L183	V184	A185	T186	G187	S188	Y189	D190	G191	L192	I193	R194	L195	Y196	D197	T198	R199	S200	S201	G202	S203	T204	D205	P206	T207	S208	L209	M210	H211	D212	Q213	I154	S155	V215	E216	M217	V218	I219	A220	V221	S222	P223	T224	Q225	G226	V227	S228	C229	G230	G231	N232	M233	F234	K235	V236	W237	D238	L239	T240	
S241	W242	K243	K244	L245	Y246	E247	R248	G249	W250	F251	N252	K253	A254	V255	T256	C257	L258	D259	Y260	V261	E262	M263	F264	D265	S266	P267	M268	Q269	S270	A271	L272	L273	A274	S275	S276	L277	D278	G279	H280	V281	K282	V283	F284	D285	P286	L287	D288	N289	F290	Q291	K293	F294	G295	W296	K297	F298	S299	G300			
F301	V302	L303	S304	C305	A306	V307	S308	F309	S310	T311	A312	G313	G314	N315	R316	H317	L318	V319	A320	G321	L322	S323	S324	G325	L326	L327	A328	I329	R330	T331	K332	K333	K334	GLU	LYS	ARG	SER	SER	ASP	LYS	GLU	ASN	ALA	PRO	ALA	SER	PHE	ASN	ASN	ALA	K353	S354	N355	N356	F357	Q358	R359	K360			
M361	R362	G363	S364	E365	V366	Q367	G368	D369	Q370	E371	H372	L373	I374	H375	M376	D377	K378	V379	R380	S381	Q382	R383	R384	R386	A387	F388	E389	R390	N391	I392	N393	Q394	F395	K396	H397	S398	E399	A400	L401	D402	N403	A404	F405	V406	P407	G408	M409	A410	K411	G412	L413	T414	L415	E416	V417	L418	Q419	E420			
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● Molecule 30: NET1-associated nuclear protein 1

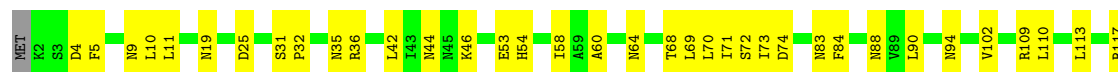


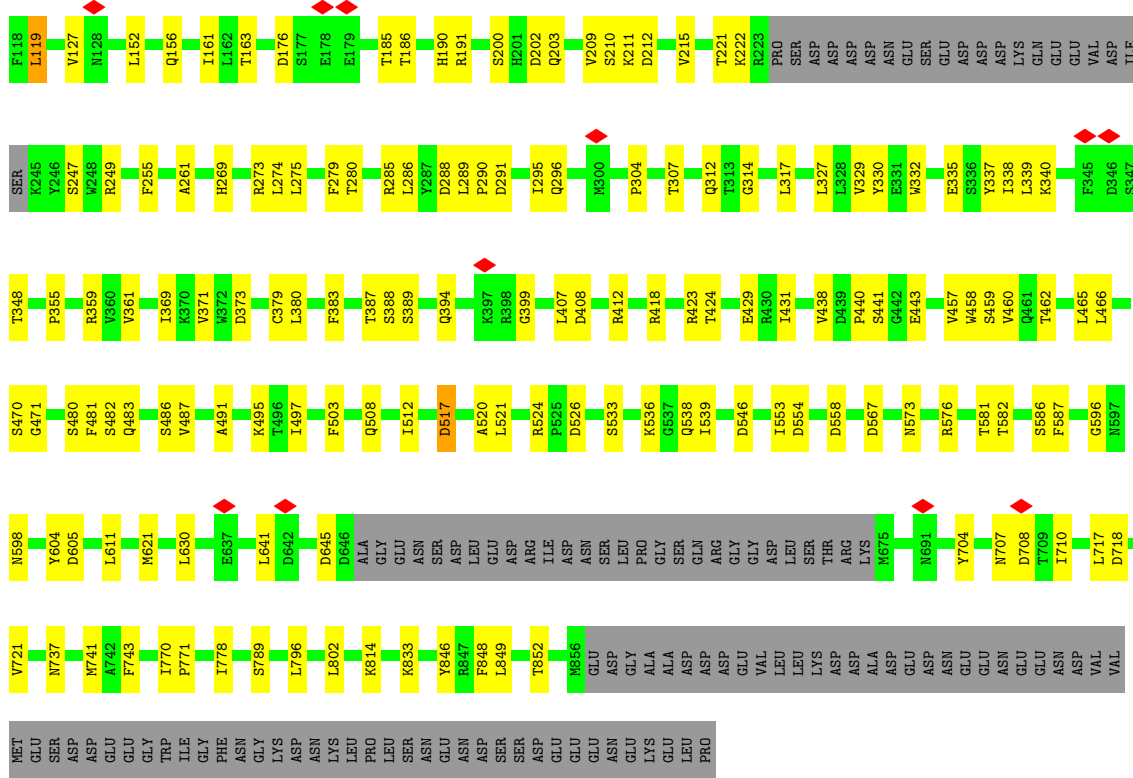
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Q61	O62	V63	K64	T65	L66	K67	F68	A69	N70	M71	S72	L73	L74	S75	G76	I77	F78	L79	Q80	E81	E82	E83	M84	N85	E86	S87	I88	V89	K90	I91	L92	L93	Q94	D95	I96	T97	V98	P99	Q100	R42	N43	Y44	I45	A46	I46	P47	F48	M49	N50	Q51	I52	K53	V54	Y55	S56	V57	T59	R60	
Y121	K122	G123	K124	L125	V126	E127	S128	P129	K130	H131	F132	K133	I134	S135	L136	A137	D138	E139	K140	L141	A142	M143	V144	F145	H146	S147	E148	G149	Y151	R152	I153	G94	T155	T156	F157	K158	ASP	PRO	SER	GLN	LYS	ALA	A104	H165	N166	S167	L168	Q169	Y171	R172	L173	Y174	A175	L176	T177	F178	D179	M180	



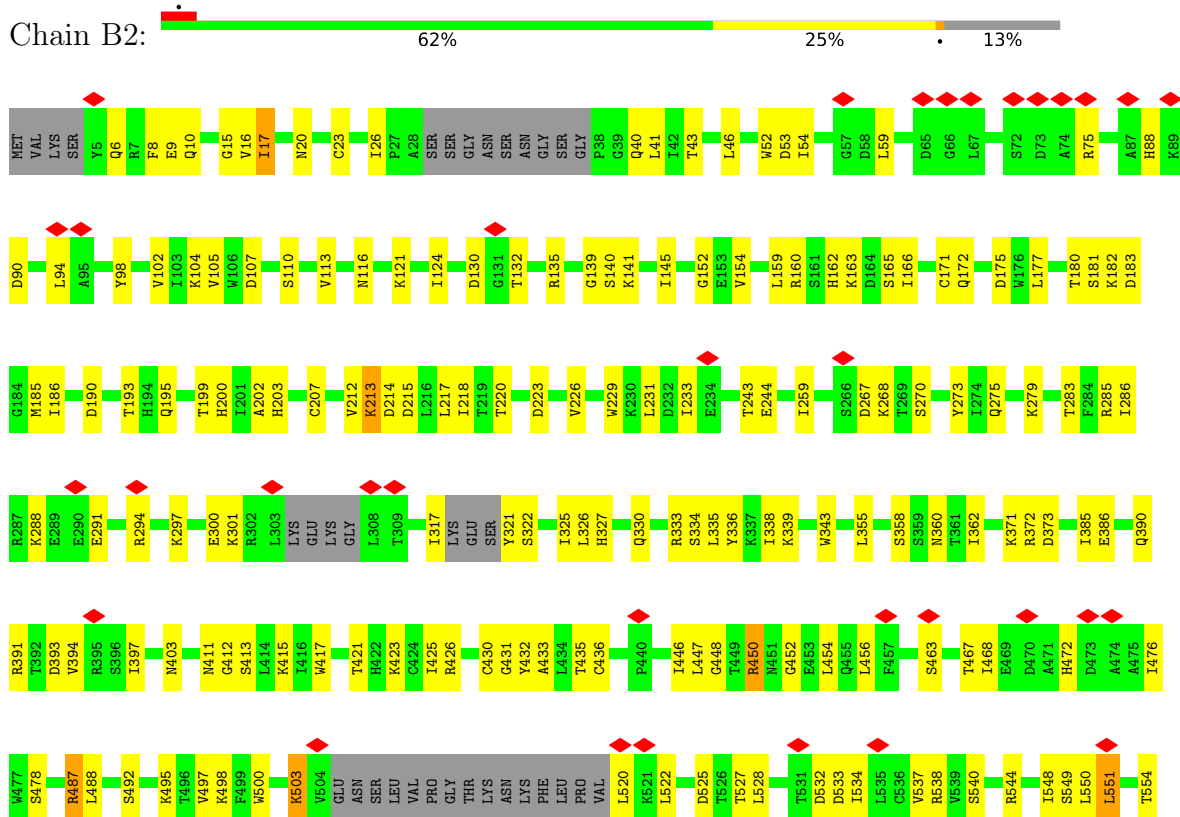
• Molecule 31: Periodic tryptophan protein 2

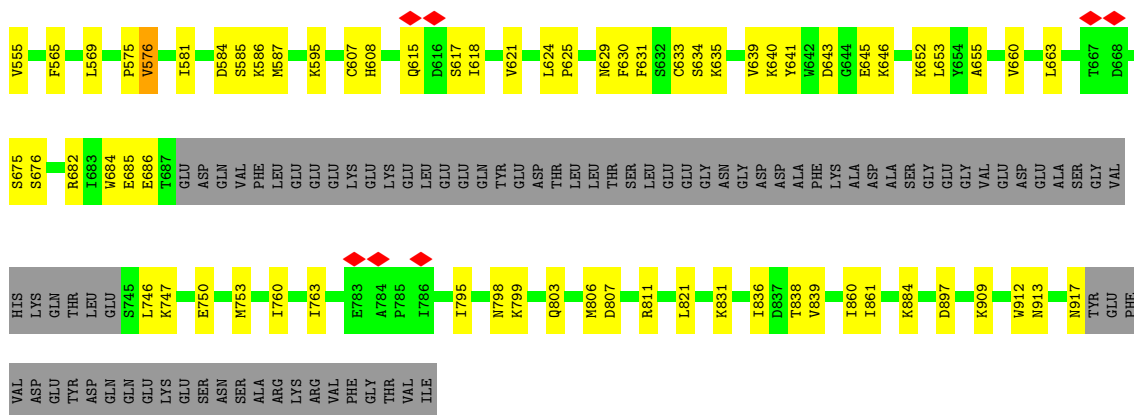
Chain B1:



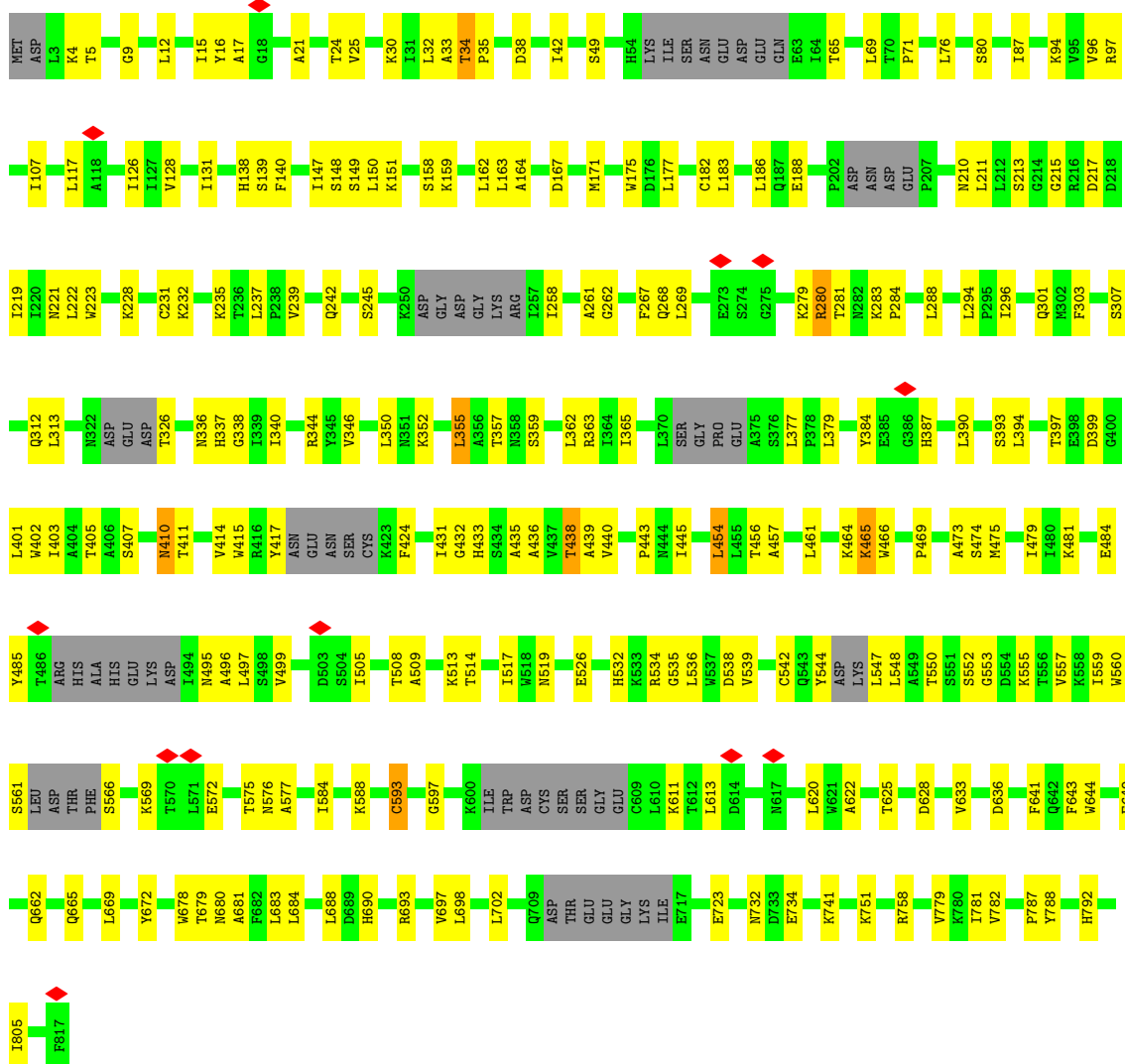


• Molecule 32: U3 small nucleolar RNA-associated protein 12

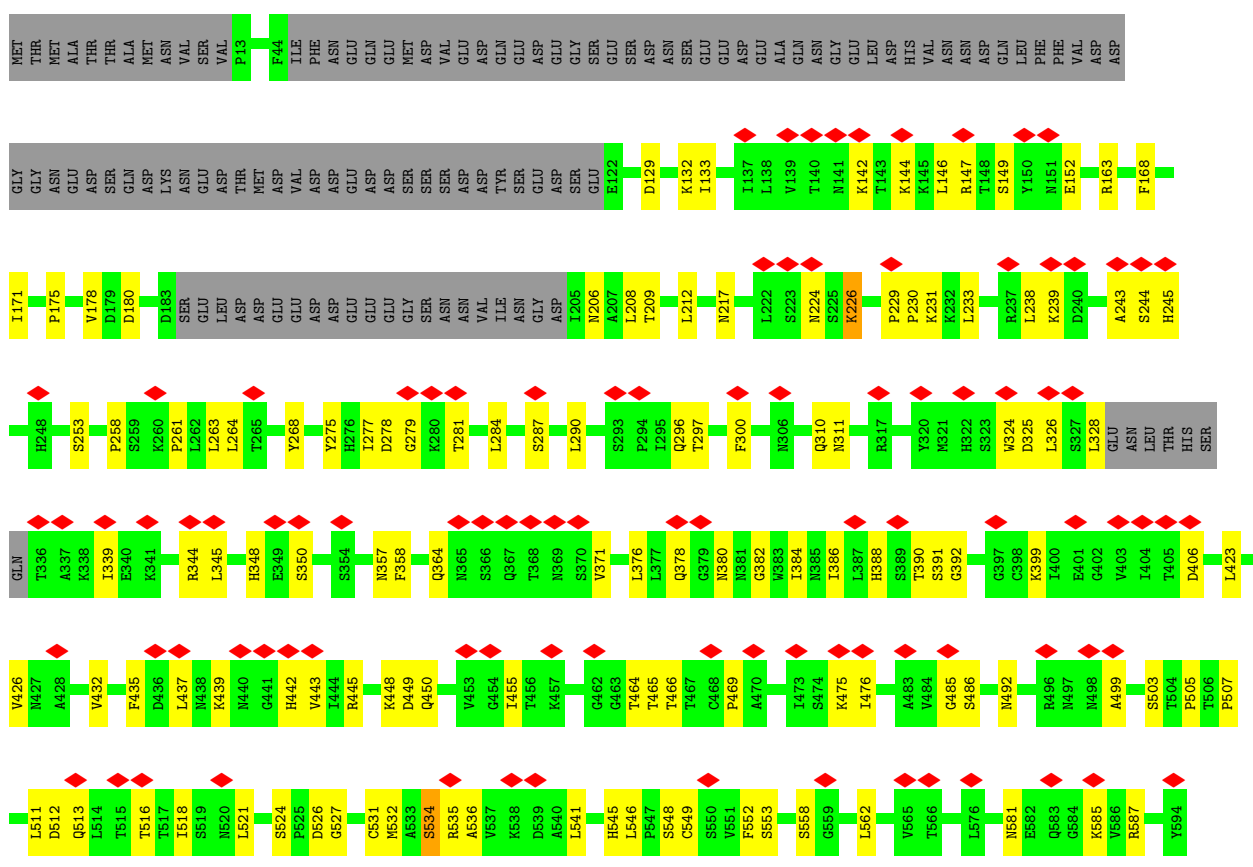




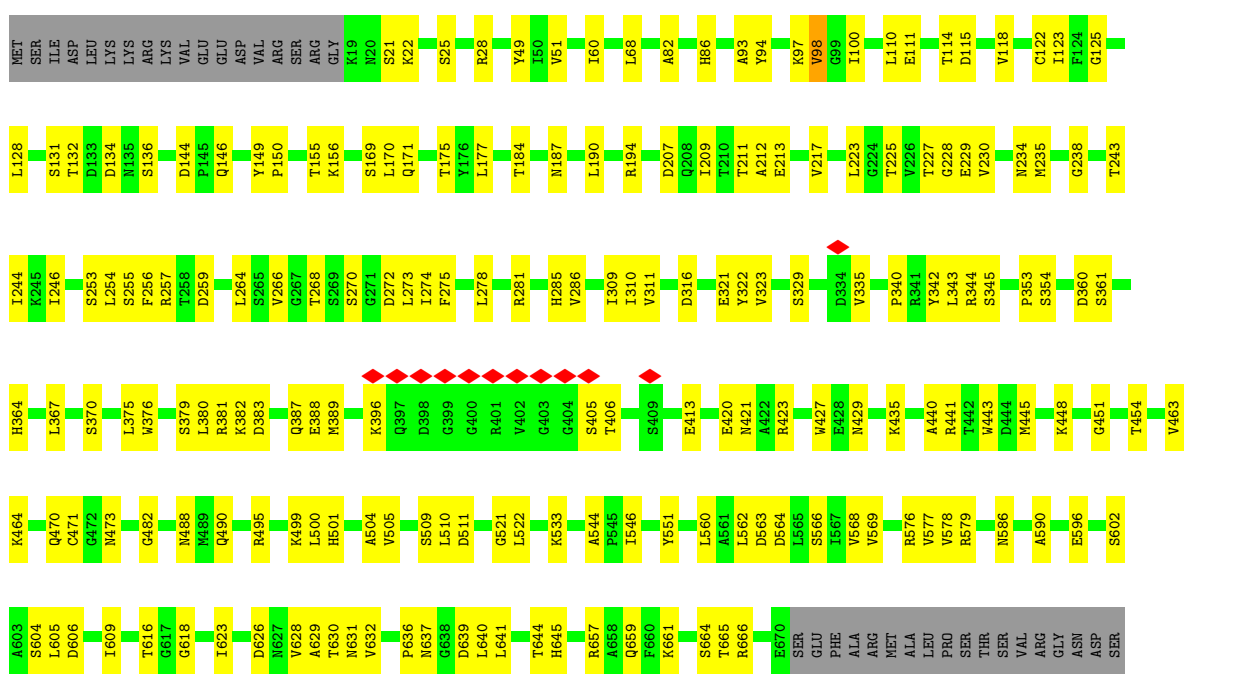
- Molecule 33: U3 small nucleolar RNA-associated protein 13

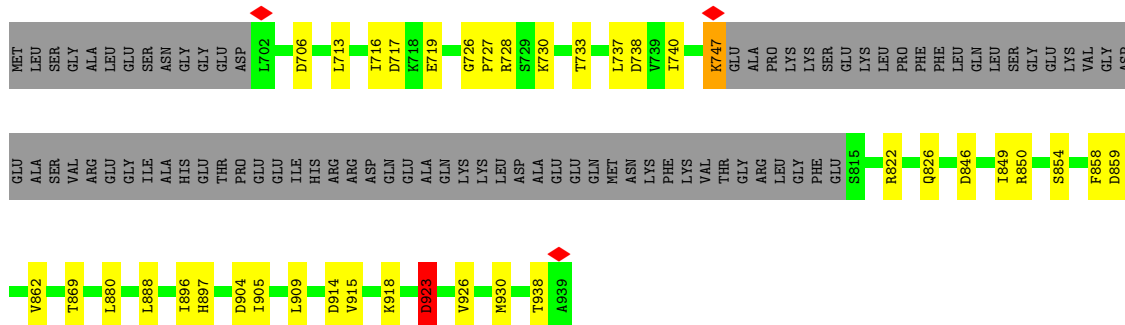


- Molecule 34: U3 small nucleolar RNA-associated protein 18

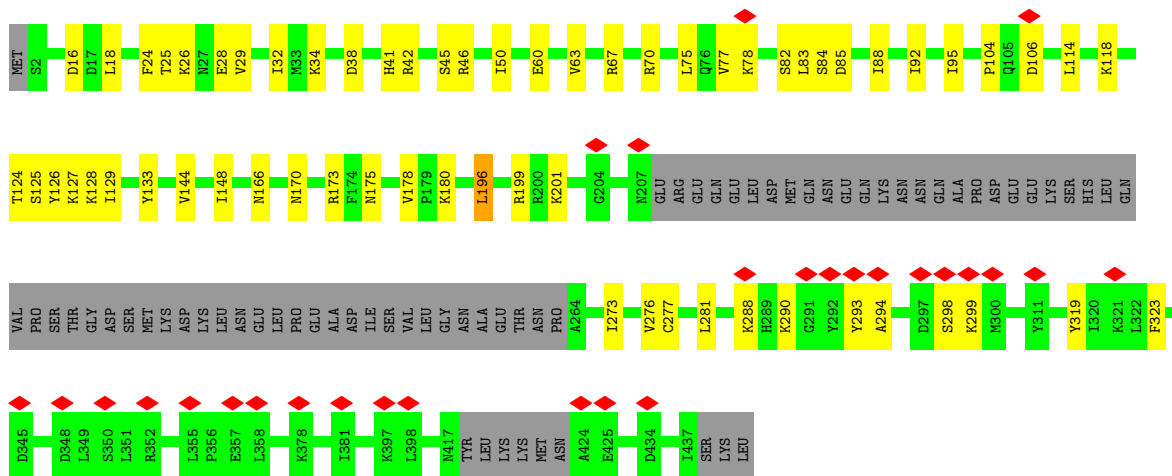
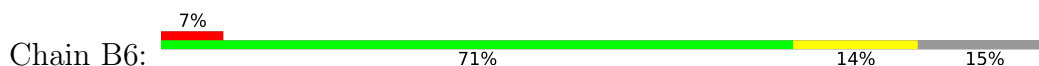


• Molecule 35: U3 small nucleolar RNA-associated protein 21

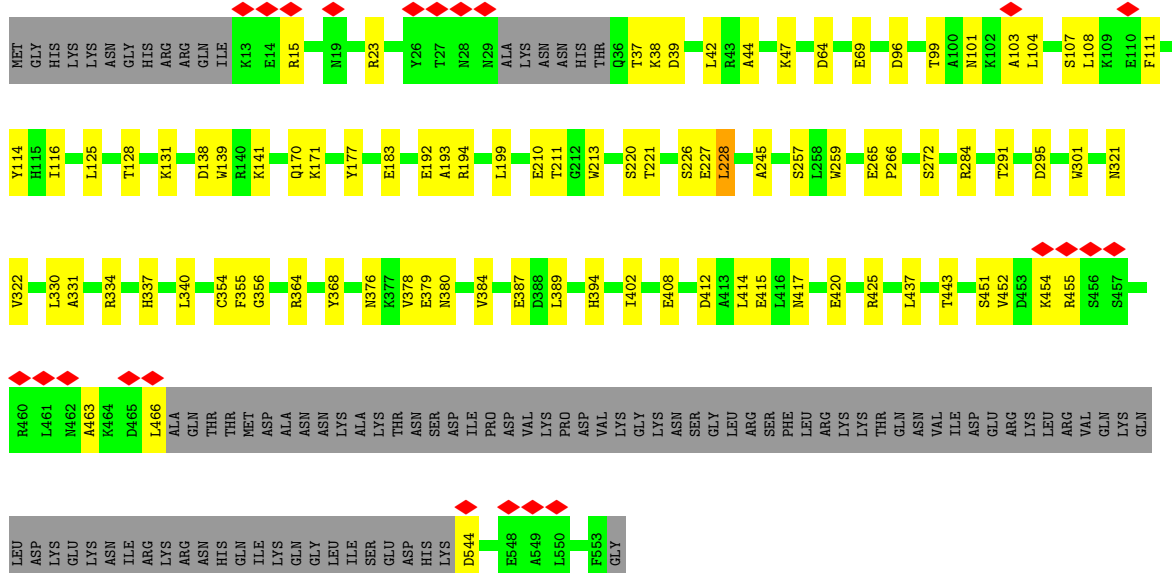


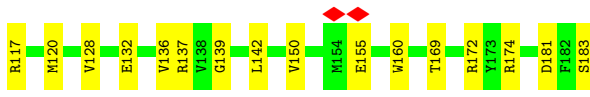
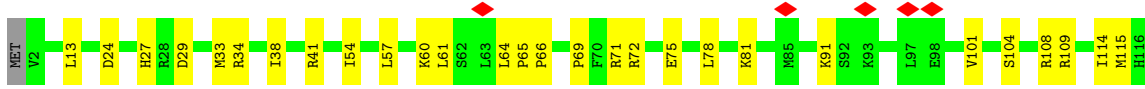


• Molecule 36: U3 small nucleolar RNA-associated protein 6

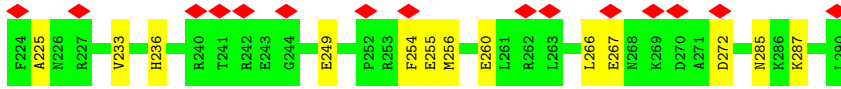
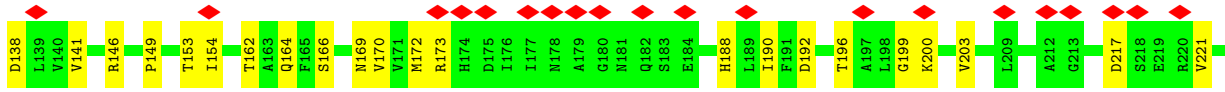
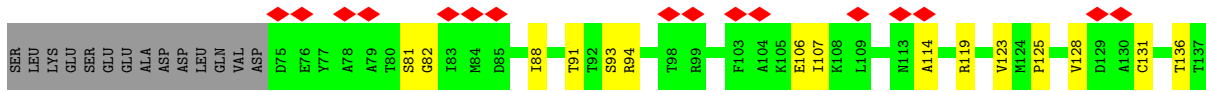


• Molecule 37: U3 small nucleolar RNA-associated protein 7

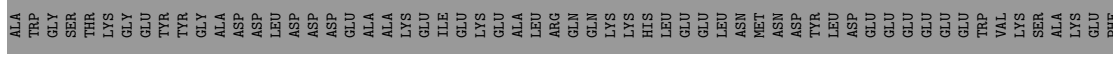
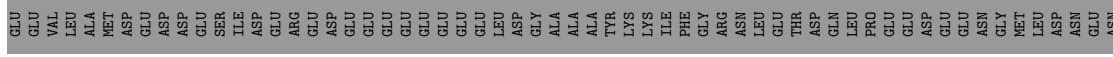


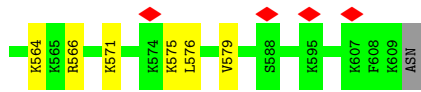
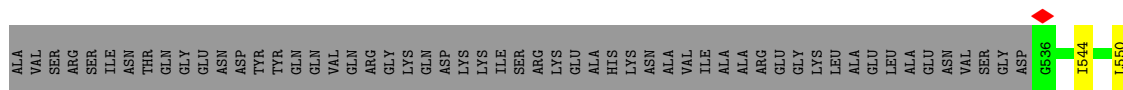


• Molecule 41: U3 small nucleolar ribonucleoprotein protein IMP4

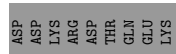
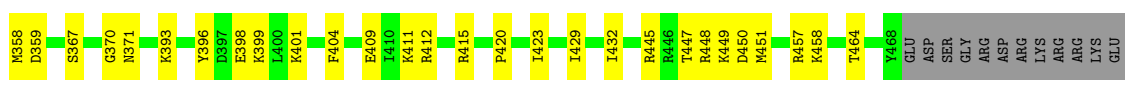


• Molecule 42: Something about silencing protein 10

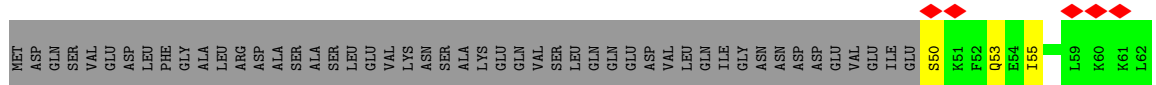




• Molecule 43: Protein SOF1

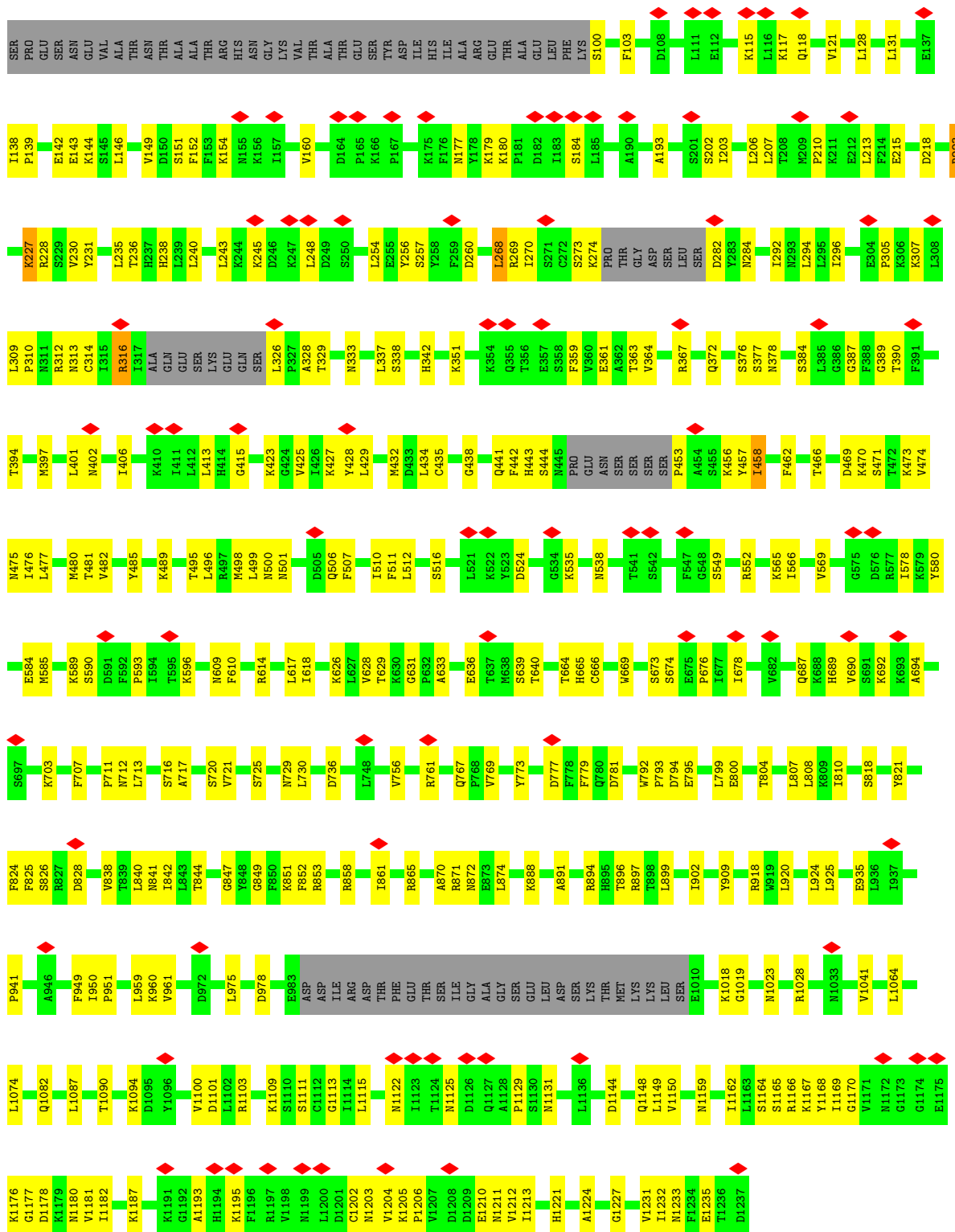


• Molecule 44: rRNA-processing protein FCF2



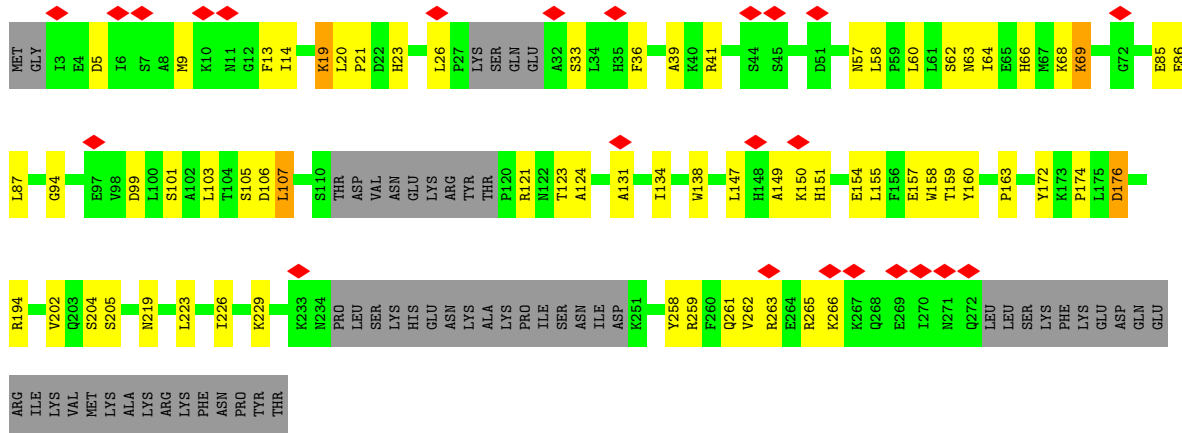
• Molecule 45: rRNA-processing protein FCF1



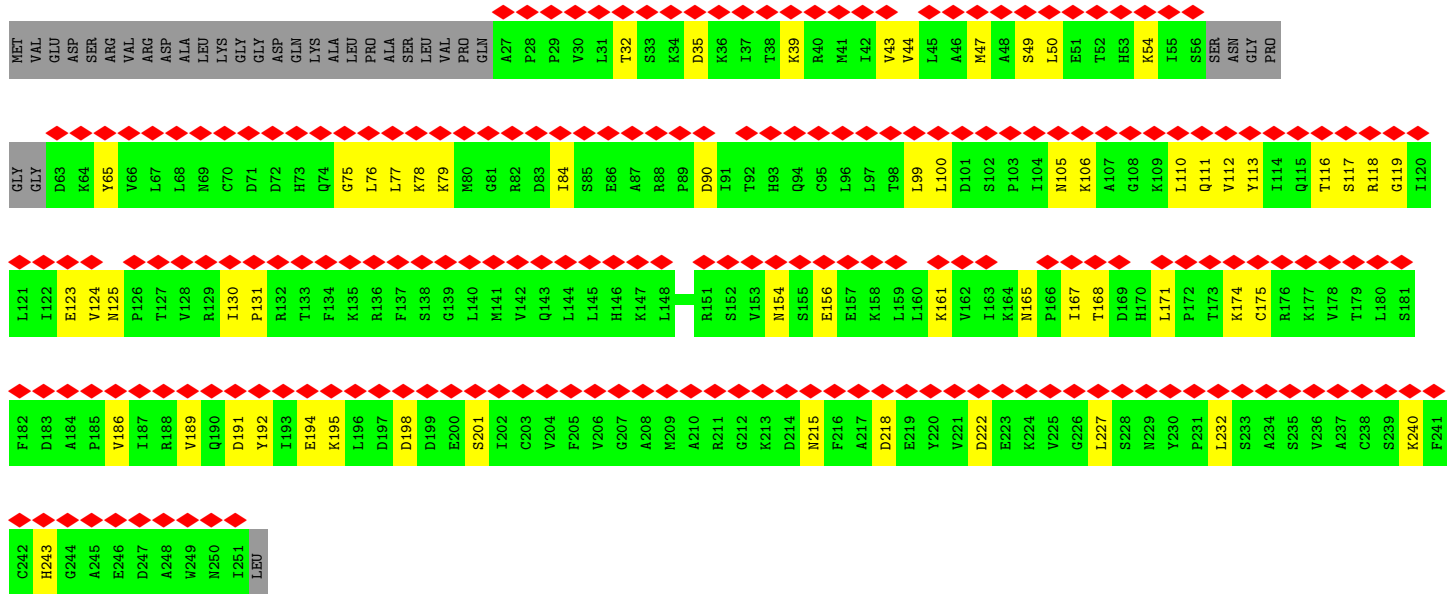
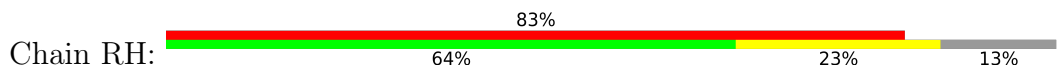


• Molecule 48: Ribosomal RNA-processing protein 7

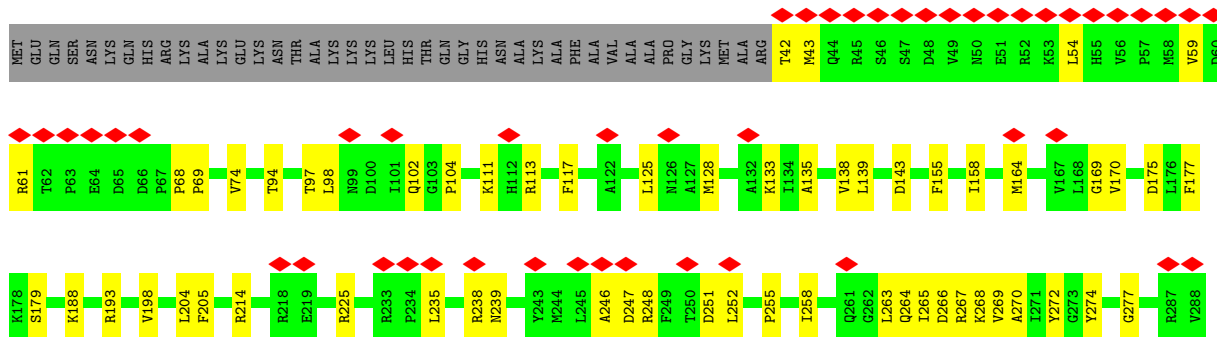


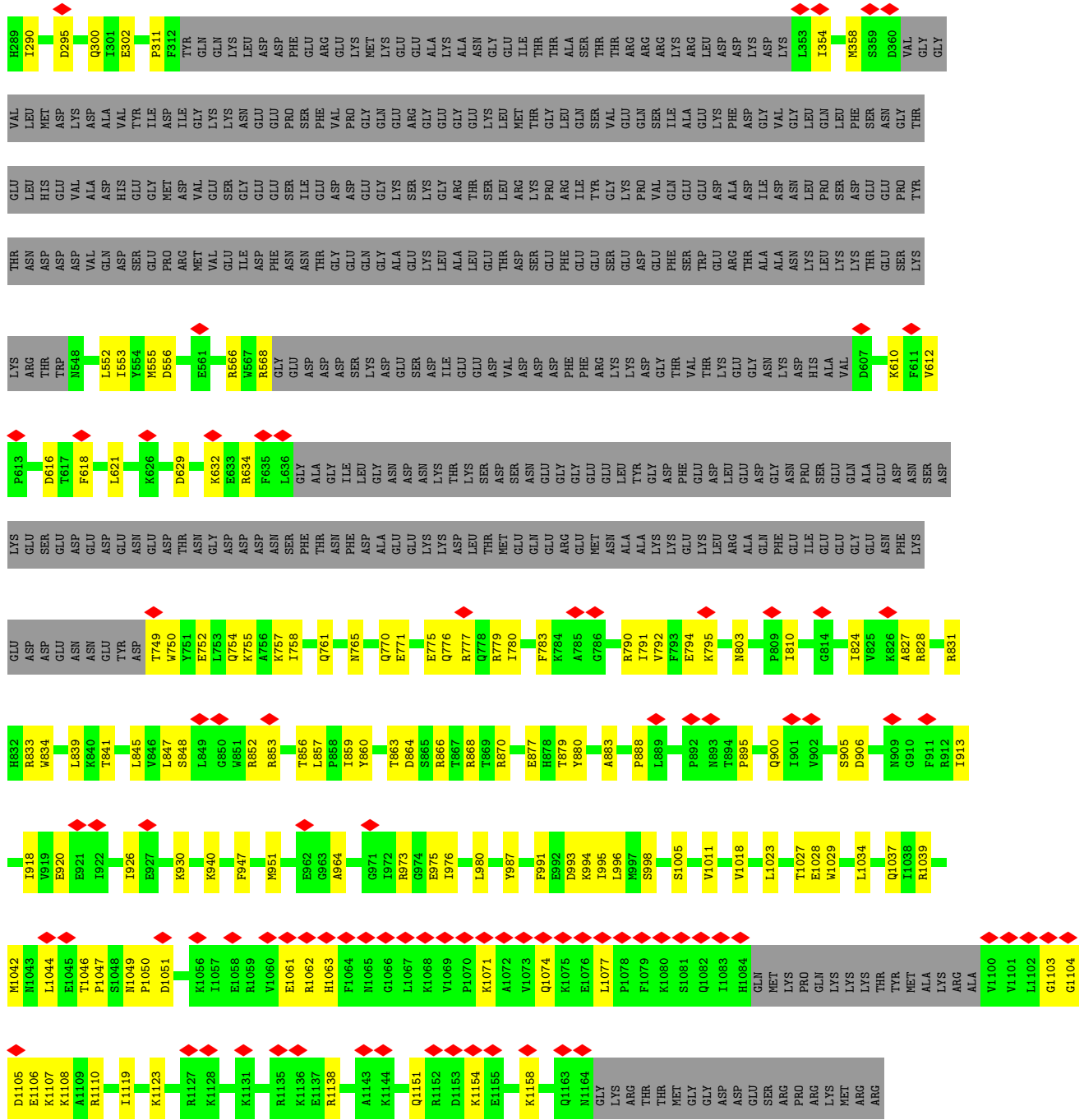


● Molecule 49: Ribosomal RNA small subunit methyltransferase NEP1

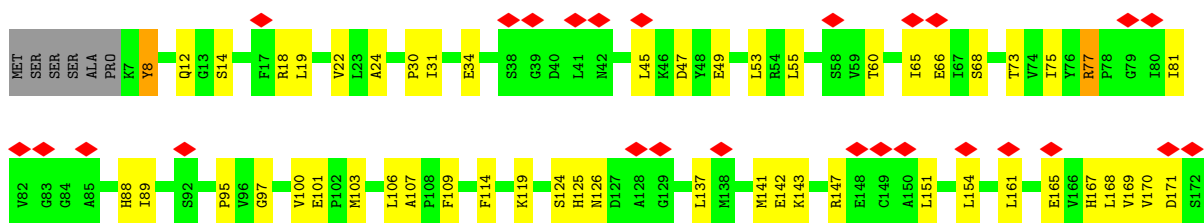


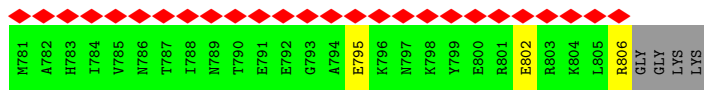
● Molecule 50: Ribosome biogenesis protein BMS1



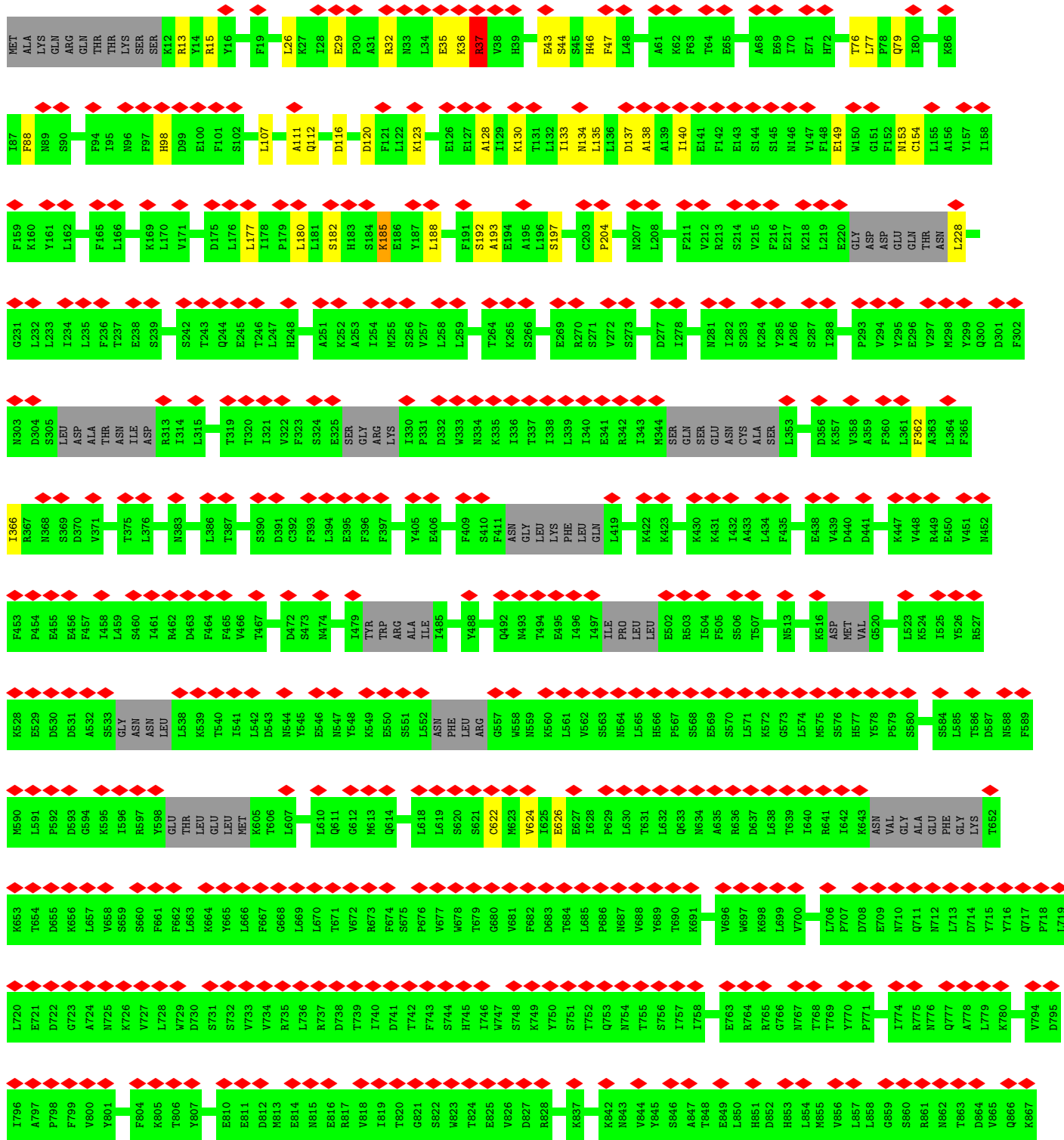
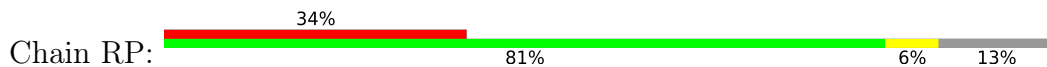


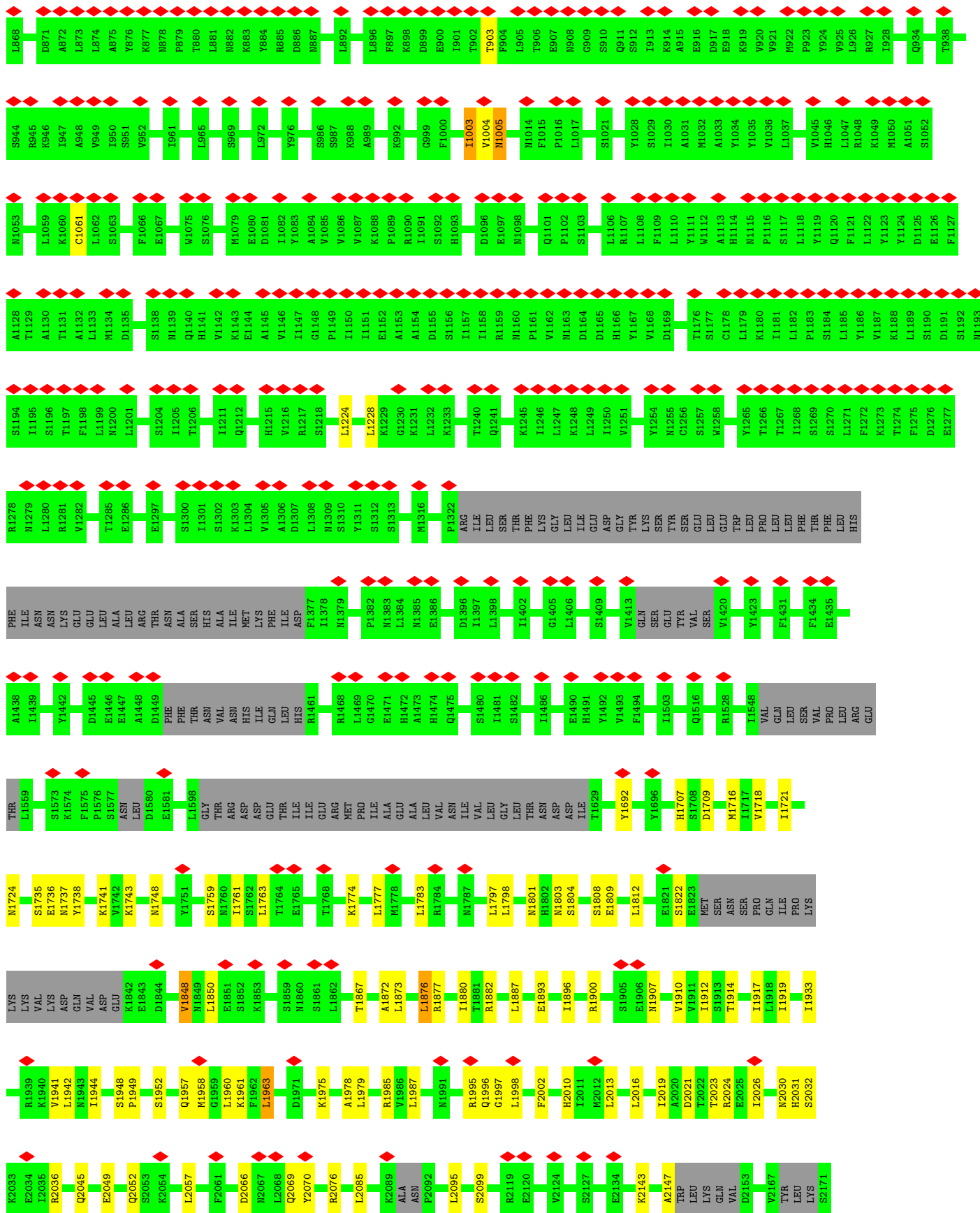
● Molecule 51: RNA 3'-terminal phosphate cyclase-like protein

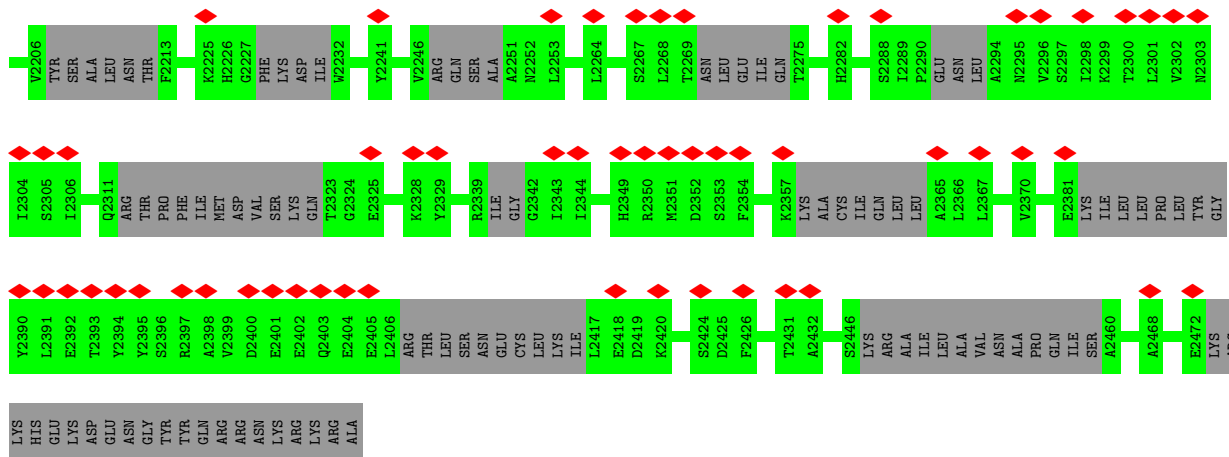




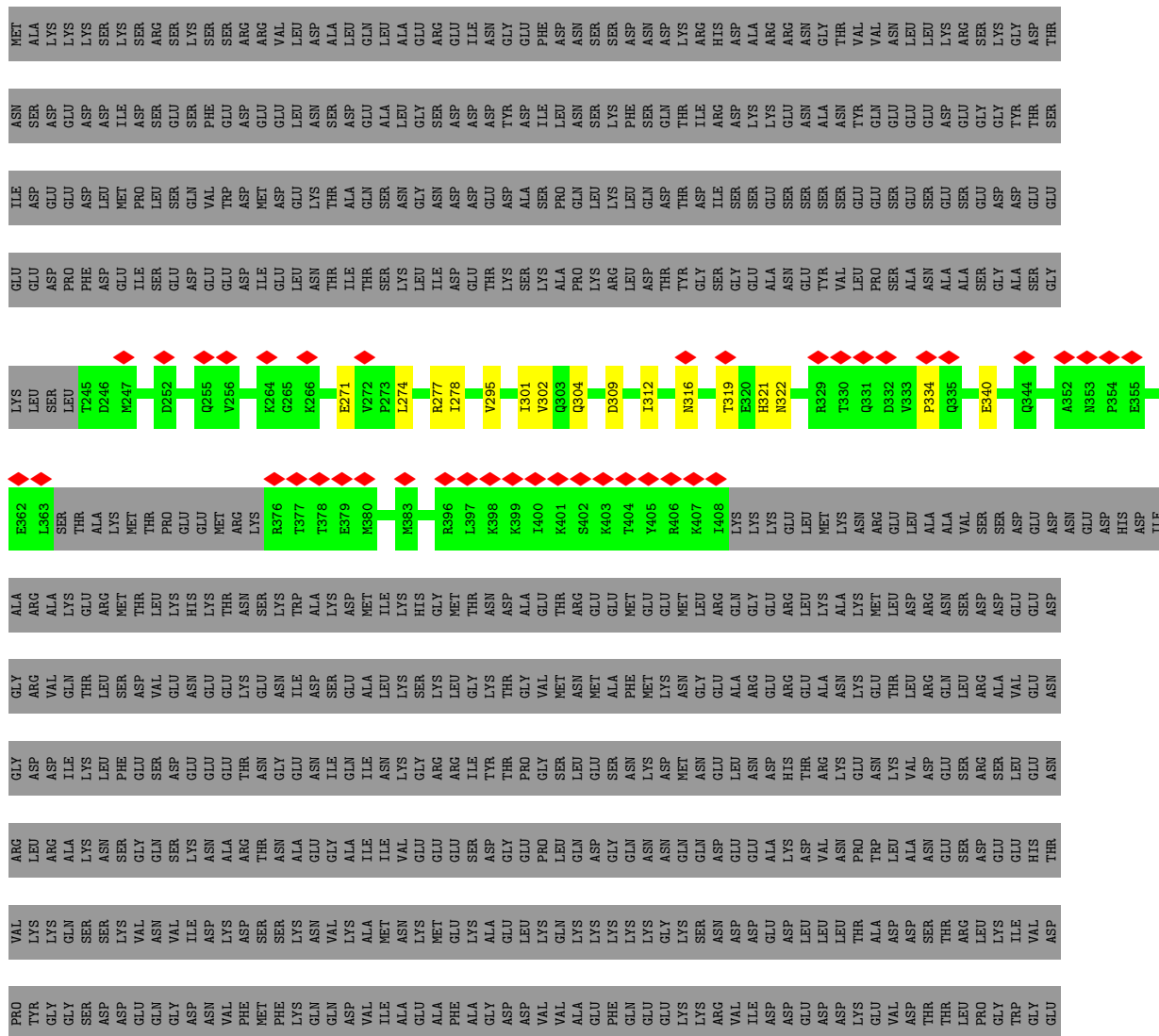
• Molecule 53: U3 small nucleolar RNA-associated protein 20







• Molecule 54: U3 small nucleolar RNA-associated protein 14



UNK	X1500	X1503	X1504	UNK	UNK	UNK	UNK	UNK	X1600	X1611	UNK	UNK	UNK	UNK
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4 Experimental information i

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	14475	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	0.086	Depositor
Minimum map value	-0.035	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.003	Depositor
Recommended contour level	0.018	Depositor
Map size (\AA)	597.632, 597.632, 597.632	wwPDB
Map dimensions	448, 448, 448	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.334, 1.334, 1.334	Depositor

5 Model quality i

5.1 Standard geometry i

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

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	0.71	0/4592	1.24	28/7138 (0.4%)
2	5A	0.52	0/3643	1.20	23/5663 (0.4%)
3	SA	0.67	0/27506	1.18	201/42818 (0.5%)
4	SC	0.46	0/1874	0.71	3/2512 (0.1%)
5	SF	0.41	0/1969	0.70	3/2661 (0.1%)
6	SG	0.44	0/1690	0.63	0/2285
7	SH	0.31	0/1477	0.58	1/1977 (0.1%)
8	SI	0.41	0/1330	0.71	1/1792 (0.1%)
9	SJ	0.31	0/1124	0.61	0/1510
10	SK	0.51	0/1410	0.66	2/1888 (0.1%)
11	SM	0.31	0/1139	0.57	0/1535
12	SO	0.44	0/1109	0.64	0/1495
13	SP	0.42	0/879	0.63	0/1186
14	SR	0.53	0/990	0.69	1/1335 (0.1%)
15	SX	0.49	0/1020	0.66	0/1371
16	SY	0.42	0/819	0.60	0/1093
17	SZ	0.52	0/1000	0.65	0/1334
18	Sc	0.45	0/613	0.73	1/828 (0.1%)
19	Sd	0.49	0/499	0.71	1/670 (0.1%)
20	3B	0.56	0/1901	0.66	1/2567 (0.0%)
20	3C	0.36	0/1796	0.63	1/2424 (0.0%)
21	3D	0.45	0/3020	0.66	4/4066 (0.1%)
22	3E	0.38	0/3072	0.61	2/4169 (0.0%)
23	3F	0.50	0/3569	0.67	0/4806
24	3G	0.40	0/928	0.72	0/1262
24	3H	0.53	0/928	0.68	1/1262 (0.1%)
25	A4	0.36	0/5338	0.64	1/7230 (0.0%)
26	A5	0.49	0/2995	0.64	1/4060 (0.0%)
27	A9	0.28	0/301	0.69	0/398
28	AE	0.44	0/3500	0.63	1/4736 (0.0%)
29	AF	0.32	0/3885	0.61	2/5261 (0.0%)
30	AG	0.34	0/6699	0.64	5/9077 (0.1%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
31	B1	0.56	0/6570	0.67	1/8892 (0.0%)
32	B2	0.42	0/6628	0.67	1/8954 (0.0%)
33	B3	0.37	0/6014	0.71	4/8137 (0.0%)
34	B8	0.43	0/3848	0.65	2/5218 (0.0%)
35	BE	0.55	0/6606	0.66	1/8935 (0.0%)
36	B6	0.45	0/2849	0.56	0/3853
37	5C	0.53	0/3690	0.65	0/4991
38	5D	0.36	0/621	0.52	0/823
39	5E	0.40	0/1580	0.67	2/2115 (0.1%)
40	5F	0.50	0/1559	0.66	1/2097 (0.0%)
41	5G	0.51	0/1768	0.66	0/2392
42	5H	0.45	0/601	0.63	1/789 (0.1%)
43	5I	0.64	0/3835	0.67	2/5162 (0.0%)
44	5J	0.35	0/1147	0.57	0/1531
45	5K	0.51	0/1346	0.63	0/1812
46	RD	0.31	0/2454	0.59	0/3310
47	RE	0.37	0/9015	0.63	7/12195 (0.1%)
48	RF	0.37	0/2004	0.64	2/2697 (0.1%)
49	RH	0.28	0/1746	0.61	0/2357
50	RJ	0.45	0/6067	0.62	2/8170 (0.0%)
51	RK	0.41	0/2832	0.63	0/3825
52	RN	0.33	0/454	0.51	0/600
53	RP	0.31	0/12777	0.51	4/17558 (0.0%)
54	RQ	0.44	0/1682	0.60	0/2286
55	RT	0.33	0/1379	0.62	0/1853
All	All	0.48	0/181687	0.79	314/252961 (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	4
7	SH	0	1
8	SI	0	4
12	SO	0	1
18	Sc	0	2
19	Sd	0	1
20	3C	0	1
23	3F	0	1
26	A5	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
29	AF	0	1
30	AG	0	5
31	B1	0	1
32	B2	0	2
33	B3	0	5
39	5E	0	1
43	5I	0	3
47	RE	0	3
48	RF	0	3
49	RH	0	1
50	RJ	0	1
51	RK	0	1
53	RP	0	11
54	RQ	0	2
55	RT	0	1
All	All	0	57

There are no bond length outliers.

The worst 5 of 314 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	3A	27	U	C2-N1-C1'	11.58	131.59	117.70
1	3A	27	U	N1-C2-O2	11.42	130.79	122.80
1	3A	27	U	N3-C2-O2	-10.83	114.62	122.20
3	SA	453	U	N3-C2-O2	-10.59	114.79	122.20
3	SA	453	U	N1-C2-O2	9.83	129.68	122.80

There are no chirality outliers.

5 of 57 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
4	SC	135	LEU	Peptide
4	SC	16	GLN	Peptide
4	SC	177	GLN	Peptide
4	SC	208	GLN	Peptide
7	SH	152	ASP	Peptide

5.2 Too-close contacts [i](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen

atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	3A	4114	0	2083	43	0
2	5A	3260	0	1643	34	0
3	SA	24609	0	12403	299	0
4	SC	1848	0	1940	41	0
5	SF	1930	0	1950	30	0
6	SG	1669	0	1724	21	0
7	SH	1457	0	1504	39	0
8	SI	1310	0	1374	36	0
9	SJ	1104	0	1107	28	0
10	SK	1388	0	1467	28	0
11	SM	1113	0	1181	29	0
12	SO	1087	0	1152	26	0
13	SP	868	0	894	18	0
14	SR	973	0	1029	19	0
15	SX	1003	0	1040	24	0
16	SY	807	0	865	16	0
17	SZ	986	0	1042	19	0
18	Sc	603	0	621	0	0
19	Sd	497	0	535	0	0
20	3B	1865	0	1910	46	0
20	3C	1763	0	1805	42	0
21	3D	2974	0	3001	53	0
22	3E	3041	0	2831	67	0
23	3F	3498	0	3515	77	0
24	3G	916	0	964	17	0
24	3H	916	0	964	23	0
25	A4	5243	0	5216	184	0
26	A5	2943	0	2928	61	0
27	A9	299	0	328	6	0
28	AE	3443	0	3564	62	0
29	AF	3807	0	3791	89	0
30	AG	6570	0	6473	187	0
31	B1	6427	0	6329	127	0
32	B2	6502	0	6493	156	0
33	B3	5919	0	6007	146	0
34	B8	3764	0	3757	83	0
35	BE	6475	0	6453	156	0
36	B6	2800	0	2517	43	0
37	5C	3612	0	3578	66	0
38	5D	609	0	616	8	0
39	5E	1564	0	1592	41	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
40	5F	1530	0	1572	30	0
41	5G	1732	0	1744	35	0
42	5H	596	0	661	8	0
43	5I	3756	0	3708	86	0
44	5J	1127	0	1150	17	0
45	5K	1323	0	1401	20	0
46	RD	2413	0	2264	29	0
47	RE	8805	0	8911	192	0
48	RF	1963	0	1942	42	0
49	RH	1719	0	1783	39	0
50	RJ	5935	0	6100	130	0
51	RK	2781	0	2878	79	0
52	RN	450	0	447	2	0
53	RP	12716	0	8235	90	0
54	RQ	1655	0	1461	22	0
55	RT	1357	0	1426	23	0
56	X1	400	0	99	3	0
57	5K	1	0	0	0	0
57	Sc	1	0	0	0	0
58	RJ	32	0	12	0	0
59	RJ	1	0	0	0	0
All	All	175869	0	155980	3018	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 9.

The worst 5 of 3018 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
25:A4:741:LEU:HD11	25:A4:744:VAL:CG2	1.48	1.42
25:A4:740:PRO:O	25:A4:756:GLU:HG2	1.44	1.16
25:A4:741:LEU:HD11	25:A4:744:VAL:HG21	1.16	1.13
25:A4:741:LEU:HD21	25:A4:744:VAL:HG23	1.39	1.04
25:A4:741:LEU:CD1	25:A4:744:VAL:CG2	2.39	1.00

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
4	SC	230/255 (90%)	190 (83%)	39 (17%)	1 (0%)	34	72
5	SF	248/261 (95%)	211 (85%)	37 (15%)	0	100	100
6	SG	211/225 (94%)	194 (92%)	17 (8%)	0	100	100
7	SH	178/236 (75%)	158 (89%)	17 (10%)	3 (2%)	9	43
8	SI	160/190 (84%)	136 (85%)	24 (15%)	0	100	100
9	SJ	136/200 (68%)	113 (83%)	23 (17%)	0	100	100
10	SK	169/197 (86%)	155 (92%)	14 (8%)	0	100	100
11	SM	135/156 (86%)	119 (88%)	16 (12%)	0	100	100
12	SO	132/151 (87%)	119 (90%)	13 (10%)	0	100	100
13	SP	116/137 (85%)	103 (89%)	13 (11%)	0	100	100
14	SR	123/143 (86%)	110 (89%)	13 (11%)	0	100	100
15	SX	125/130 (96%)	114 (91%)	11 (9%)	0	100	100
16	SY	104/145 (72%)	91 (88%)	13 (12%)	0	100	100
17	SZ	121/135 (90%)	104 (86%)	17 (14%)	0	100	100
18	Sc	78/82 (95%)	66 (85%)	12 (15%)	0	100	100
19	Sd	61/67 (91%)	56 (92%)	5 (8%)	0	100	100
20	3B	236/327 (72%)	222 (94%)	14 (6%)	0	100	100
20	3C	221/327 (68%)	204 (92%)	17 (8%)	0	100	100
21	3D	372/504 (74%)	343 (92%)	29 (8%)	0	100	100
22	3E	428/511 (84%)	389 (91%)	39 (9%)	0	100	100
23	3F	431/572 (75%)	365 (85%)	65 (15%)	1 (0%)	47	81
24	3G	119/126 (94%)	109 (92%)	10 (8%)	0	100	100
24	3H	119/126 (94%)	112 (94%)	6 (5%)	1 (1%)	19	60
25	A4	650/776 (84%)	583 (90%)	67 (10%)	0	100	100
26	A5	362/643 (56%)	333 (92%)	29 (8%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
27	A9	35/575 (6%)	34 (97%)	1 (3%)	0	100	100
28	AE	429/1769 (24%)	410 (96%)	19 (4%)	0	100	100
29	AF	473/513 (92%)	427 (90%)	46 (10%)	0	100	100
30	AG	812/896 (91%)	694 (86%)	118 (14%)	0	100	100
31	B1	800/923 (87%)	720 (90%)	80 (10%)	0	100	100
32	B2	813/943 (86%)	731 (90%)	82 (10%)	0	100	100
33	B3	733/817 (90%)	608 (83%)	123 (17%)	2 (0%)	41	76
34	B8	469/594 (79%)	423 (90%)	45 (10%)	1 (0%)	47	81
35	BE	817/939 (87%)	746 (91%)	71 (9%)	0	100	100
36	B6	368/440 (84%)	343 (93%)	25 (7%)	0	100	100
37	5C	452/554 (82%)	400 (88%)	52 (12%)	0	100	100
38	5D	68/250 (27%)	57 (84%)	10 (15%)	1 (2%)	10	46
39	5E	187/593 (32%)	173 (92%)	14 (8%)	0	100	100
40	5F	180/183 (98%)	165 (92%)	15 (8%)	0	100	100
41	5G	214/290 (74%)	196 (92%)	18 (8%)	0	100	100
42	5H	72/610 (12%)	63 (88%)	9 (12%)	0	100	100
43	5I	456/489 (93%)	422 (92%)	33 (7%)	1 (0%)	47	81
44	5J	130/217 (60%)	121 (93%)	9 (7%)	0	100	100
45	5K	162/189 (86%)	149 (92%)	13 (8%)	0	100	100
46	RD	310/1729 (18%)	278 (90%)	32 (10%)	0	100	100
47	RE	1080/1237 (87%)	996 (92%)	84 (8%)	0	100	100
48	RF	233/297 (78%)	203 (87%)	30 (13%)	0	100	100
49	RH	215/252 (85%)	198 (92%)	17 (8%)	0	100	100
50	RJ	719/1183 (61%)	649 (90%)	69 (10%)	1 (0%)	51	85
51	RK	358/367 (98%)	335 (94%)	23 (6%)	0	100	100
52	RN	51/810 (6%)	51 (100%)	0	0	100	100
53	RP	2112/2493 (85%)	1903 (90%)	203 (10%)	6 (0%)	41	76
54	RQ	220/899 (24%)	197 (90%)	23 (10%)	0	100	100
55	RT	165/326 (51%)	152 (92%)	13 (8%)	0	100	100
All	All	18398/27999 (66%)	16543 (90%)	1837 (10%)	18 (0%)	54	85

5 of 18 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
34	B8	226	LYS
24	3H	6	PRO
53	RP	37	ARG
53	RP	1004	VAL
4	SC	213	ARG

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	205/224 (92%)	203 (99%)	2 (1%)	76	86
5	SF	199/222 (90%)	196 (98%)	3 (2%)	65	80
6	SG	180/191 (94%)	179 (99%)	1 (1%)	86	92
7	SH	153/201 (76%)	152 (99%)	1 (1%)	84	90
8	SI	145/170 (85%)	144 (99%)	1 (1%)	84	90
9	SJ	114/161 (71%)	114 (100%)	0	100	100
10	SK	147/166 (89%)	146 (99%)	1 (1%)	84	90
11	SM	124/137 (90%)	122 (98%)	2 (2%)	62	79
12	SO	117/128 (91%)	114 (97%)	3 (3%)	46	67
13	SP	90/105 (86%)	89 (99%)	1 (1%)	73	85
14	SR	105/119 (88%)	104 (99%)	1 (1%)	76	86
15	SX	108/111 (97%)	108 (100%)	0	100	100
16	SY	88/120 (73%)	86 (98%)	2 (2%)	50	70
17	SZ	103/113 (91%)	98 (95%)	5 (5%)	25	51
18	Sc	69/71 (97%)	66 (96%)	3 (4%)	29	54
19	Sd	56/60 (93%)	56 (100%)	0	100	100
20	3B	201/240 (84%)	201 (100%)	0	100	100
20	3C	190/240 (79%)	187 (98%)	3 (2%)	62	79
21	3D	322/435 (74%)	320 (99%)	2 (1%)	86	92
22	3E	265/433 (61%)	263 (99%)	2 (1%)	81	89

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
23	3F	382/502 (76%)	374 (98%)	8 (2%)	53	72
24	3G	100/104 (96%)	100 (100%)	0	100	100
24	3H	100/104 (96%)	100 (100%)	0	100	100
25	A4	593/713 (83%)	585 (99%)	8 (1%)	69	82
26	A5	334/574 (58%)	332 (99%)	2 (1%)	86	92
27	A9	34/533 (6%)	31 (91%)	3 (9%)	10	33
28	AE	391/1633 (24%)	389 (100%)	2 (0%)	88	93
29	AF	424/454 (93%)	420 (99%)	4 (1%)	78	88
30	AG	750/826 (91%)	744 (99%)	6 (1%)	81	89
31	B1	707/812 (87%)	703 (99%)	4 (1%)	86	92
32	B2	712/832 (86%)	701 (98%)	11 (2%)	65	80
33	B3	665/719 (92%)	657 (99%)	8 (1%)	71	84
34	B8	421/529 (80%)	419 (100%)	2 (0%)	88	93
35	BE	721/819 (88%)	713 (99%)	8 (1%)	73	85
36	B6	251/414 (61%)	248 (99%)	3 (1%)	71	84
37	5C	394/480 (82%)	390 (99%)	4 (1%)	76	86
38	5D	65/234 (28%)	65 (100%)	0	100	100
39	5E	175/535 (33%)	174 (99%)	1 (1%)	86	92
40	5F	171/172 (99%)	171 (100%)	0	100	100
41	5G	191/258 (74%)	191 (100%)	0	100	100
42	5H	63/538 (12%)	63 (100%)	0	100	100
43	5I	415/443 (94%)	408 (98%)	7 (2%)	60	78
44	5J	124/200 (62%)	121 (98%)	3 (2%)	49	69
45	5K	148/169 (88%)	147 (99%)	1 (1%)	84	90
46	RD	226/1544 (15%)	225 (100%)	1 (0%)	91	94
47	RE	994/1125 (88%)	986 (99%)	8 (1%)	81	89
48	RF	221/274 (81%)	216 (98%)	5 (2%)	50	70
49	RH	197/222 (89%)	197 (100%)	0	100	100
50	RJ	649/1039 (62%)	644 (99%)	5 (1%)	81	89
51	RK	307/312 (98%)	302 (98%)	5 (2%)	62	79
52	RN	47/732 (6%)	47 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
53	RP	550/2307 (24%)	545 (99%)	5 (1%)	78	88
54	RQ	149/808 (18%)	149 (100%)	0	100	100
55	RT	148/282 (52%)	148 (100%)	0	100	100
All	All	14800/24889 (60%)	14653 (99%)	147 (1%)	77	86

5 of 147 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
44	5J	115	ARG
53	RP	37	ARG
47	RE	223	ARG
48	RF	263	ARG
25	A4	565	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 214 such sidechains are listed below:

Mol	Chain	Res	Type
34	B8	450	GLN
38	5D	45	GLN
51	RK	88	HIS
35	BE	67	HIS
36	B6	115	ASN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	3A	189/333 (56%)	77 (40%)	3 (1%)
2	5A	144/700 (20%)	62 (43%)	2 (1%)
3	SA	1137/1809 (62%)	413 (36%)	20 (1%)
All	All	1470/2842 (51%)	552 (37%)	25 (1%)

5 of 552 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	3A	4	G
1	3A	12	U
1	3A	15	U
1	3A	24	U
1	3A	25	U

5 of 25 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
3	SA	579	A
3	SA	685	A
3	SA	1754	A
3	SA	637	C
3	SA	773	C

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

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
58	GTP	RJ	1201	59	26,34,34	1.18	2 (7%)	32,54,54	1.78	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
58	GTP	RJ	1201	59	-	1/18/38/38	0/3/3/3

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
58	RJ	1201	GTP	C5-C6	-4.13	1.39	1.47
58	RJ	1201	GTP	C2-N3	2.02	1.38	1.33

The worst 5 of 7 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
58	RJ	1201	GTP	PA-O3A-PB	-5.07	115.43	132.83
58	RJ	1201	GTP	PB-O3B-PG	-3.88	119.52	132.83
58	RJ	1201	GTP	C5-C6-N1	3.52	120.16	113.95
58	RJ	1201	GTP	C8-N7-C5	3.16	109.02	102.99
58	RJ	1201	GTP	C2-N1-C6	-3.14	119.31	125.10

There are no chirality outliers.

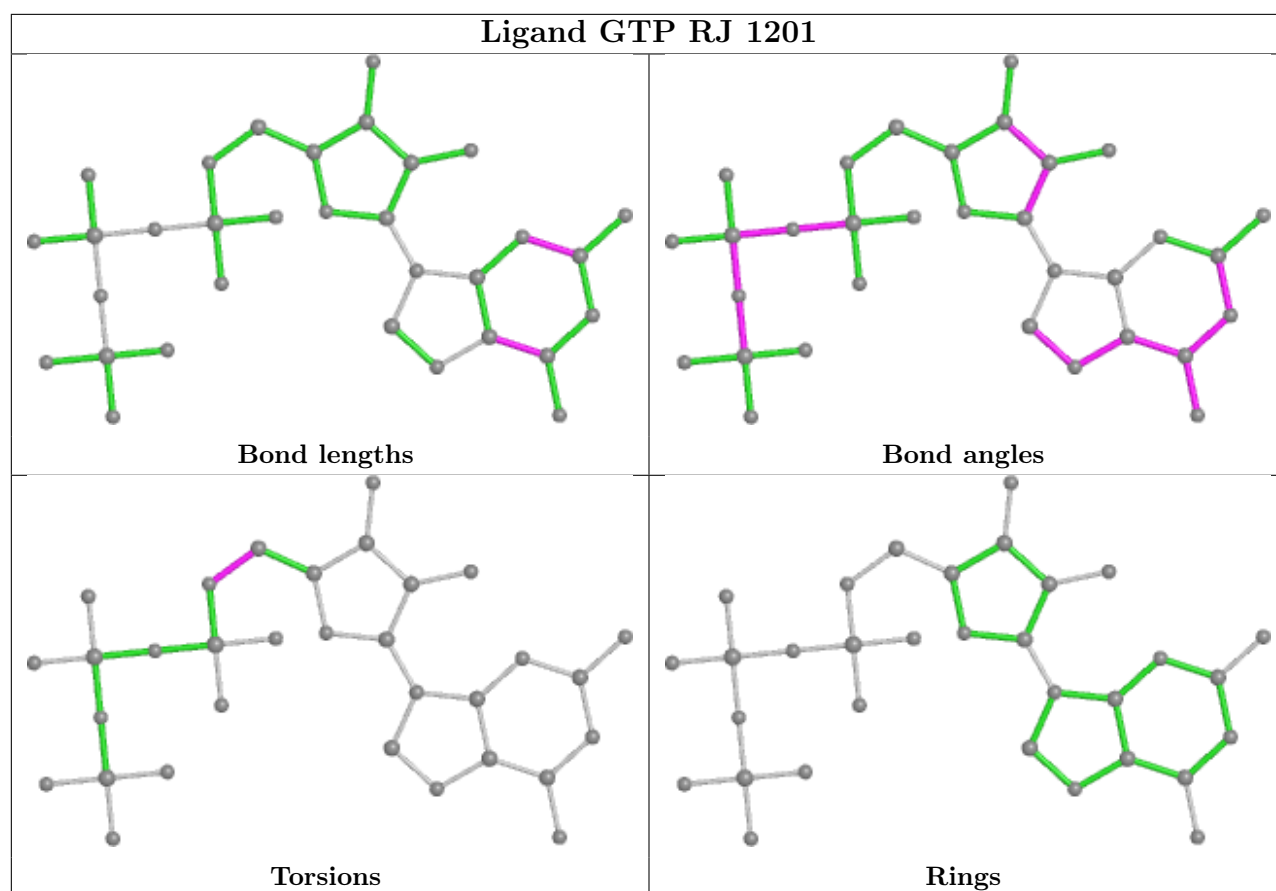
All (1) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
58	RJ	1201	GTP	C4'-C5'-O5'-PA

There are no ring outliers.

No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less 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.

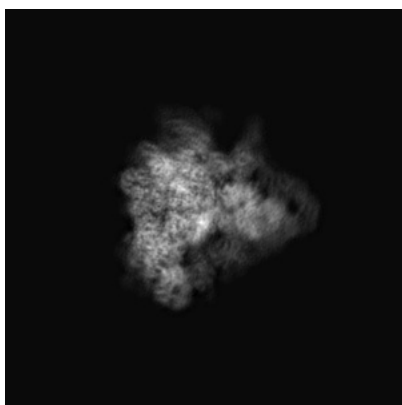
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-0953. These allow visual inspection of the internal detail of the map and identification of artifacts.

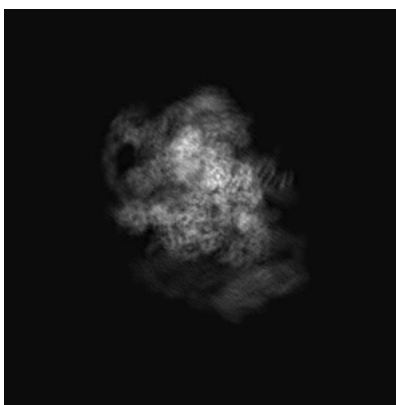
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

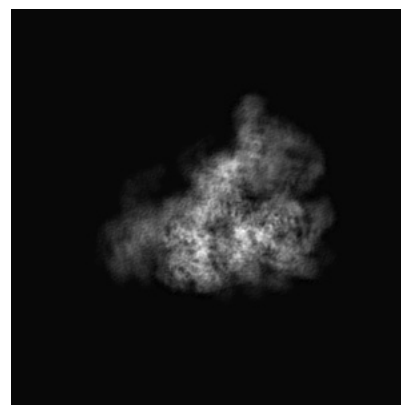
6.1.1 Primary map



X



Y

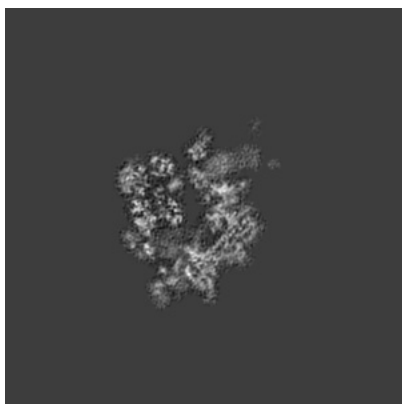


Z

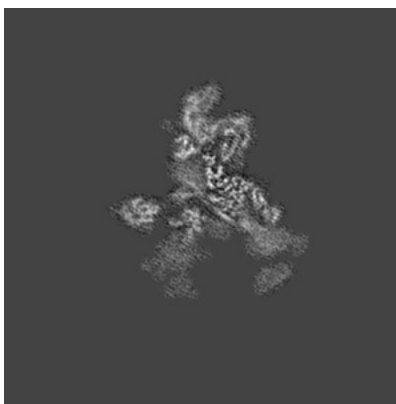
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

6.2.1 Primary map



X Index: 224



Y Index: 224

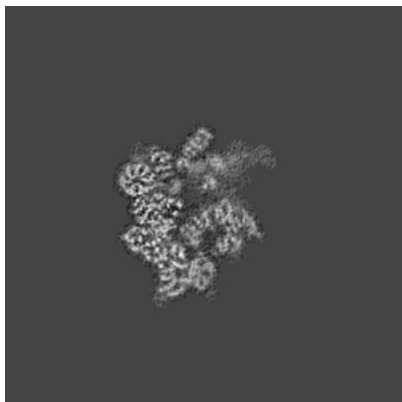


Z Index: 224

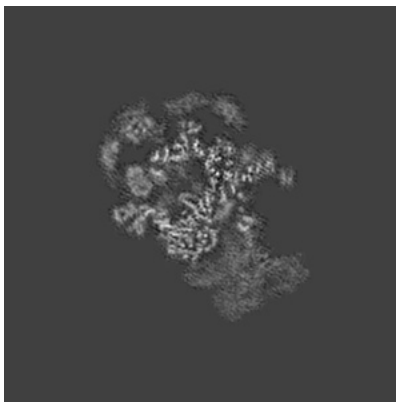
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [\(i\)](#)

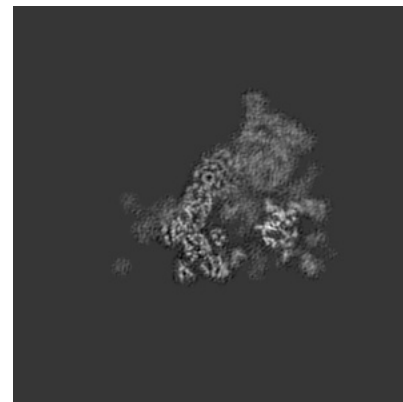
6.3.1 Primary map



X Index: 215



Y Index: 190

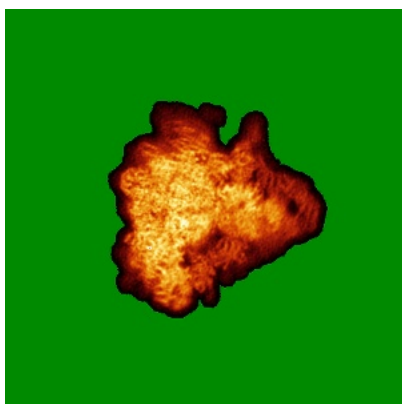


Z Index: 208

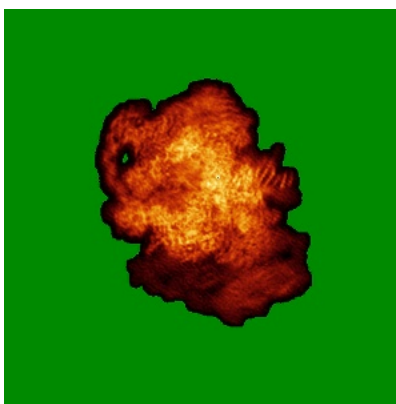
The images above show the largest variance slices of the map in three orthogonal directions.

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

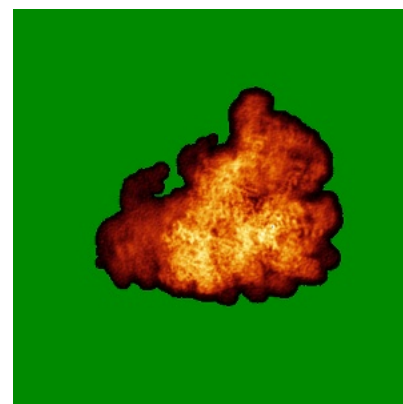
6.4.1 Primary map



X



Y



Z

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

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.018. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

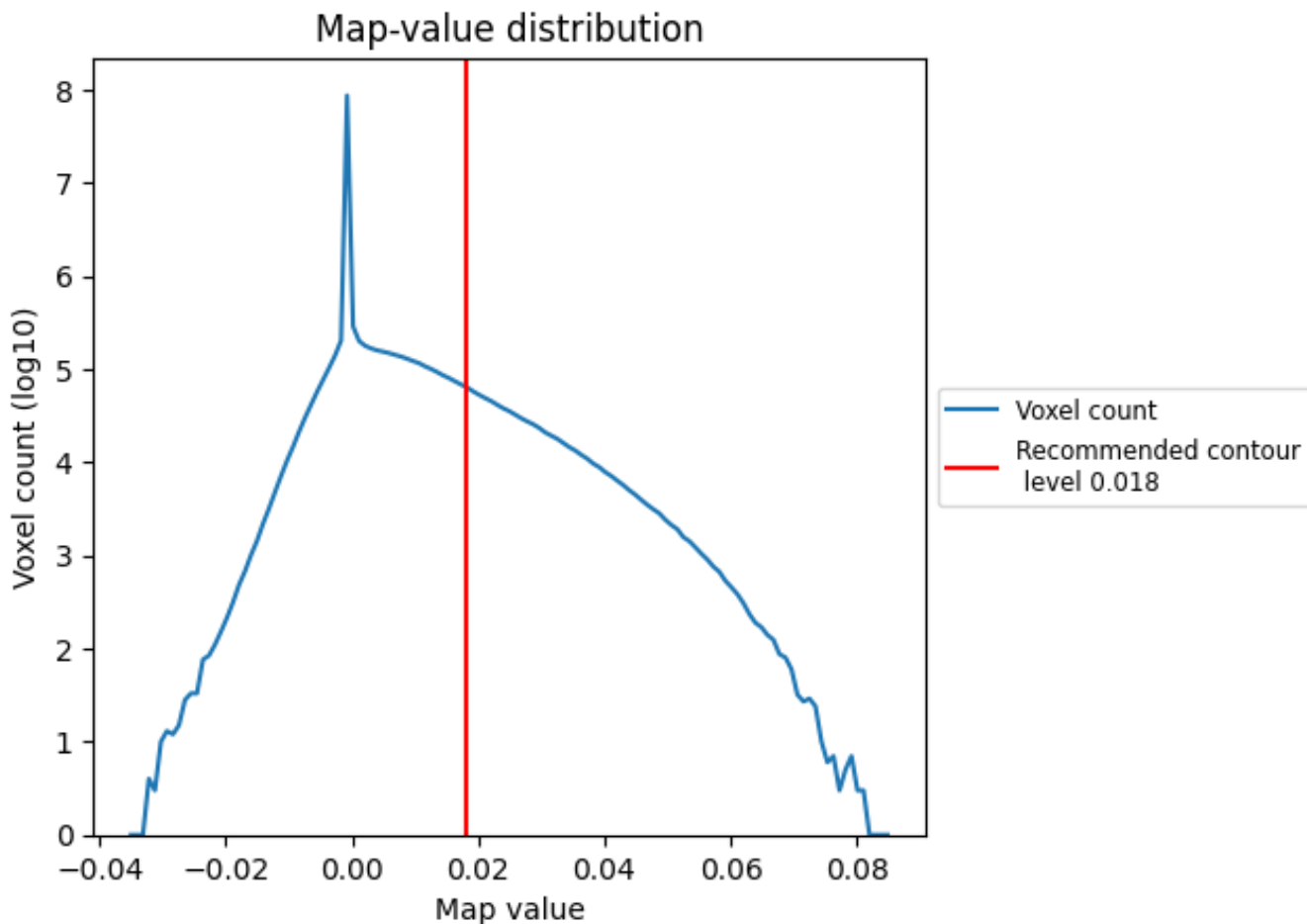
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

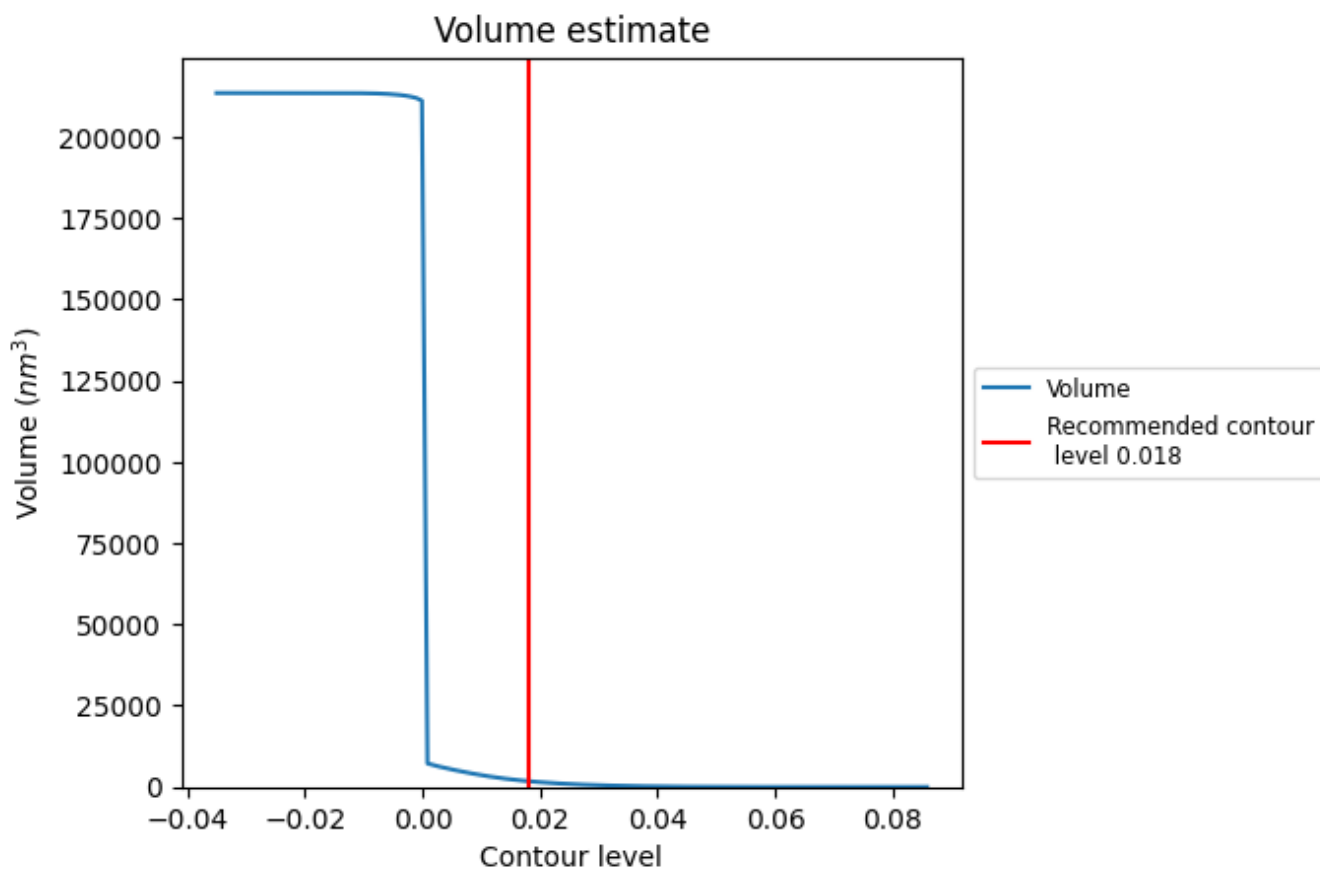
This section contains the results of statistical analysis of the map.

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.

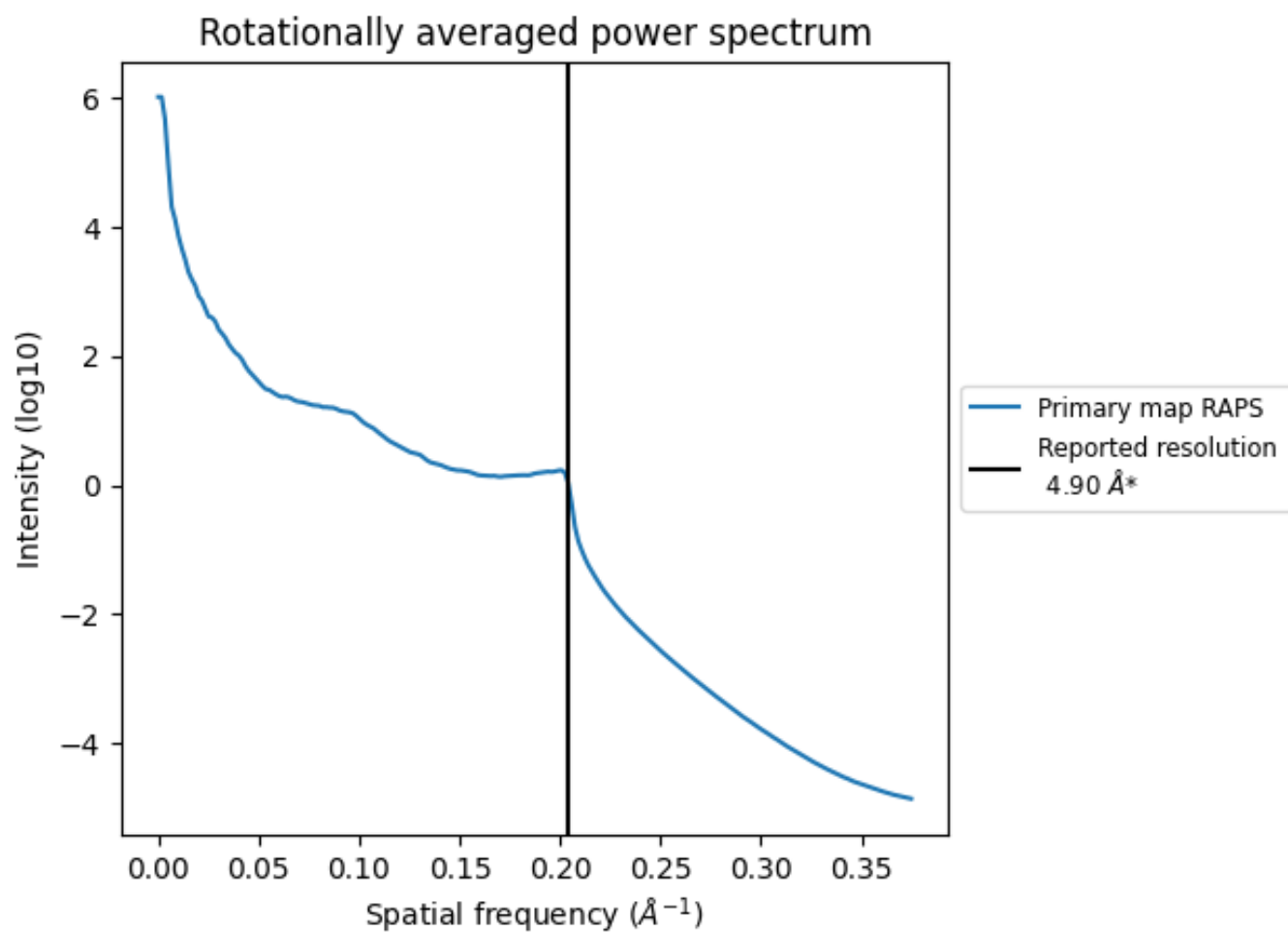
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 1775 nm³; this corresponds to an approximate mass of 1603 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 0.204\AA^{-1}

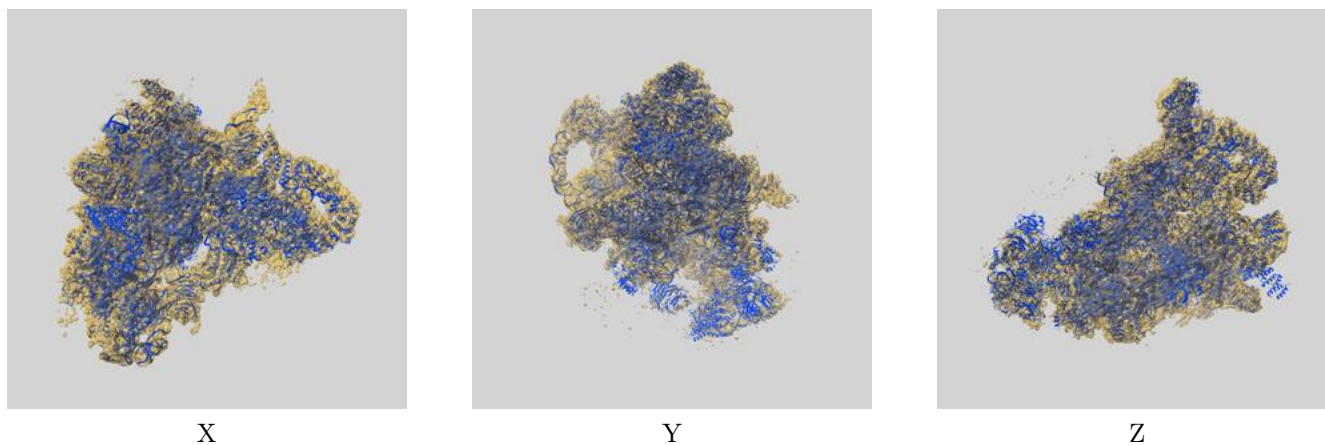
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

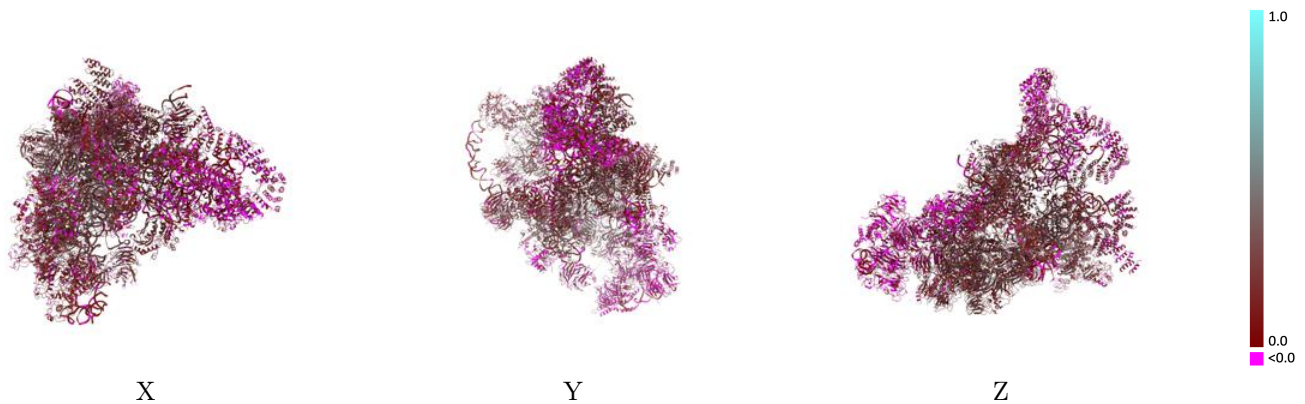
This section contains information regarding the fit between EMDB map EMD-0953 and PDB model 6LQT. Per-residue inclusion information can be found in section 3 on page 15.

9.1 Map-model overlay [i](#)



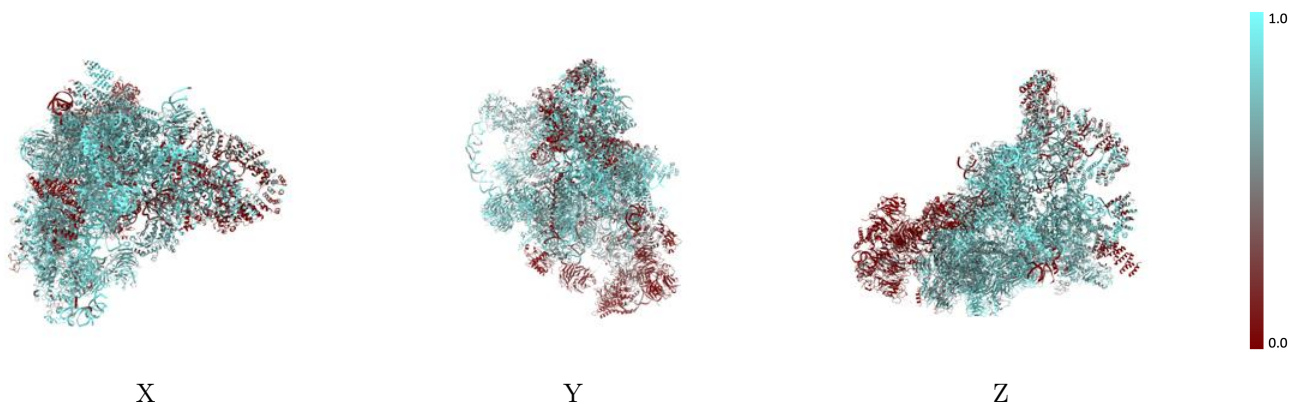
The images above show the 3D surface view of the map at the recommended contour level 0.018 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



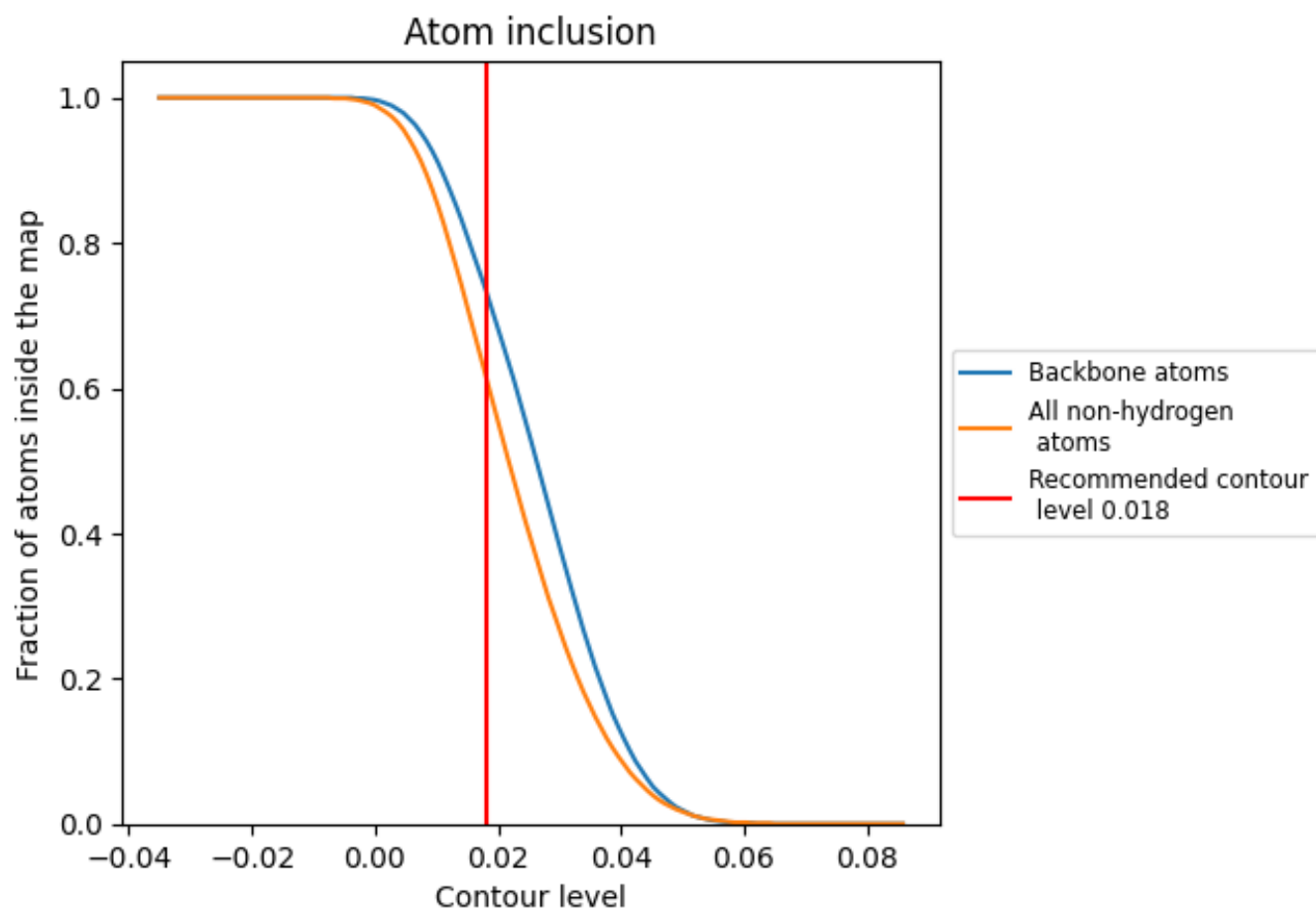
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.018).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 74% of all backbone atoms, 62% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

















































The table lists the average atom inclusion at the recommended contour level (0.018) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.6170	 0.1760
3A	 0.7220	 0.1730
3B	 0.7350	 0.2510
3C	 0.2290	 0.0270
3D	 0.7200	 0.2100
3E	 0.5210	 0.1280
3F	 0.7380	 0.1990
3G	 0.5690	 0.0750
3H	 0.7190	 0.2500
5A	 0.4470	 0.1260
5C	 0.7510	 0.2720
5D	 0.4040	 0.1920
5E	 0.6550	 0.2140
5F	 0.7150	 0.2580
5G	 0.5840	 0.2170
5H	 0.7250	 0.2260
5I	 0.7840	 0.2810
5J	 0.4590	 0.1630
5K	 0.7250	 0.2770
A4	 0.0530	 0.0370
A5	 0.5280	 0.1980
A9	 0.0340	 -0.0100
AE	 0.6560	 0.2260
AF	 0.0570	 0.0650
AG	 0.1490	 0.0500
B1	 0.7890	 0.2790
B2	 0.7740	 0.1980
B3	 0.8130	 0.1990
B6	 0.7470	 0.2190
B8	 0.6200	 0.1640
BE	 0.7970	 0.2680
RD	 0.1150	 0.0930
RE	 0.7000	 0.1860
RF	 0.6930	 0.1820
RH	 0.0450	 0.0060



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Chain	Atom inclusion	Q-score
RJ	 0.6150	 0.1880
RK	 0.6710	 0.1890
RN	 0.1260	 0.1140
RP	 0.5610	 0.1180
RQ	 0.6330	 0.2320
RT	 0.5970	 0.1850
SA	 0.7860	 0.1830
SC	 0.7430	 0.2580
SF	 0.5820	 0.0960
SG	 0.7470	 0.2420
SH	 0.3820	 0.0560
SI	 0.6830	 0.2190
SJ	 0.4120	 0.0390
SK	 0.7420	 0.2280
SM	 0.2760	 0.0230
SO	 0.7900	 0.2440
SP	 0.7420	 0.2350
SR	 0.7600	 0.2490
SX	 0.7770	 0.2820
SY	 0.4970	 0.1920
SZ	 0.7190	 0.1340
Sc	 0.7700	 0.2800
Sd	 0.7710	 0.2780
X1	 0.5020	 0.1910