



wwPDB EM Validation Summary Report ⓘ

Mar 19, 2024 – 05:12 PM JST

PDB ID : 5YLZ
EMDB ID : EMD-6839
Title : Cryo-EM Structure of the Post-catalytic Spliceosome from *Saccharomyces cerevisiae* at 3.6 angstrom
Authors : Wan, R.; Yan, C.; Bai, R.; Lei, J.; Shi, Y.
Deposited on : 2017-10-20
Resolution : 3.60 Å(reported)

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:

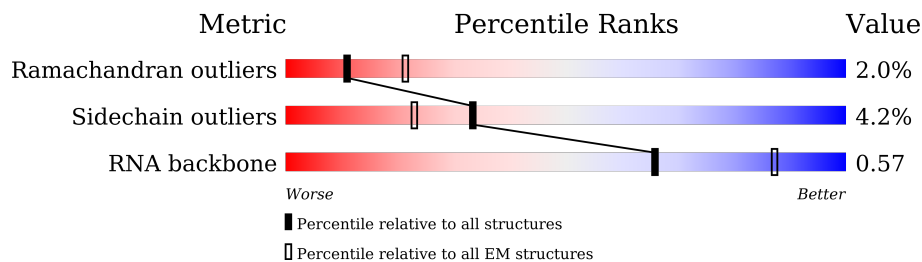
EMDB validation analysis : 0.0.1.dev70
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4.02b-467
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (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 3.60 Å.

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



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

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	A	2413	
2	B	214	
3	C	1008	
4	D	112	
5	E	369	
6	F	1175	
7	G	175	
8	H	859	

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Mol	Chain	Length	Quality of chain
9	I	687	51% 74% 25%
10	J	590	49% 68% 5% 27%
11	K	215	25% 43% 55%
12	L	157	7% 93% 6%
13	T	455	65% 56% 15% 24%
14	M	364	26% 48% 49%
15	N	339	21% 74% 23%
16	O	451	67% 8% 25%
17	P	175	35% 61%
18	Q	379	22% 49% 47%
19	R	135	6% 19% 80%
20	S	577	5% 35% 64%
21	U	251	59% 58% 41%
22	V	382	23% 21% 77%
23	W	1145	60% 51% 8% 39%
24	a	196	32% 41% 59%
24	h	196	40% 40% 60%
25	b	94	77% 74% 5% 20%
25	i	94	80% 74% 5% 20%
26	c	86	77% 78% 19%
26	j	86	81% 78% 19%
27	d	77	83% 86% 10%
27	k	77	90% 86% 10%
28	e	101	37% 77% 19%
28	l	101	80% 76% 20%

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Mol	Chain	Length	Quality of chain
29	f	146	
29	m	146	
30	g	110	
30	n	110	
31	o	238	
32	p	111	
33	q	503	
33	r	503	
33	s	503	
33	t	503	

2 Entry composition

There are 37 unique types of molecules in this entry. The entry contains 76247 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called Pre-mRNA-splicing factor 8.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1931	15931	10239	2737	2897	58	0	0

- Molecule 2 is a RNA chain called U5 snRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	B	117	2465	1104	414	830	117	0	0

- Molecule 3 is a protein called Pre-mRNA-splicing factor SNU114.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	878	7019	4529	1166	1295	29	0	0

- Molecule 4 is a RNA chain called U6 snRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
4	D	103	2192	982	391	716	103	0	0

- Molecule 5 is a RNA chain called mRNA/intron lariat.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
5	E	62	1310	590	224	434	62	0	0

- Molecule 6 is a RNA chain called U2 snRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
6	F	91	1909	854	309	655	91	0	0

- Molecule 7 is a protein called Pre-mRNA-splicing factor SNT309.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	G	156	926	585	160	180	1	0	0

- Molecule 8 is a protein called Pre-mRNA-splicing factor SYF1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	H	562	3012	1844	572	595	1	0	0

- Molecule 9 is a protein called Pre-mRNA-splicing factor CLF1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	I	517	3424	2130	643	643	8	0	0

- Molecule 10 is a protein called Pre-mRNA-splicing factor CEF1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	J	432	2949	1827	545	569	8	0	0

- Molecule 11 is a protein called Pre-mRNA-splicing factor SYF2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	K	96	777	476	143	157	1	0	0

- Molecule 12 is a protein called Pre-mRNA-splicing factor BUD31.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	L	157	1291	808	240	232	11	0	0

- Molecule 13 is a protein called Pre-mRNA-processing factor 17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	T	344	2357	1504	414	432	7	0	0

- Molecule 14 is a protein called Pre-mRNA-splicing factor SLT11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
14	M	185	1472	930	256	271	15	0	0

- Molecule 15 is a protein called Pre-mRNA-splicing factor CWC2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
15	N	261	2089	1320	369	388	12	0	0

- Molecule 16 is a protein called Pre-mRNA-splicing factor PRP46.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
16	O	337	2646	1669	466	501	10	0	0

- Molecule 17 is a protein called Pre-mRNA-splicing factor CWC15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
17	P	69	560	351	112	96	1	0	0

- Molecule 18 is a protein called Pre-mRNA-processing protein 45.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
18	Q	201	1583	988	290	298	7	0	0

- Molecule 19 is a protein called Pre-mRNA-splicing factor CWC21.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
19	R	27	190	112	38	40	0	0

- Molecule 20 is a protein called Pre-mRNA-splicing factor CWC22.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
20	S	207	1701	1096	275	323	7	0	0

- Molecule 21 is a protein called Pre-mRNA-splicing factor 18.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
21	U	148	1202	780	204	214	4	0	0

- Molecule 22 is a protein called Pre-mRNA-splicing factor SLU7.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
22	V	88	554	350	100	104	0	0

- Molecule 23 is a protein called Pre-mRNA-splicing factor ATP-dependent RNA helicase PRP22.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
23	W	703	5553	3521	941	1060	31	0	0

- Molecule 24 is a protein called Small nuclear ribonucleoprotein-associated protein B.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
24	a	80	631	403	114	111	3	0	0
24	h	78	610	389	110	108	3	0	0

- Molecule 25 is a protein called Small nuclear ribonucleoprotein E.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
25	b	75	575	379	92	101	3	0	0
25	i	75	575	379	92	101	3	0	0

- Molecule 26 is a protein called Small nuclear ribonucleoprotein F.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
26	c	70	554	355	98	100	1	0	0
26	j	70	554	355	98	100	1	0	0

- Molecule 27 is a protein called Small nuclear ribonucleoprotein G.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	d	69	Total	C	N	O	S	0	0
			529	337	93	97	2		
27	k	69	Total	C	N	O	S	0	0
			529	337	93	97	2		

- Molecule 28 is a protein called Small nuclear ribonucleoprotein Sm D3.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	e	82	Total	C	N	O	S	0	0
			625	399	109	115	2		
28	l	81	Total	C	N	O	S	0	0
			616	393	107	114	2		

- Molecule 29 is a protein called Small nuclear ribonucleoprotein Sm D1.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	f	82	Total	C	N	O	S	0	0
			644	409	110	123	2		
29	m	82	Total	C	N	O	S	0	0
			644	409	110	123	2		

- Molecule 30 is a protein called Small nuclear ribonucleoprotein Sm D2.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	g	94	Total	C	N	O	S	0	0
			741	477	141	119	4		
30	n	65	Total	C	N	O	S	0	0
			528	340	102	84	2		

- Molecule 31 is a protein called U2 small nuclear ribonucleoprotein A'.

Mol	Chain	Residues	Atoms				AltConf	Trace
31	o	135	Total	C	N	O	0	0
			841	538	142	161		

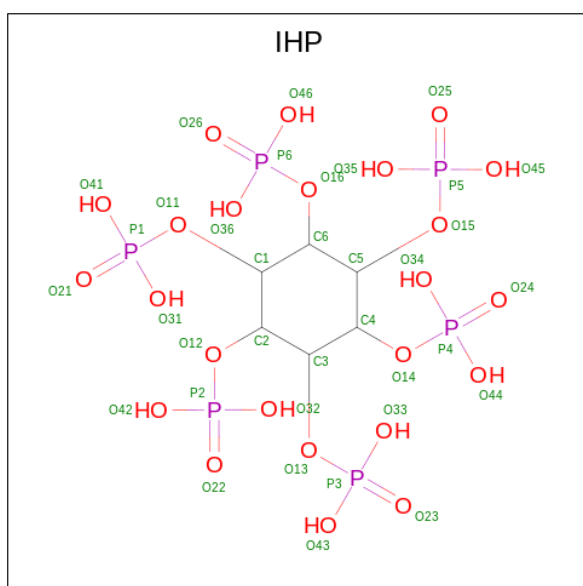
- Molecule 32 is a protein called U2 small nuclear ribonucleoprotein B'.

Mol	Chain	Residues	Atoms				AltConf	Trace
32	p	81	Total	C	N	O	0	0
			513	332	89	92		

- Molecule 33 is a protein called Pre-mRNA-processing factor 19.

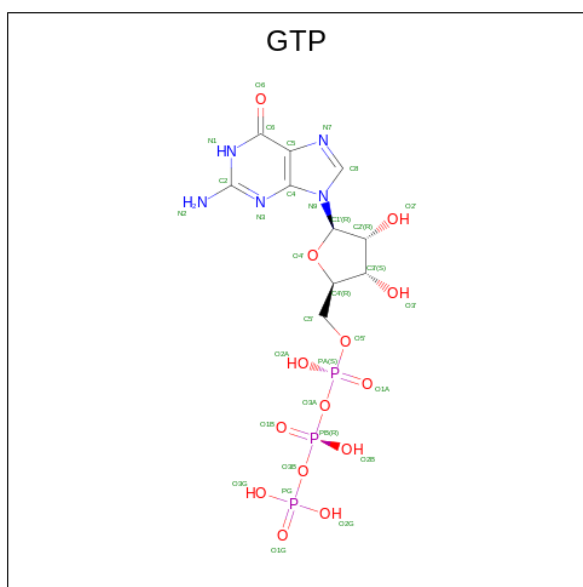
Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
33	q	129	Total 850	C 537	N 137	O 174	S 2	0	0
33	r	125	Total 823	C 521	N 133	O 167	S 2	0	0
33	s	126	Total 830	C 525	N 134	O 169	S 2	0	0
33	t	128	Total 843	C 532	N 136	O 173	S 2	0	0

- Molecule 34 is INOSITOL HEXAKISPHOSPHATE (three-letter code: IHP) (formula: $C_6H_{18}O_{24}P_6$).



Mol	Chain	Residues	Atoms				AltConf
			Total	C	O	P	
34	A	1	Total 36	C 6	O 24	P 6	0

- Molecule 35 is GUANOSINE-5'-TRIPHOSPHATE (three-letter code: GTP) (formula: $C_{10}H_{16}N_5O_{14}P_3$).



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

- Molecule 36 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
			Total	Mg	
36	C	1	1	1	0
36	D	5	5	5	0

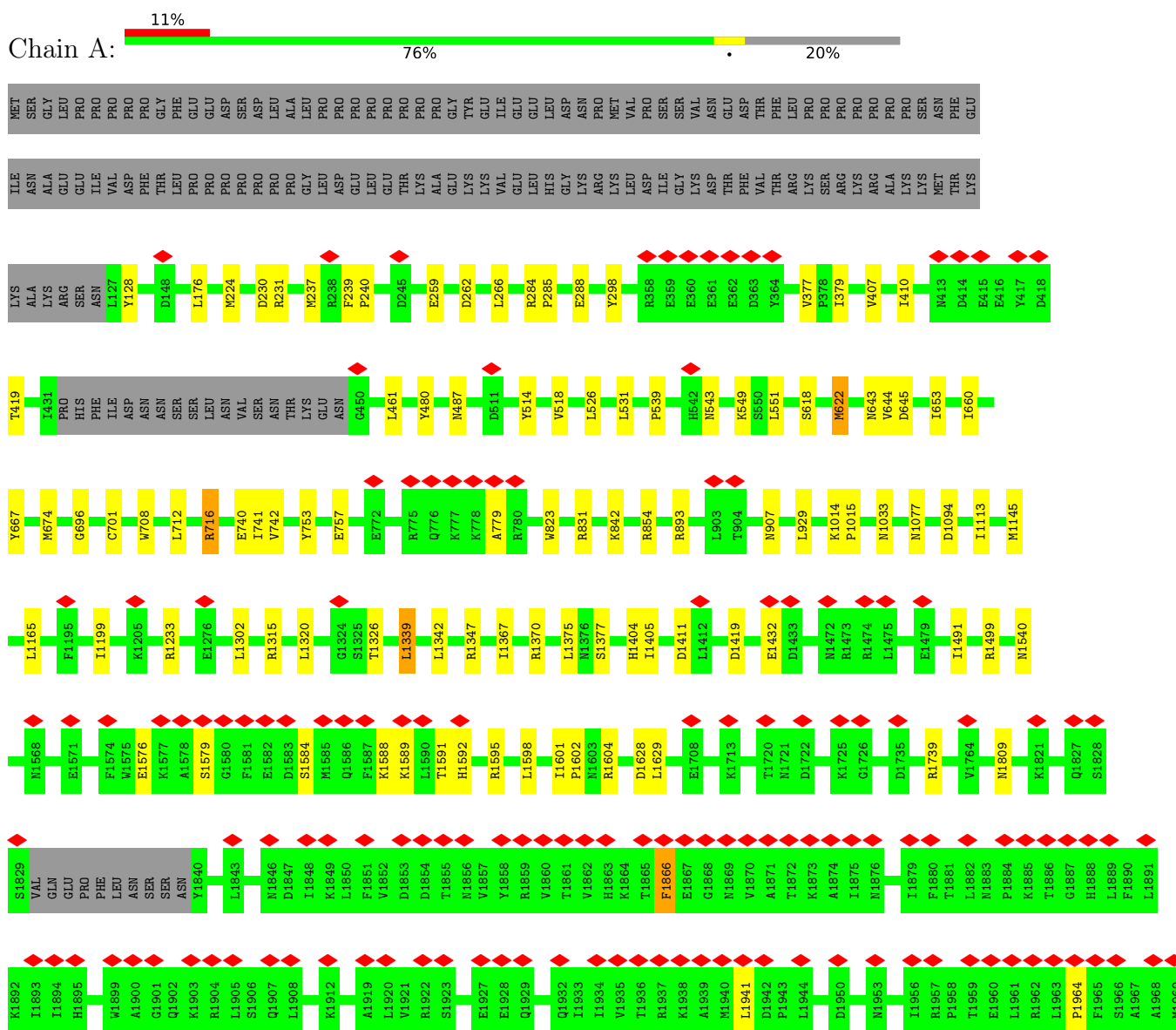
- Molecule 37 is ZINC ION (three-letter code: ZN) (formula: Zn).

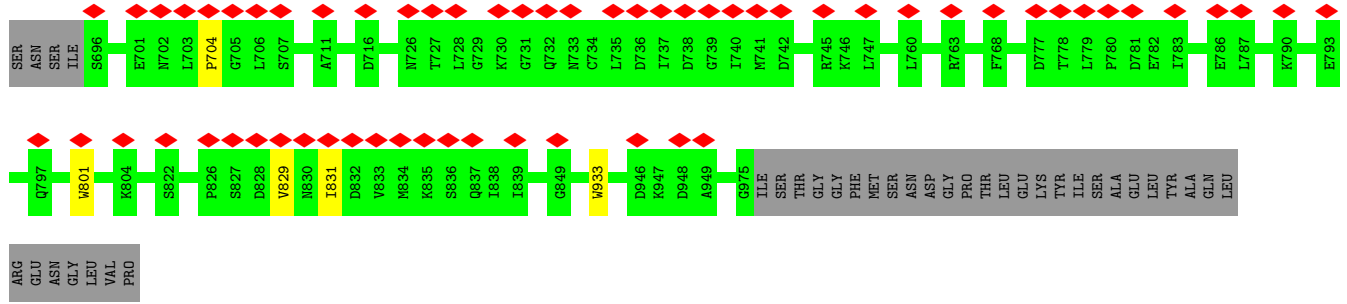
Mol	Chain	Residues	Atoms		AltConf
			Total	Zn	
37	L	3	3	3	0
37	M	2	2	2	0
37	N	1	1	1	0

3 Residue-property plots i

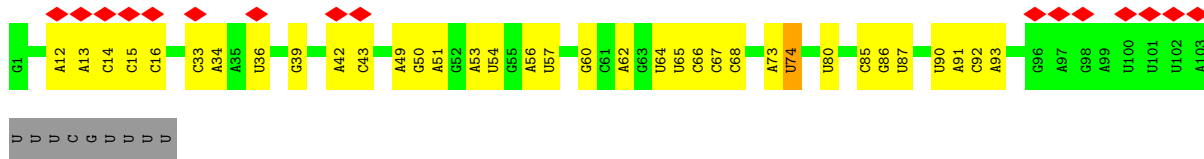
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

- Molecule 1: Pre-mRNA-splicing factor 8

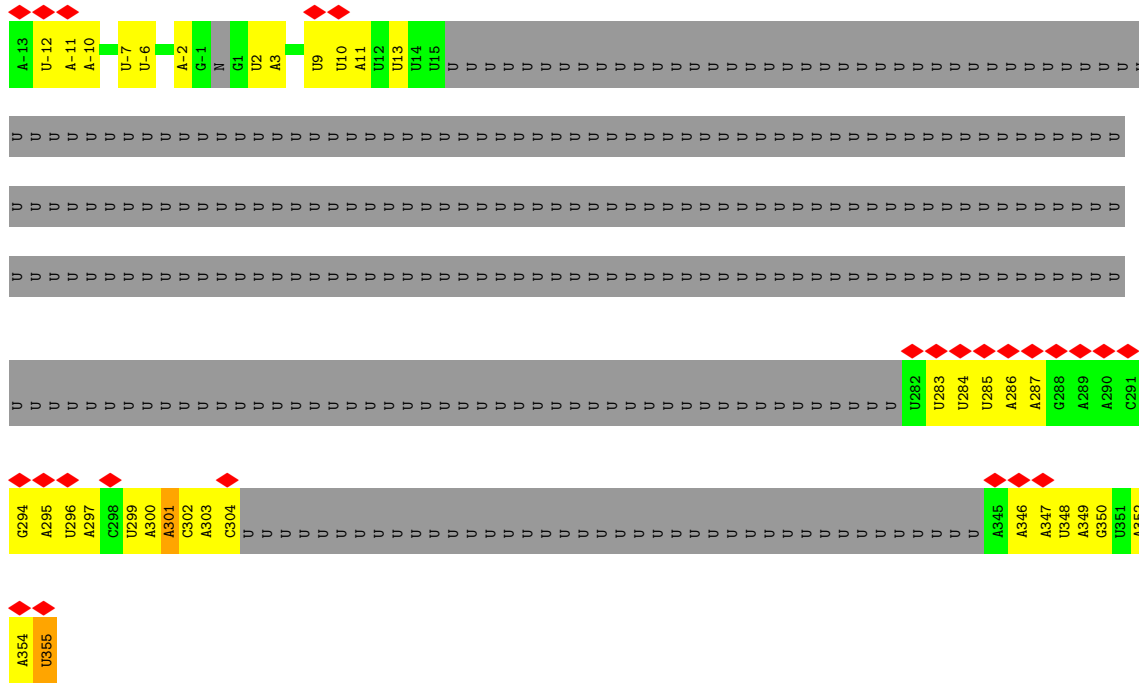




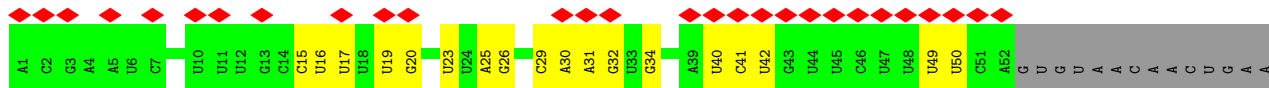
• Molecule 4: U6 snRNA

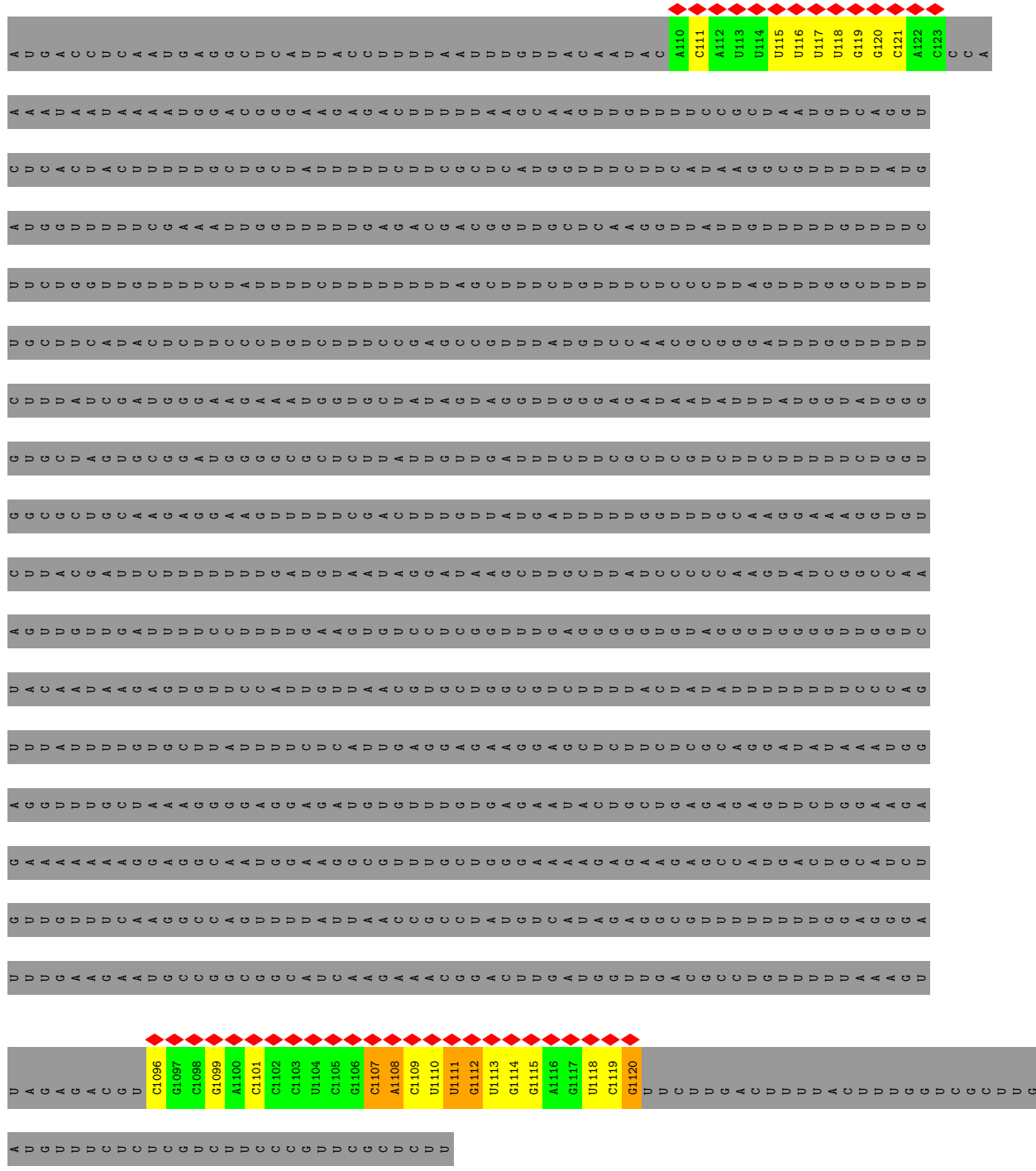


• Molecule 5: mRNA/intron lariat

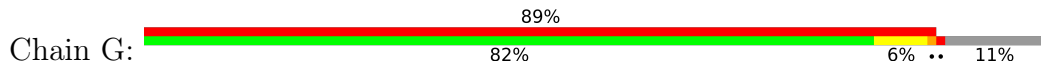


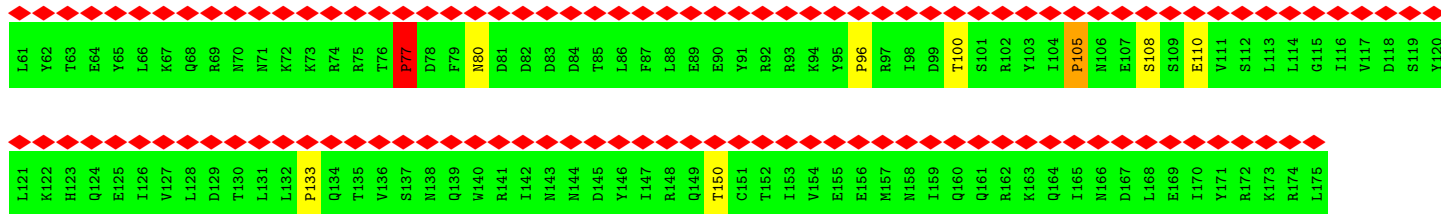
• Molecule 6: U2 snRNA



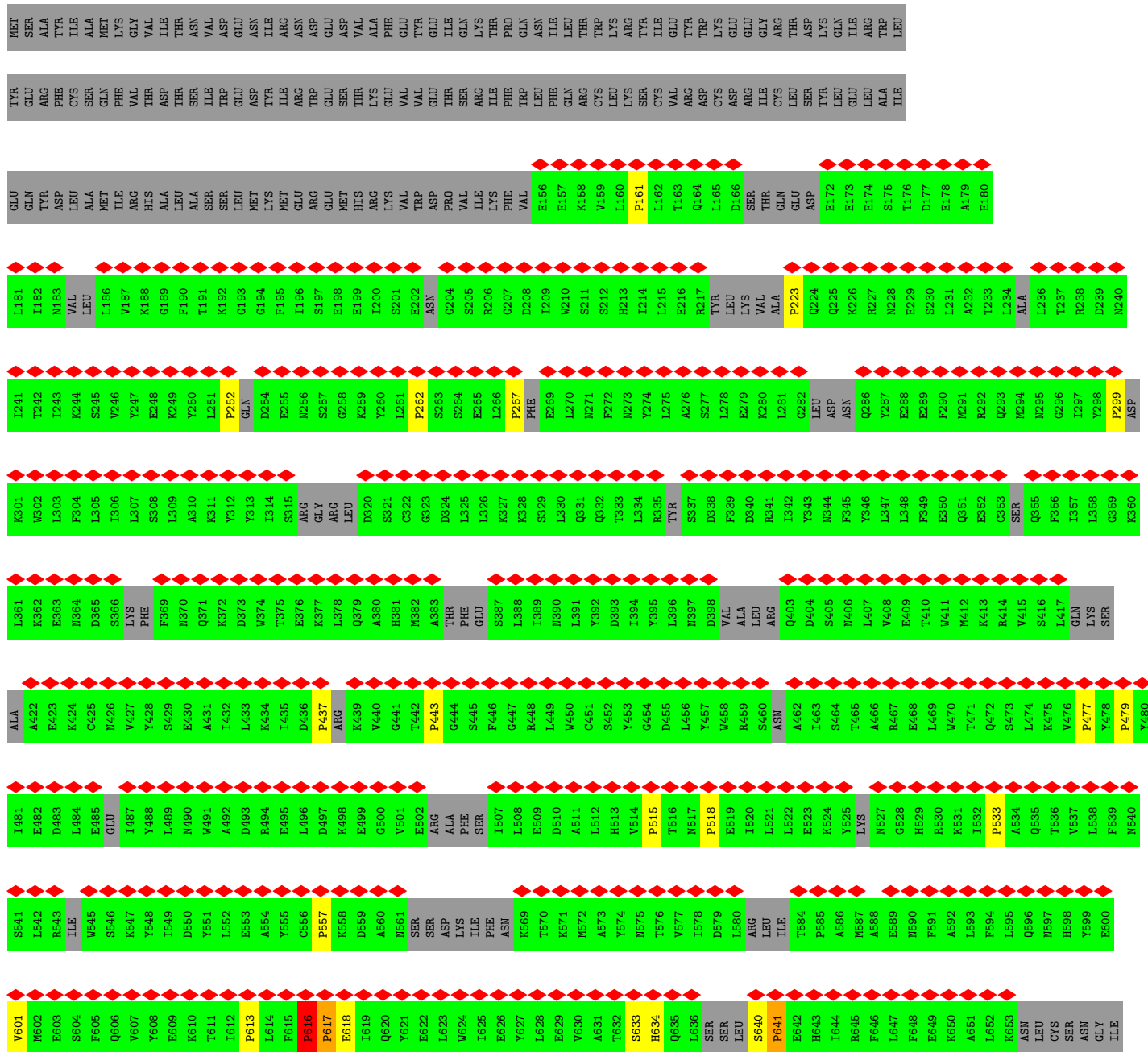


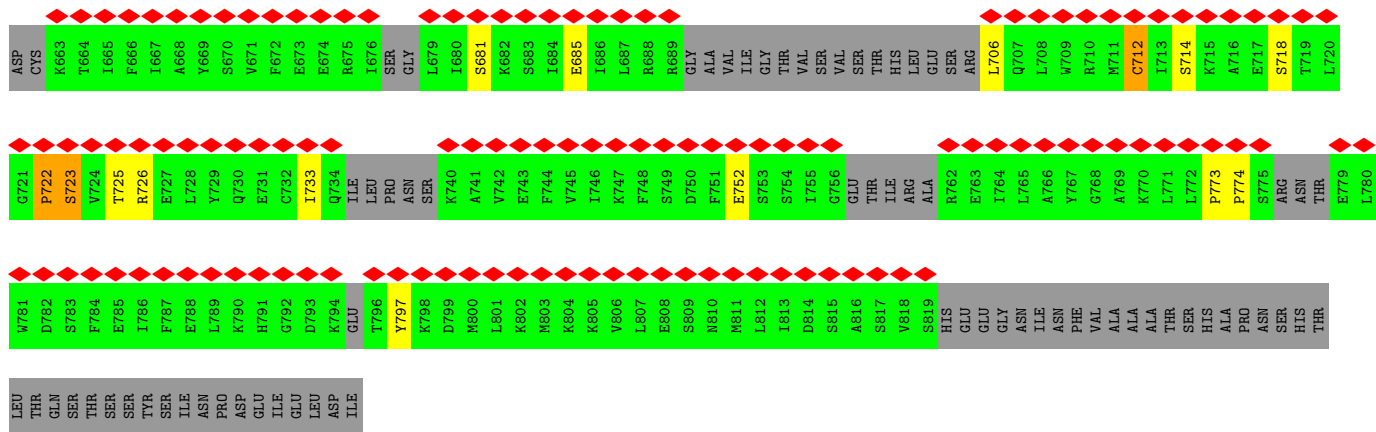
● Molecule 7: Pre-mRNA-splicing factor SNT309



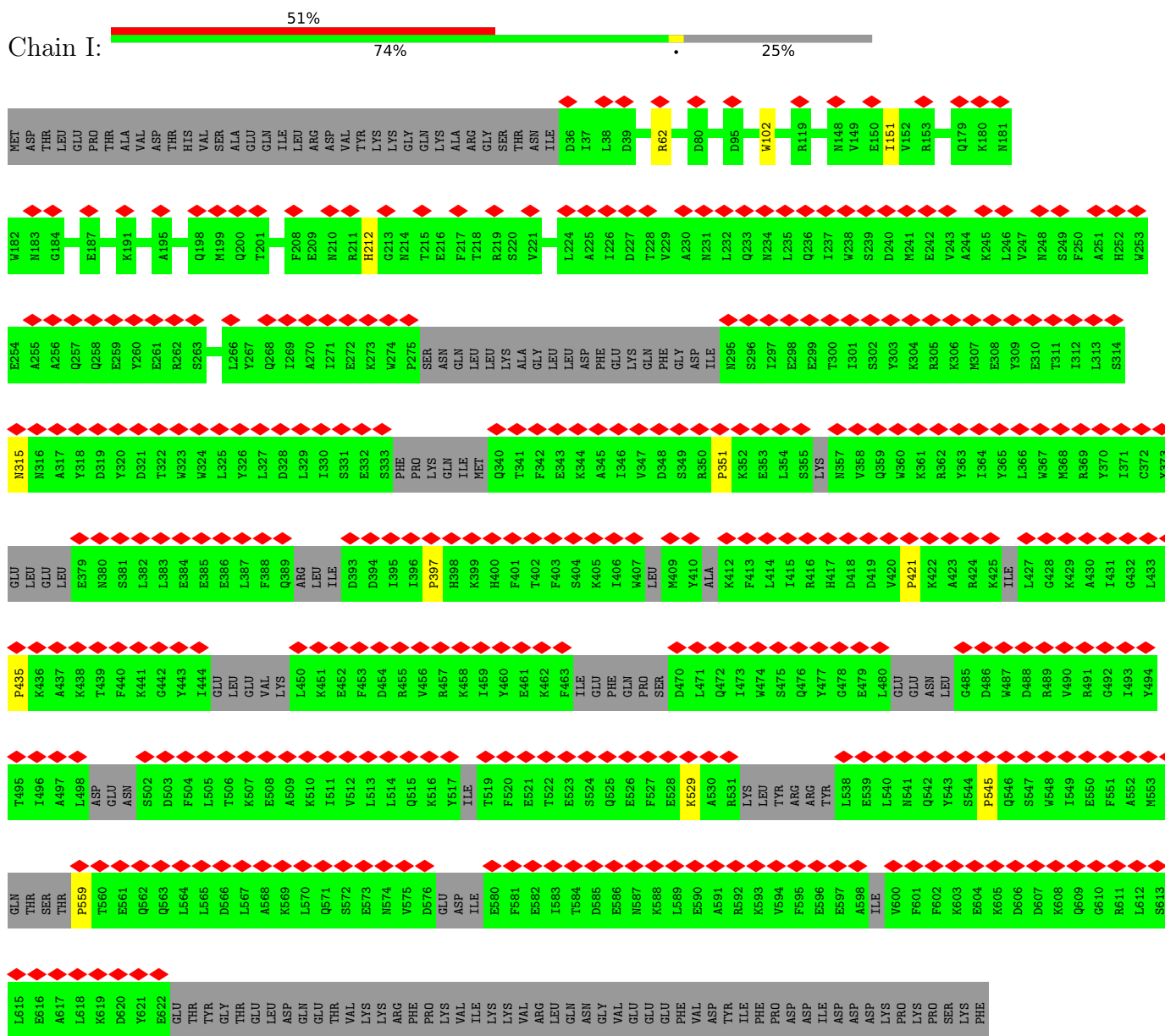


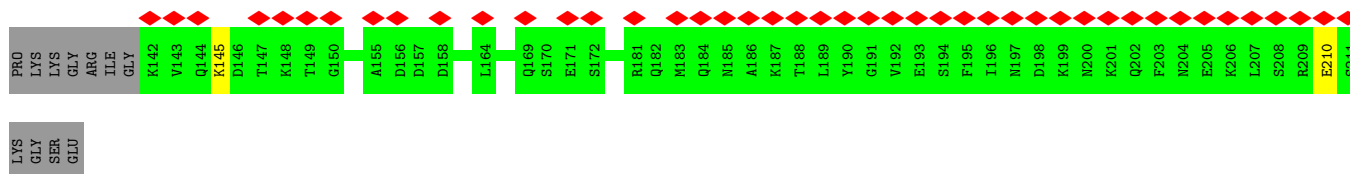
• Molecule 8: Pre-mRNA-splicing factor SYF1



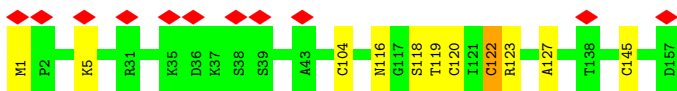


● Molecule 9: Pre-mRNA-splicing factor CLF1

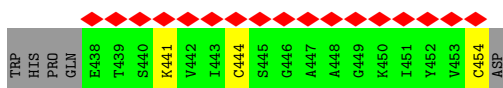
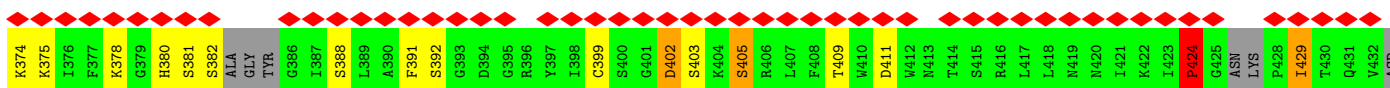
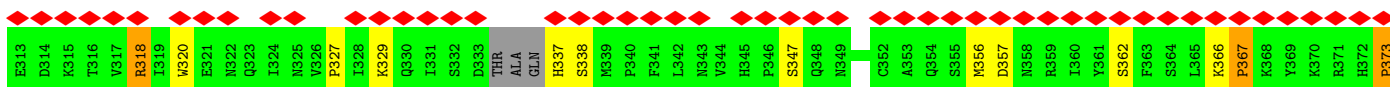
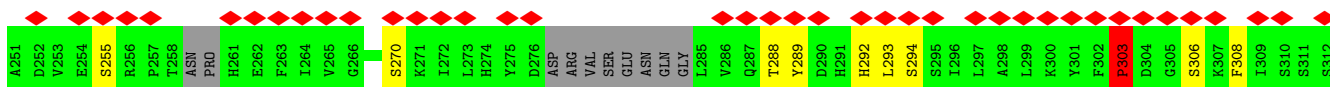
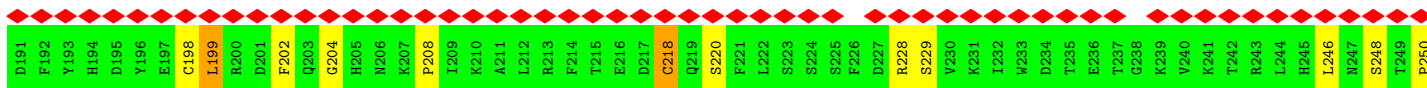
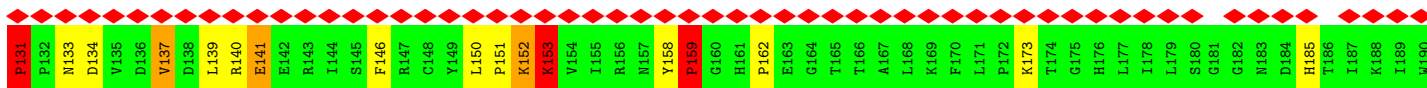
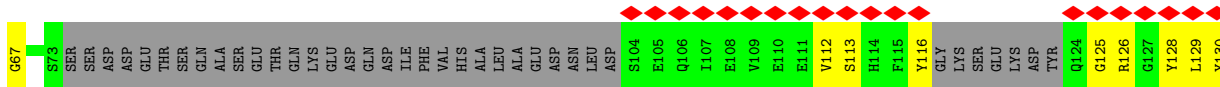
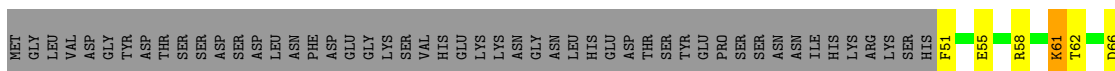




- Molecule 12: Pre-mRNA-splicing factor BUD31

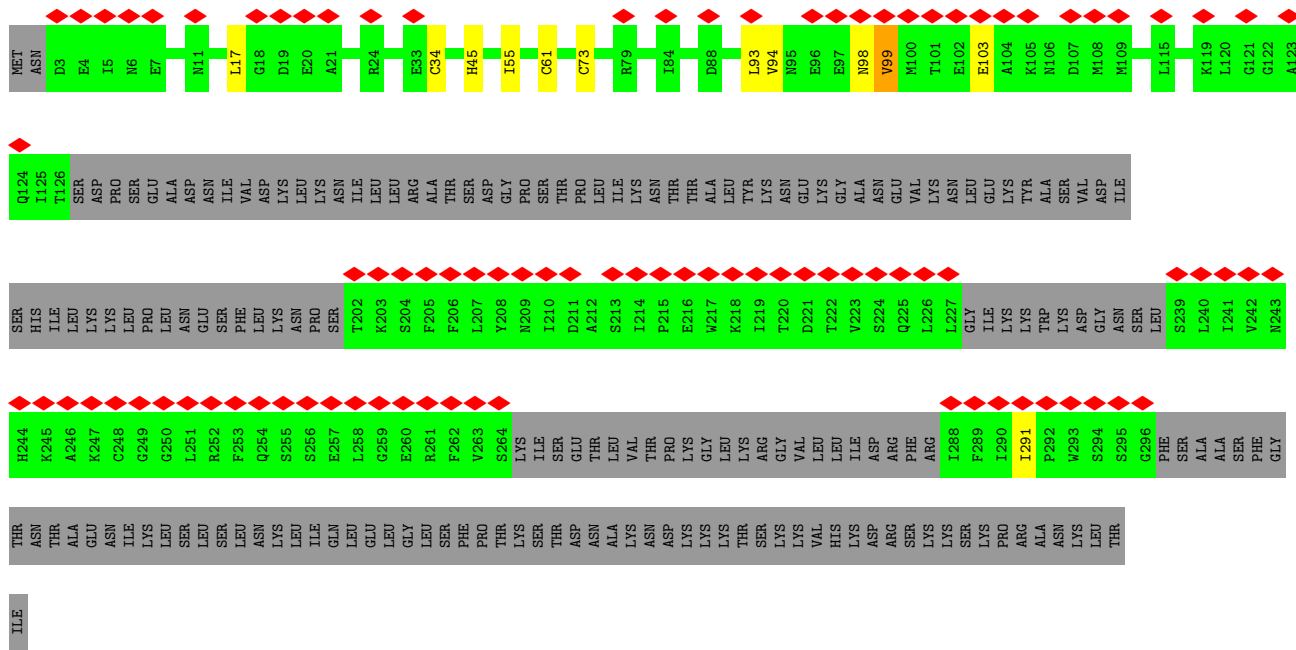


- Molecule 13: Pre-mRNA-processing factor 17

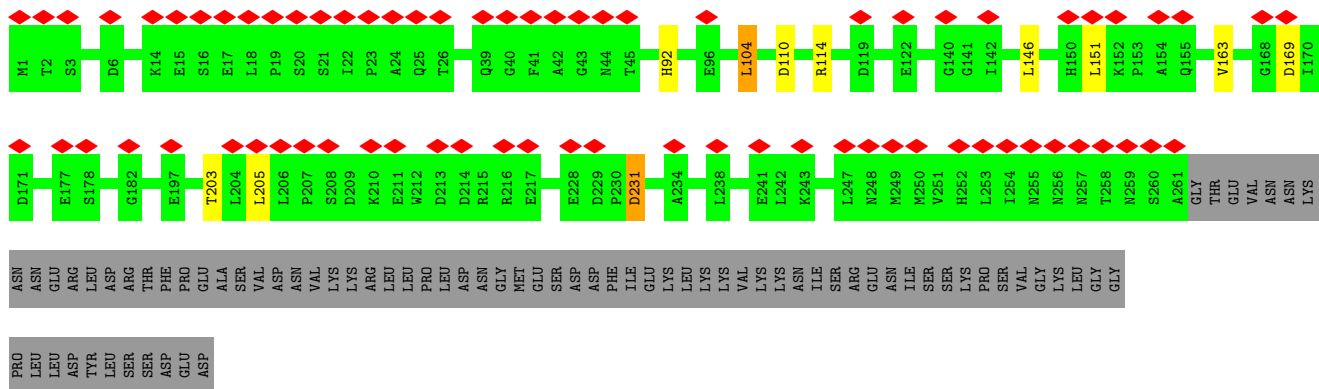


- Molecule 14: Pre-mRNA-splicing factor SLT11

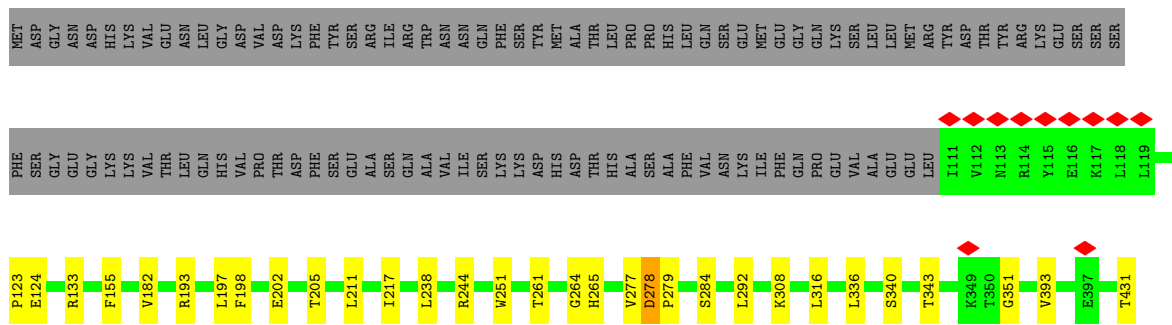


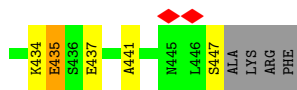


• Molecule 15: Pre-mRNA-splicing factor CWC2

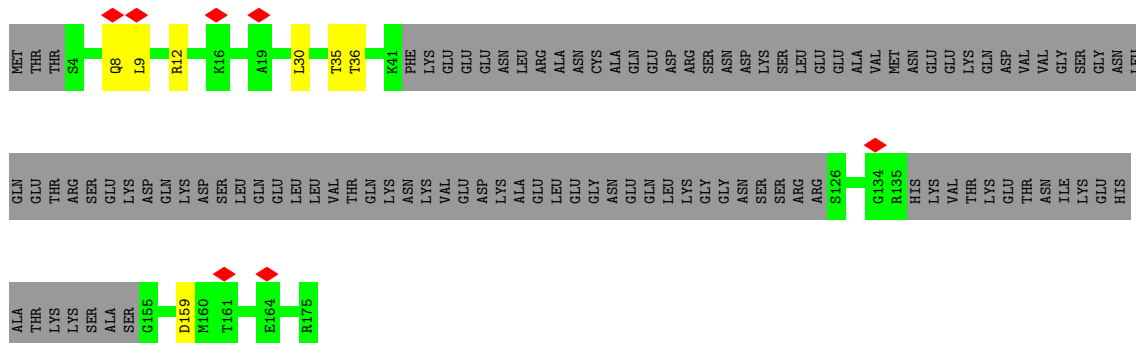


• Molecule 16: Pre-mRNA-splicing factor PRP46

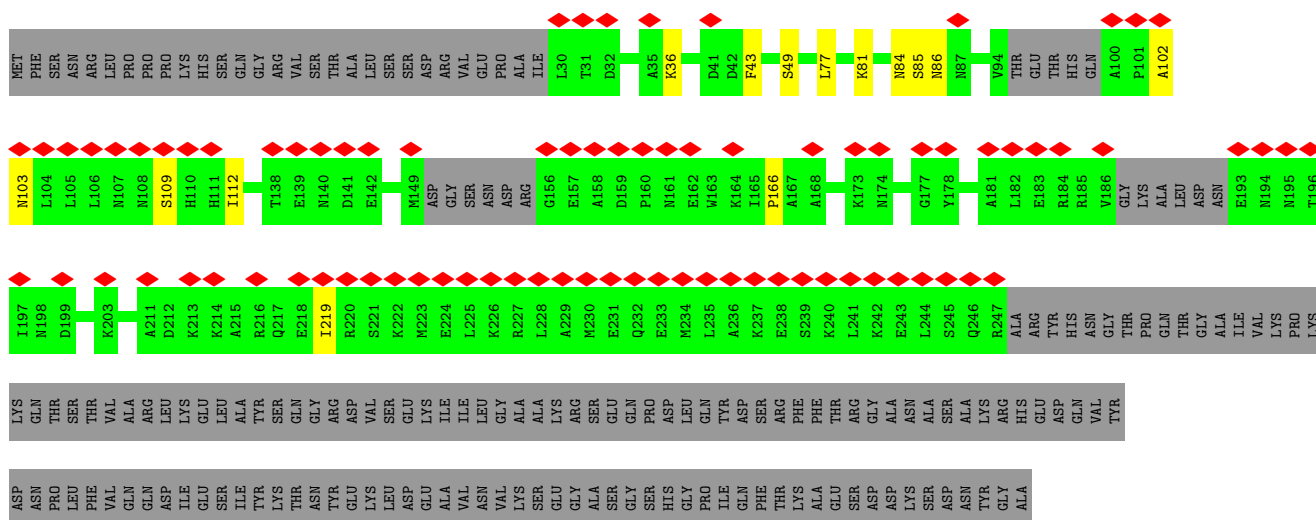




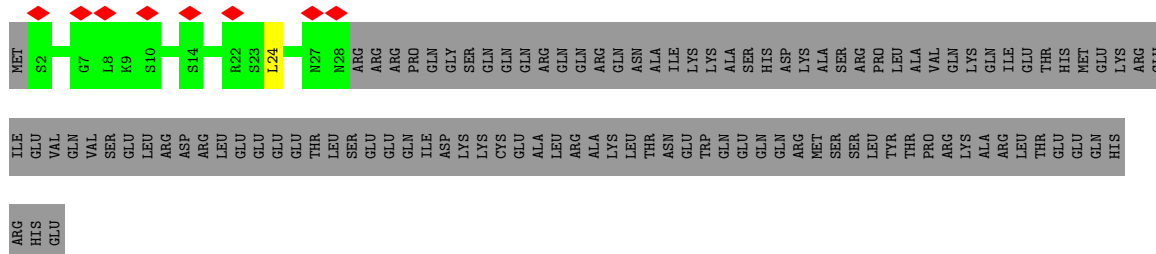
• Molecule 17: Pre-mRNA-splicing factor CWC15

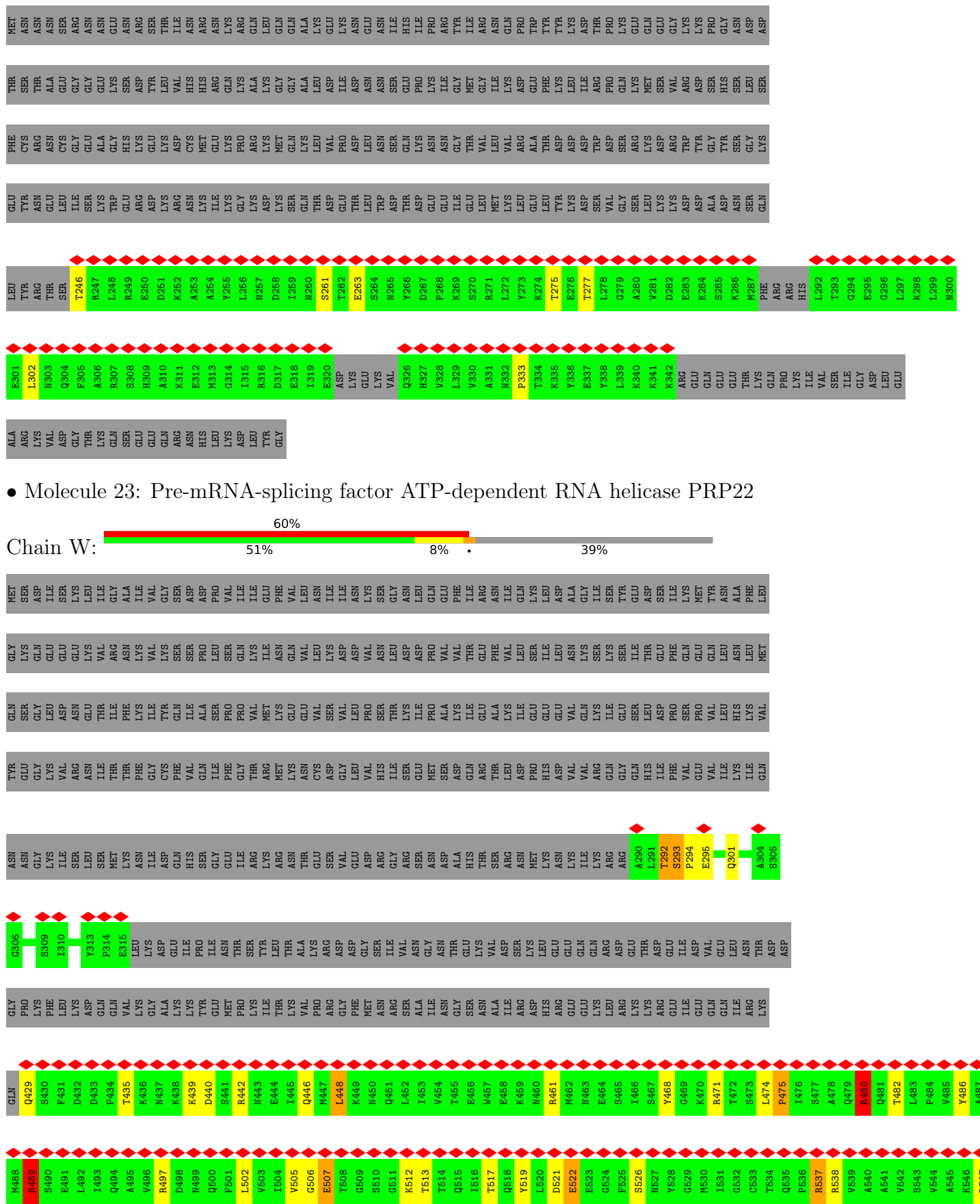


• Molecule 18: Pre-mRNA-processing protein 45



• Molecule 19: Pre-mRNA-splicing factor CWC21

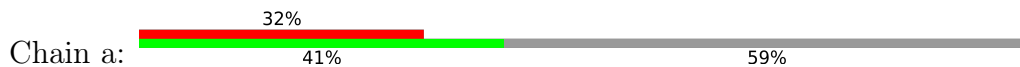




● Molecule 23: Pre-mRNA-splicing factor ATP-dependent RNA helicase PRP22

V548	A649	E550	E651	V552	G653	C554	K555	V556	G557	H558	D559	V560	G561	Y562	T563	I564	R565	F566	E567	D568	V569	T570	G571	P572	D573	T574	R575	I576	K577	Y578	M579	T580	D581	G582	M583	L584	Q585	R586	E587	A588	L589	L590	D591	P592	E593	M594	S595	K596	Y597	S598	V599	I600	L602	D603	E604	H606	E607			
R608	T609	V610	A611	T612	D613	V614	L615	F616	A617	L618	L619	K620	K621	A622	A623	I624	K625	R626	P627	E628	L629	K630	V631	I632	D633	T634	S635	A636	T637	L638	M639	S640	A641	K642	F643	S644	E645	Y646	F647	L648	L649	C650	P651	I652	I653	M654	I655	P656	Y657	K658	T659	F660	I661	V662	E663	V664	Y666	S667		
Q668	T669	P670	Q671	M672	D673	V674	I675	E676	A677	A678	L679	D680	C681	A682	I683	D684	I685	H686	I687	N688	E689	G690	P691	G692	D693	I694	L695	V696	F697	L698	T699	G700	Q701	E702	E703	I704	D705	S706	C707	C708	E709	I710	L711	Y712	I713	R714	V715	K716	T717	L718	G719	D720	I721	I722	G723	V724	L726	I727		
L728	P729	V730	Y731	L732	A733	L734	P735	E736	F737	I738	Q739	S740	K741	I742	F743	E744	P745	THR	PRO	K748	G749	S750	R751	K752	V753	V754	F755	A756	T757	N758	I759	A760	E761	T762	S763	I764	T765	I766	D767	G768	I769	Y770	Y771	V772	V773	D774	F775	G776	F777	A778	K779	I780	N781	I782	Y783	N784	A785	R786	A787	
G788	I789	E790	Q791	L792	I793	V794	S795	P796	I797	S798	Q799	A800	Q801	A802	N803	Q804	R805	K806	G807	R808	A809	G810	R811	G812	P813	P814	G815	K816	C817	Y818	R819	L820	Y821	T822	E823	S824	A825	F826	Y827	N828	E829	M830	L831	E832	N833	T834	V835	F836	E837	I838	Q839	R840	N842	L843	S844	H845	T846	I847		
L848	M849	L850	K851	A852	M853	G854	I855	N856	D857	L858	L859	K860	F861	D862	F863	M864	D865	P866	P867	R868	K869	N870	L871	M872	L873	N874	A875	L876	T877	E878	L879	Y880	H881	L882	Q883	S884	L885	D886	D887	E888	G889	K890	L891	T892	N893	L894	G895	K896	E897	M898	S899	L900	F901	P902	N903	D904	P905	T906	L907	
S908	R909	S910	L911	L912	S913	S914	V915	D916	N917	Q918	C919	S920	K921	E922	I923	V924	T925	I926	I927	S928	N929	M930	L930	S931	V932	Q933	N934	V935	F936	R937	R938	P939	K940	D941	R942	Q943	L944	E945	A946	D947	S948	K949	K950	A951	K952	F953	H954	H955	P956	Y957	G958	D959	H960	I961	T962	L963	L964	N965	V966	Y967
T968	R969	M970	Q971	L972	A973	M974	Y975	S976	E977	Q978	Y979	C980	K981	T982	N983	F984	L985	H986	F987	R988	H989	L990	K991	R992	A993	R994	D995	V996	K997	S998	L999	I1000	S1001	M1002	I1003	F1004	L1005	K1006	I1007	G1008	L1009	K1010	L1011	I1012	S1013	C1014	H1015	S1016	D1017	P1018	D1019	L1020	I1021	R1022	K1023	L1024	F1025	V1026	S1027	
G1028	F1029	F1030	M1031	M1032	A1033	A1034	K1035	R1036	D1037	S1038	Q1039	V1040	G1041	Y1042	K1043	T1044	I1045	M1046	G1047	T1048	G1049	E1050	V1051	G1052	I1053	H1054	P1055	S1056	S1057	S1058	L1059	Y1060	G1061	K1062	E1063	Y1064	L1065	Y1066	V1067	M1068	G1069	L1070	S1071	I1072	V1073	L1074	T1075	S1076	R1077	E1078	Y1079	M1080	Q1082	V1083	T1084	S1085	I1086	E1087		
P1088	Q1089	M1090	L1091	L1092	E1093	V1094	A1095	P1096	H1097	F1098	Y1099	K1100	G1101	G1102	D1103	A1104	E1105	S1106	Q1107	SER	ARG	LYS	ALA	LYS	ILE	PRO	LEU	ASN	ASN	PHE	ALA	LYS	ASP	GLN	ASN	SER	TRP	LEU	SER	ILE	ARG	GLN	GLN	ARG	GLY	ILE	LYS	ARG	P1018	Y1079	M1080	Q1082	V1083	T1084	S1085	I1086	E1087			

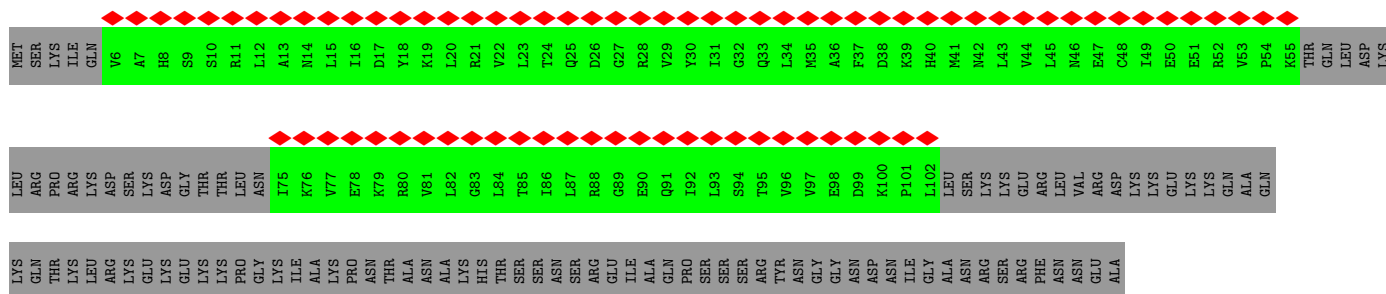
• Molecule 24: Small nuclear ribonucleoprotein-associated protein B



MET	SER	LYS	I4	Q5	V6	A7	H8	S9	S10	R11	L12	M14	L15	I16	D17	Y18	K19	L20	R21	V22	Q25	D26	G27	R28	V29	Y30	I31	HIS	LYS	G32	Q33	L34	D38	K39	L43	E47	C48	I49	E50	E51	R52	V53	P54	K55	THR	GLN	LEU	ASP	LYS	LEU	ARG	PRO	ARG	ARG	LYS	ASP	SER
LYS	ASP	GLY	THR	THR	LEU	ASN	I75	K76	V77	E78	K79	R80	V81	L82	G83	L84	T85	I86	L87	E90	Q91	I92	L93	S94	T95	ARG	V96	TYR	V97	E98	G99	K100	G32	P101	L102	LEU	SER	LYS	ASN	ARG	GLU	ALA	PRO	GLU	PRO	PRO	GLN	LYS	GLN	THR	THR	LEU	LYS	ARG	LYS	GLY	GLN
LYS	GLU	LYS	PRO	GLY	LYS	ILE	ALA	PRO	ASN	THR	ALA	ALA	LYS	HIS	THR	SER	ASN	SER	ARG	GLU	ILE	ALA	GLN	PRO	SER	SER	ARG	TYR	ASN	GLY	GLY	ASN	ASP	ASN	ILE	ALA	LYS	ASN	ARG	ARG	ARG	PHE	ASN	ASN	GLU	ALA	PRO	PRO	PRO	GLN	THR	ARG	LYS	PHE	GLN		

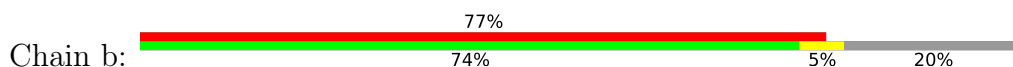
PRO
PRO
PRO
GLY
PHE
LYS
ARG
LYS

• Molecule 24: Small nuclear ribonucleoprotein-associated protein B

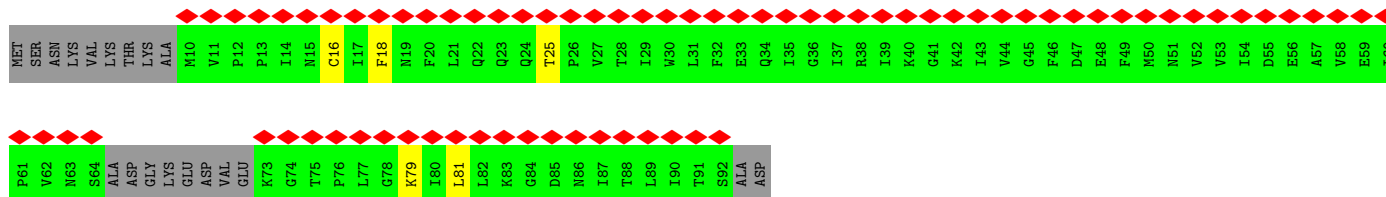
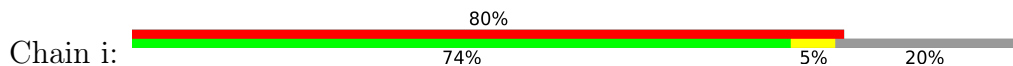


PRO
PRO
GLN
THR
THR
ARG
LYS
PHE
GLN
LYS
ARG

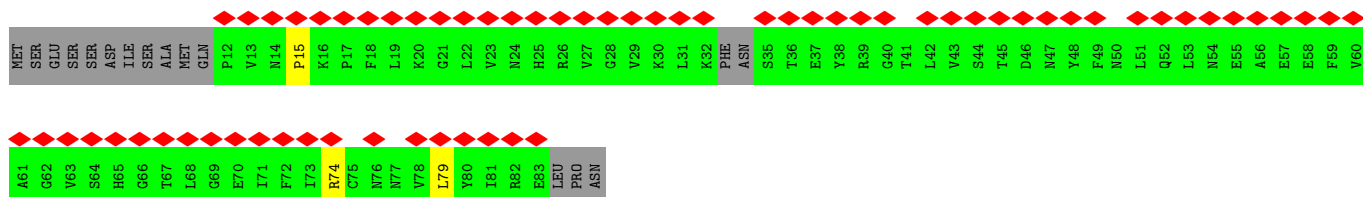
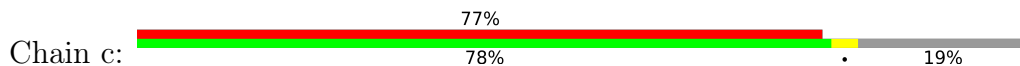
• Molecule 25: Small nuclear ribonucleoprotein E



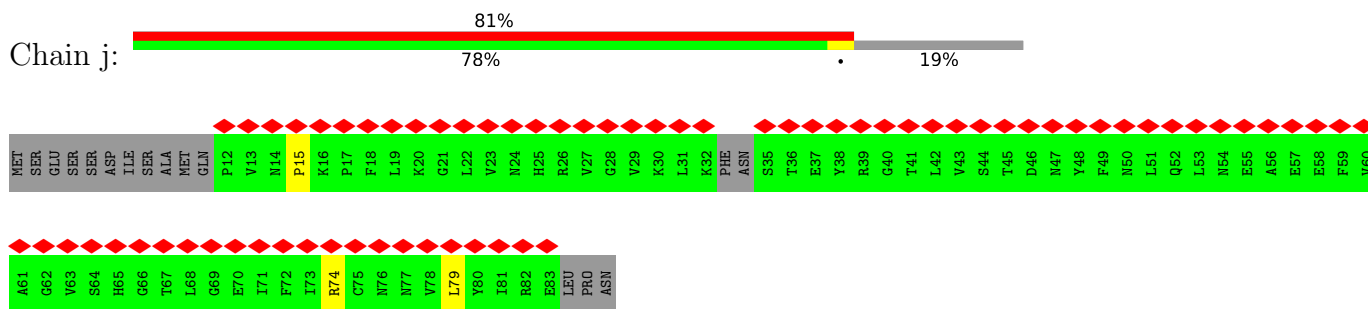
• Molecule 25: Small nuclear ribonucleoprotein E



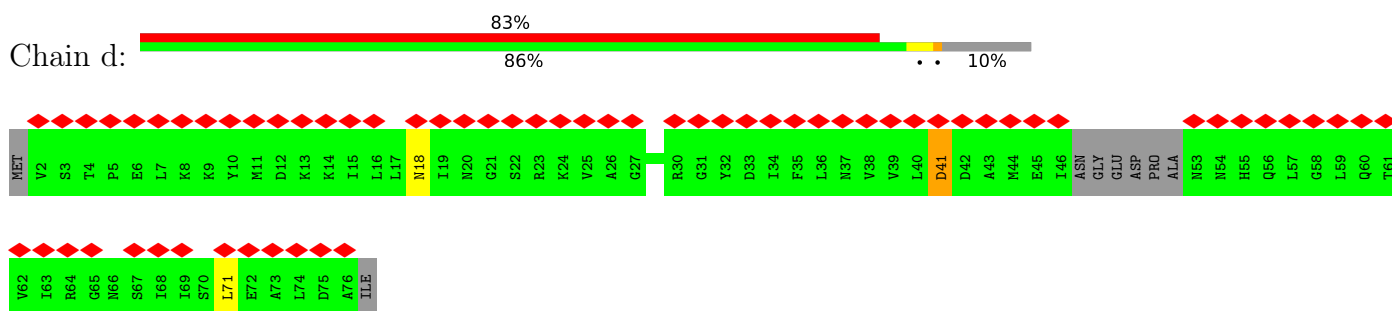
• Molecule 26: Small nuclear ribonucleoprotein F



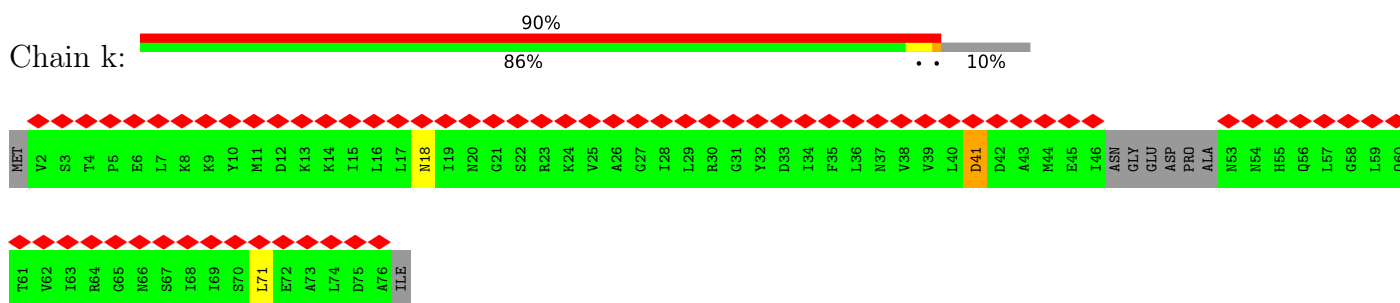
• Molecule 26: Small nuclear ribonucleoprotein F



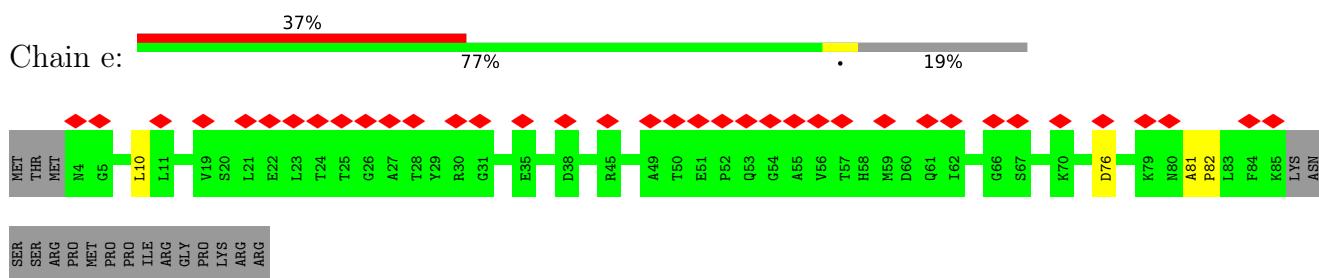
• Molecule 27: Small nuclear ribonucleoprotein G



• Molecule 27: Small nuclear ribonucleoprotein G

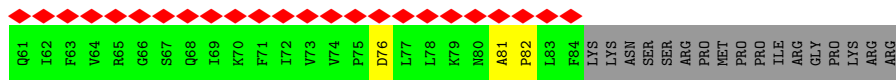


• Molecule 28: Small nuclear ribonucleoprotein Sm D3

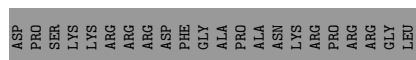
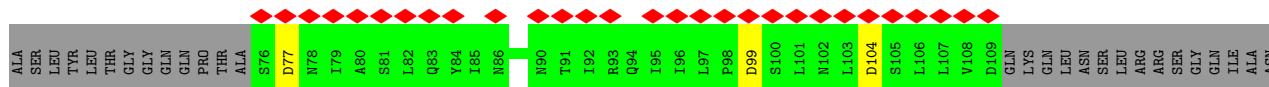
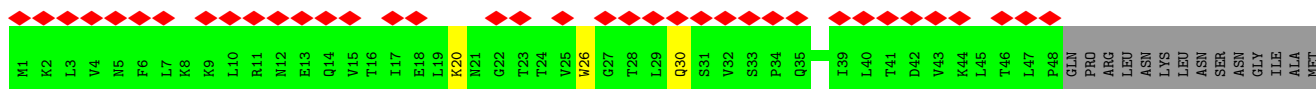
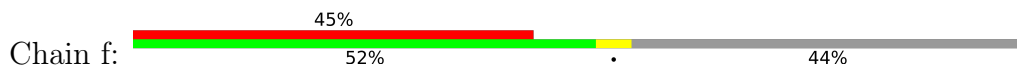


• Molecule 28: Small nuclear ribonucleoprotein Sm D3

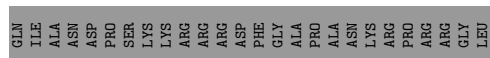
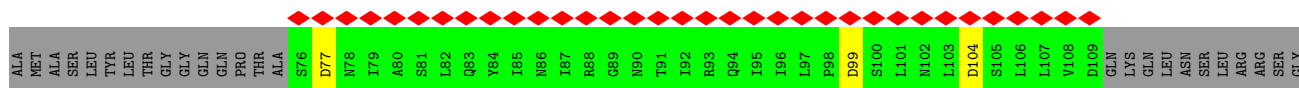




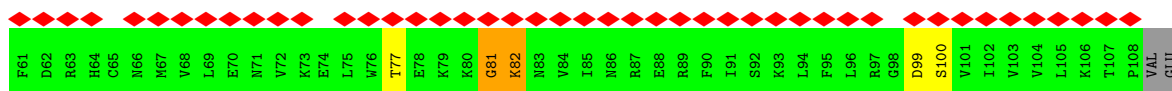
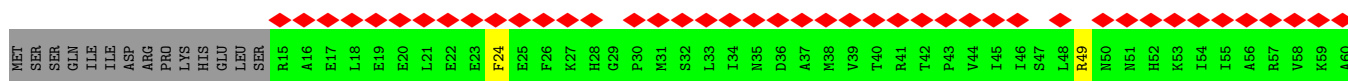
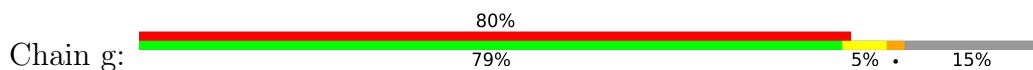
• Molecule 29: Small nuclear ribonucleoprotein Sm D1



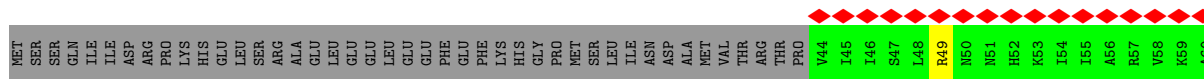
• Molecule 29: Small nuclear ribonucleoprotein Sm D1

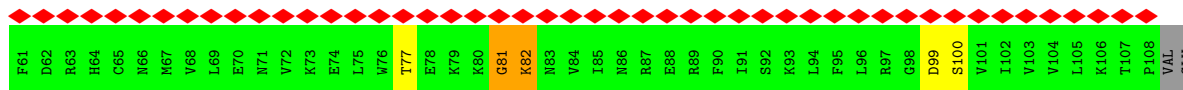


• Molecule 30: Small nuclear ribonucleoprotein Sm D2

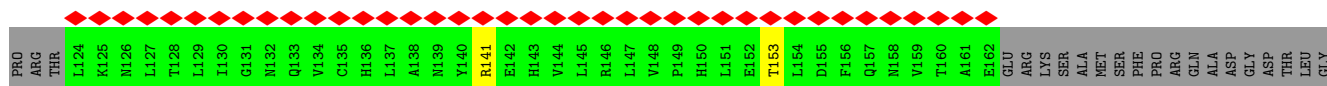
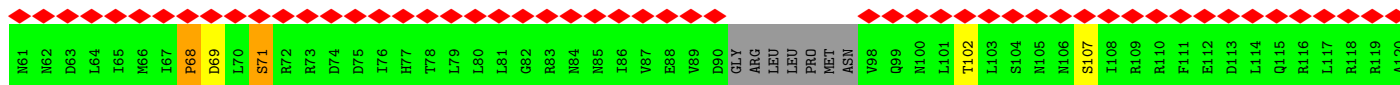
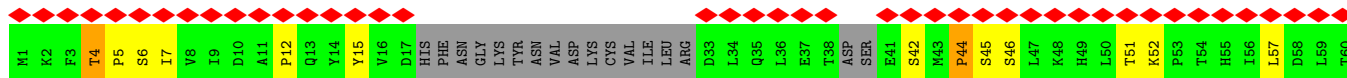


• Molecule 30: Small nuclear ribonucleoprotein Sm D2

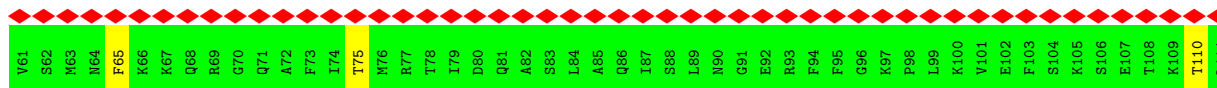
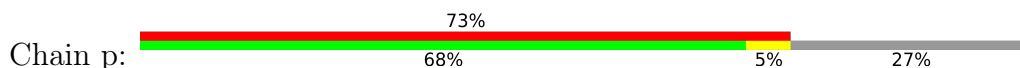




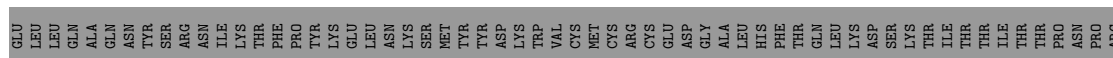
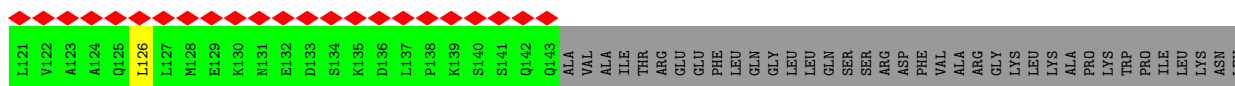
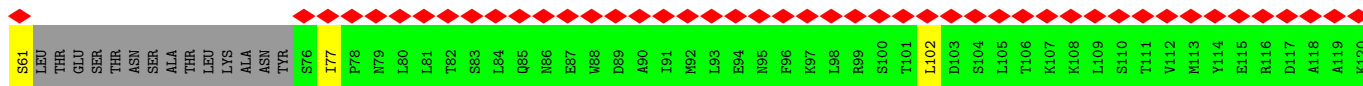
• Molecule 31: U2 small nuclear ribonucleoprotein A'

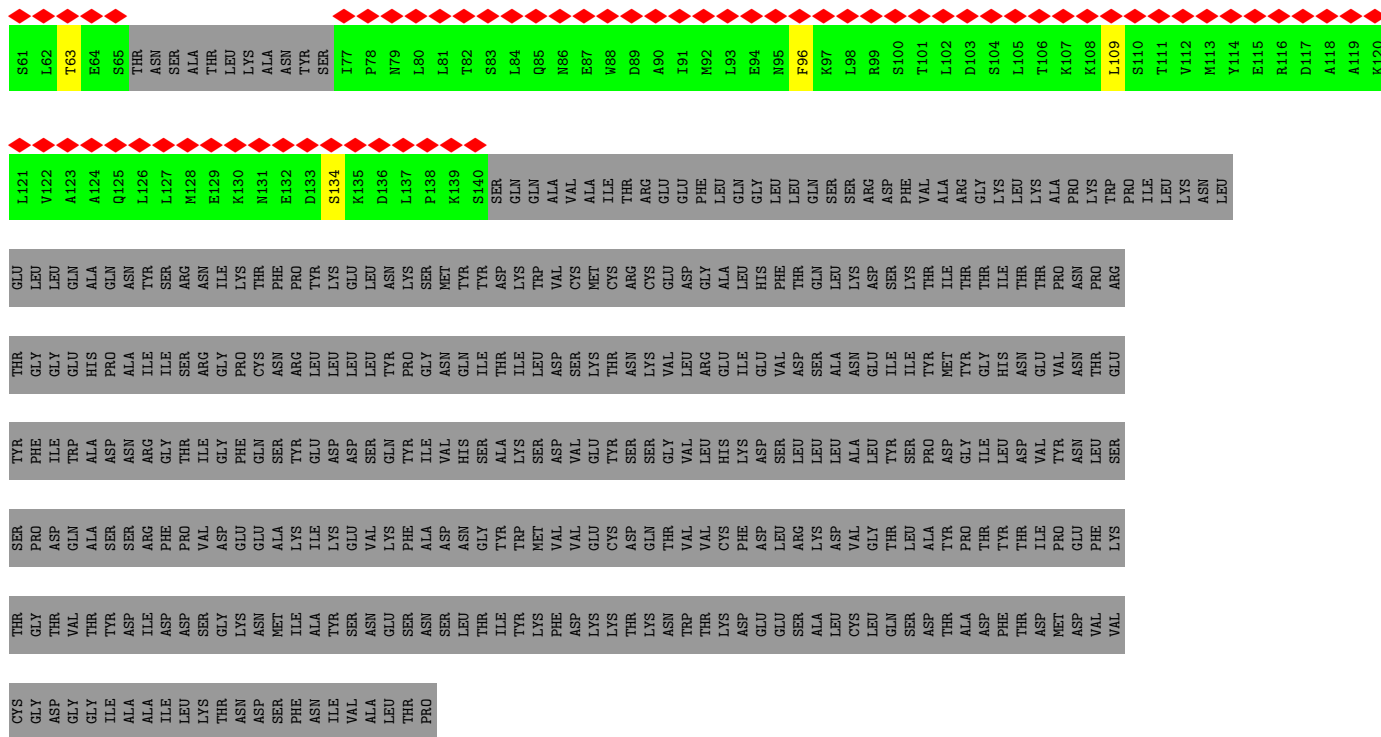


• Molecule 32: U2 small nuclear ribonucleoprotein B''

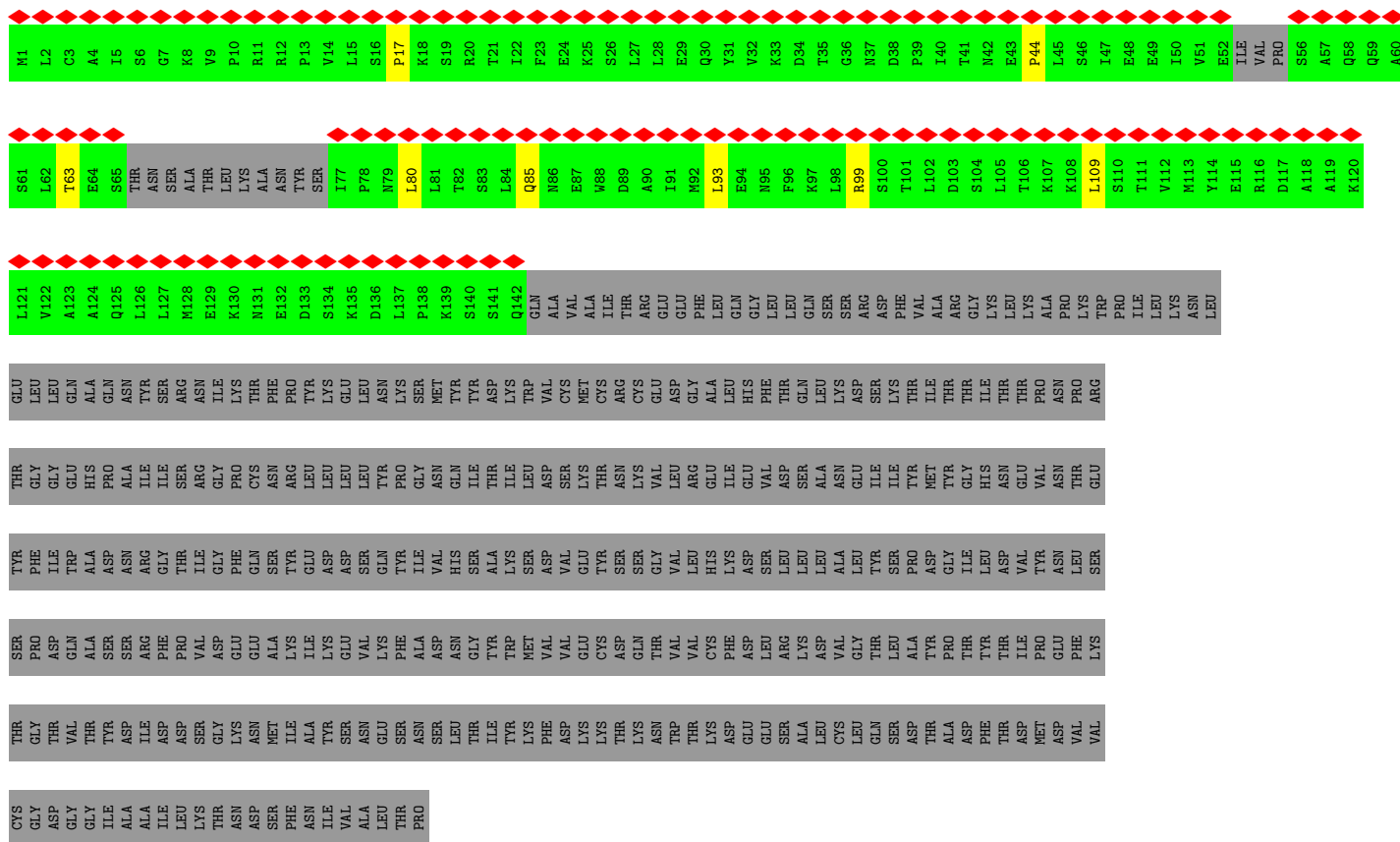


• Molecule 33: Pre-mRNA-processing factor 19





● Molecule 33: Pre-mRNA-processing factor 19



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	134517	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.230	Depositor
Minimum map value	-0.120	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.007	Depositor
Recommended contour level	0.034	Depositor
Map size (\AA)	423.99997, 423.99997, 423.99997	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.06, 1.06, 1.06	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, GTP, MG, IHP

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.82	7/16338 (0.0%)	0.94	27/22145 (0.1%)
2	B	0.37	0/2747	0.70	0/4267
3	C	0.67	1/7168 (0.0%)	0.85	3/9707 (0.0%)
4	D	0.46	3/2452 (0.1%)	0.69	0/3817
5	E	0.41	2/1461 (0.1%)	0.68	0/2260
6	F	0.73	11/2123 (0.5%)	1.09	19/3295 (0.6%)
7	G	0.42	0/924	0.56	2/1244 (0.2%)
8	H	0.66	8/2991 (0.3%)	0.63	22/4072 (0.5%)
9	I	0.48	1/3459 (0.0%)	0.61	6/4708 (0.1%)
10	J	0.49	1/2967 (0.0%)	0.68	9/3994 (0.2%)
11	K	0.42	0/780	0.63	0/1036
12	L	0.72	0/1315	0.89	2/1759 (0.1%)
13	T	1.25	24/2390 (1.0%)	1.10	20/3200 (0.6%)
14	M	0.57	0/1496	0.85	0/2014
15	N	0.57	0/2135	0.83	3/2871 (0.1%)
16	O	1.13	5/2704 (0.2%)	1.18	12/3676 (0.3%)
17	P	0.85	0/574	0.98	2/766 (0.3%)
18	Q	0.66	0/1604	0.87	1/2160 (0.0%)
19	R	0.41	0/191	0.73	0/254
20	S	0.60	0/1732	0.84	2/2330 (0.1%)
21	U	0.29	0/1227	0.50	0/1665
22	V	0.98	1/555 (0.2%)	0.90	2/742 (0.3%)
23	W	0.72	1/5660 (0.0%)	1.24	44/7653 (0.6%)
24	a	0.38	0/636	0.61	0/856
24	h	0.37	0/615	0.61	0/829
25	b	0.43	0/585	0.62	0/795
25	i	0.43	0/585	0.62	0/795
26	c	0.44	0/564	0.65	1/761 (0.1%)
26	j	0.44	0/564	0.66	1/761 (0.1%)
27	d	0.37	0/532	0.60	0/715
27	k	0.37	0/532	0.60	0/715
28	e	0.40	0/634	0.71	0/859

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
28	l	0.40	0/625	0.70	0/848
29	f	0.41	0/649	0.61	0/880
29	m	0.42	0/649	0.61	0/880
30	g	0.45	0/753	0.69	2/1013 (0.2%)
30	n	0.43	0/535	0.66	2/717 (0.3%)
31	o	1.03	9/839 (1.1%)	1.65	11/1127 (1.0%)
32	p	0.83	4/514 (0.8%)	1.32	2/686 (0.3%)
33	q	0.41	0/856	0.54	0/1155
33	r	0.39	0/828	0.54	1/1117 (0.1%)
33	s	0.40	0/835	0.53	0/1126
33	t	0.40	0/848	0.56	0/1143
All	All	0.69	78/78171 (0.1%)	0.88	196/107413 (0.2%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	8
3	C	0	3
9	I	0	1
10	J	0	3
12	L	0	5
13	T	0	2
14	M	0	5
15	N	0	1
16	O	0	11
18	Q	0	3
20	S	0	3
23	W	0	35
27	d	0	1
27	k	0	1
28	e	0	2
28	l	0	2
30	g	0	2
30	n	0	2
All	All	0	90

The worst 5 of 78 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
13	T	444	CYS	CB-SG	-22.89	1.43	1.82
13	T	454	CYS	CB-SG	-18.67	1.50	1.82
13	T	185	HIS	CB-CG	18.43	1.83	1.50
13	T	399	CYS	CB-SG	-17.51	1.52	1.82
8	H	712	CYS	CB-SG	-17.09	1.53	1.82

The worst 5 of 196 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
13	T	130	TYR	N-CA-C	16.80	156.37	111.00
13	T	152	LYS	CB-CA-C	-16.28	77.83	110.40
13	T	153	LYS	N-CA-CB	12.84	133.71	110.60
6	F	1110	U	C5-C4-O4	11.77	132.96	125.90
1	A	284	ARG	NE-CZ-NH2	11.66	126.13	120.30

There are no chirality outliers.

5 of 90 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	1014	LYS	Peptide
1	A	239	PHE	Peptide
1	A	288	GLU	Peptide
1	A	539	PRO	Peptide
1	A	907	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	
1	A	1925/2413 (80%)	1558 (81%)	328 (17%)	39 (2%)	7	41
3	C	872/1008 (86%)	735 (84%)	121 (14%)	16 (2%)	8	43
7	G	150/175 (86%)	134 (89%)	13 (9%)	3 (2%)	7	41
8	H	496/859 (58%)	474 (96%)	16 (3%)	6 (1%)	13	51
9	I	481/687 (70%)	433 (90%)	45 (9%)	3 (1%)	25	64
10	J	414/590 (70%)	368 (89%)	35 (8%)	11 (3%)	5	35
11	K	92/215 (43%)	84 (91%)	7 (8%)	1 (1%)	14	53
12	L	155/157 (99%)	118 (76%)	34 (22%)	3 (2%)	8	42
13	T	326/455 (72%)	283 (87%)	21 (6%)	22 (7%)	1	15
14	M	177/364 (49%)	137 (77%)	36 (20%)	4 (2%)	6	38
15	N	259/339 (76%)	219 (85%)	35 (14%)	5 (2%)	8	42
16	O	335/451 (74%)	268 (80%)	58 (17%)	9 (3%)	5	35
17	P	63/175 (36%)	50 (79%)	10 (16%)	3 (5%)	2	22
18	Q	193/379 (51%)	156 (81%)	29 (15%)	8 (4%)	3	26
19	R	25/135 (18%)	20 (80%)	5 (20%)	0	100	100
20	S	205/577 (36%)	166 (81%)	36 (18%)	3 (2%)	10	47
21	U	144/251 (57%)	140 (97%)	4 (3%)	0	100	100
22	V	82/382 (22%)	71 (87%)	9 (11%)	2 (2%)	6	37
23	W	697/1145 (61%)	600 (86%)	72 (10%)	25 (4%)	3	29
24	a	76/196 (39%)	69 (91%)	7 (9%)	0	100	100
24	h	74/196 (38%)	67 (90%)	7 (10%)	0	100	100
25	b	71/94 (76%)	65 (92%)	6 (8%)	0	100	100
25	i	71/94 (76%)	65 (92%)	6 (8%)	0	100	100
26	c	66/86 (77%)	61 (92%)	4 (6%)	1 (2%)	10	47
26	j	66/86 (77%)	61 (92%)	4 (6%)	1 (2%)	10	47
27	d	65/77 (84%)	64 (98%)	1 (2%)	0	100	100
27	k	65/77 (84%)	64 (98%)	1 (2%)	0	100	100
28	e	80/101 (79%)	70 (88%)	9 (11%)	1 (1%)	12	50
28	l	79/101 (78%)	69 (87%)	9 (11%)	1 (1%)	12	50
29	f	78/146 (53%)	74 (95%)	4 (5%)	0	100	100
29	m	78/146 (53%)	74 (95%)	4 (5%)	0	100	100
30	g	92/110 (84%)	85 (92%)	6 (6%)	1 (1%)	14	53

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
30	n	63/110 (57%)	58 (92%)	4 (6%)	1 (2%)	9	46
31	o	125/238 (52%)	111 (89%)	12 (10%)	2 (2%)	9	46
32	p	77/111 (69%)	75 (97%)	2 (3%)	0	100	100
33	q	125/503 (25%)	115 (92%)	6 (5%)	4 (3%)	4	31
33	r	119/503 (24%)	111 (93%)	5 (4%)	3 (2%)	5	36
33	s	120/503 (24%)	115 (96%)	4 (3%)	1 (1%)	19	59
33	t	122/503 (24%)	116 (95%)	6 (5%)	0	100	100
All	All	8803/14738 (60%)	7603 (86%)	1021 (12%)	179 (2%)	11	41

5 of 179 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	487	ASN
1	A	645	ASP
1	A	1404	HIS
1	A	1405	ILE
1	A	1540	ASN

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	1751/2182 (80%)	1715 (98%)	36 (2%)	53	78
3	C	794/910 (87%)	785 (99%)	9 (1%)	73	88
7	G	36/165 (22%)	26 (72%)	10 (28%)	0	3
8	H	57/786 (7%)	47 (82%)	10 (18%)	2	12
9	I	219/633 (35%)	218 (100%)	1 (0%)	88	95
10	J	212/525 (40%)	206 (97%)	6 (3%)	43	72
11	K	88/193 (46%)	86 (98%)	2 (2%)	50	76
12	L	141/141 (100%)	139 (99%)	2 (1%)	67	85
13	T	177/413 (43%)	130 (73%)	47 (27%)	0	3

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
14	M	171/332 (52%)	167 (98%)	4 (2%)	50	76
15	N	224/296 (76%)	220 (98%)	4 (2%)	59	81
16	O	295/397 (74%)	290 (98%)	5 (2%)	60	82
17	P	56/151 (37%)	54 (96%)	2 (4%)	35	67
18	Q	173/328 (53%)	171 (99%)	2 (1%)	71	87
19	R	21/121 (17%)	20 (95%)	1 (5%)	25	60
20	S	192/538 (36%)	190 (99%)	2 (1%)	76	88
21	U	134/225 (60%)	131 (98%)	3 (2%)	52	77
22	V	24/346 (7%)	22 (92%)	2 (8%)	11	42
23	W	613/1029 (60%)	559 (91%)	54 (9%)	10	40
24	a	70/176 (40%)	70 (100%)	0	100	100
24	h	67/176 (38%)	67 (100%)	0	100	100
25	b	65/83 (78%)	60 (92%)	5 (8%)	13	45
25	i	65/83 (78%)	60 (92%)	5 (8%)	13	45
26	c	61/77 (79%)	60 (98%)	1 (2%)	62	83
26	j	61/77 (79%)	60 (98%)	1 (2%)	62	83
27	d	58/66 (88%)	55 (95%)	3 (5%)	23	58
27	k	58/66 (88%)	55 (95%)	3 (5%)	23	58
28	e	69/89 (78%)	67 (97%)	2 (3%)	42	72
28	l	68/89 (76%)	66 (97%)	2 (3%)	42	72
29	f	77/129 (60%)	71 (92%)	6 (8%)	12	44
29	m	77/129 (60%)	71 (92%)	6 (8%)	12	44
30	g	79/103 (77%)	74 (94%)	5 (6%)	18	53
30	n	59/103 (57%)	55 (93%)	4 (7%)	16	50
31	o	45/219 (20%)	42 (93%)	3 (7%)	16	50
32	p	26/100 (26%)	25 (96%)	1 (4%)	33	66
33	q	63/451 (14%)	56 (89%)	7 (11%)	6	31
33	r	60/451 (13%)	55 (92%)	5 (8%)	11	42
33	s	59/451 (13%)	52 (88%)	7 (12%)	5	27
33	t	62/451 (14%)	54 (87%)	8 (13%)	4	24
All	All	6627/13280 (50%)	6351 (96%)	276 (4%)	33	63

5 of 276 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
27	k	41	ASP
29	m	77	ASP
33	r	99	ARG
13	T	202	PHE
13	T	159	PRO

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 99 such sidechains are listed below:

Mol	Chain	Res	Type
13	T	292	HIS
16	O	428	GLN
13	T	358	ASN
15	N	227	ASN
18	Q	37	ASN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
2	B	114/214 (53%)	27 (23%)	3 (2%)
4	D	102/112 (91%)	31 (30%)	5 (4%)
5	E	57/369 (15%)	34 (59%)	6 (10%)
6	F	88/1175 (7%)	30 (34%)	8 (9%)
All	All	361/1870 (19%)	122 (33%)	22 (6%)

5 of 122 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
2	B	32	G
2	B	33	U
2	B	42	A
2	B	44	A
2	B	74	U

5 of 22 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
6	F	29	C
6	F	40	U
6	F	31	A

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Mol	Chain	Res	Type
6	F	41	C
4	D	56	A

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 14 ligands modelled in this entry, 12 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
34	IHP	A	3000	-	36,36,36	0.70	0	54,60,60	0.96	0
35	GTP	C	1500	36	26,34,34	1.35	3 (11%)	32,54,54	2.46	12 (37%)

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
34	IHP	A	3000	-	-	15/30/54/54	0/1/1/1
35	GTP	C	1500	36	-	5/18/38/38	0/3/3/3

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
35	C	1500	GTP	C6-N1	-3.52	1.32	1.37
35	C	1500	GTP	PB-O1B	-2.77	1.41	1.50
35	C	1500	GTP	C4-N3	-2.35	1.31	1.37

The worst 5 of 12 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
35	C	1500	GTP	PB-O3B-PG	-6.13	111.78	132.83
35	C	1500	GTP	PA-O3A-PB	-5.30	114.65	132.83
35	C	1500	GTP	O6-C6-N1	4.93	126.47	120.65
35	C	1500	GTP	O6-C6-C5	-4.54	115.51	124.37
35	C	1500	GTP	O4'-C1'-C2'	3.61	112.19	106.93

There are no chirality outliers.

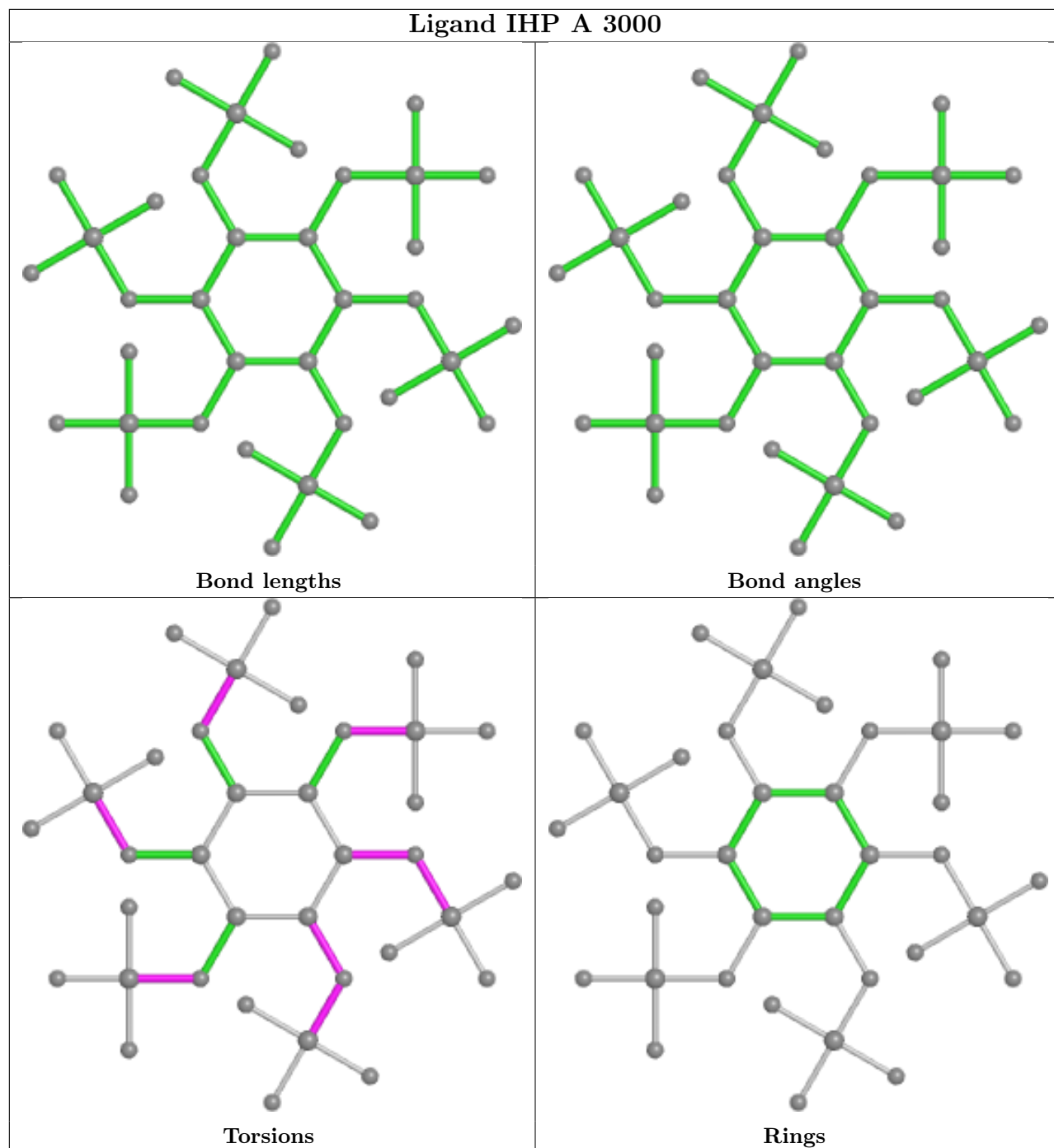
5 of 20 torsion outliers are listed below:

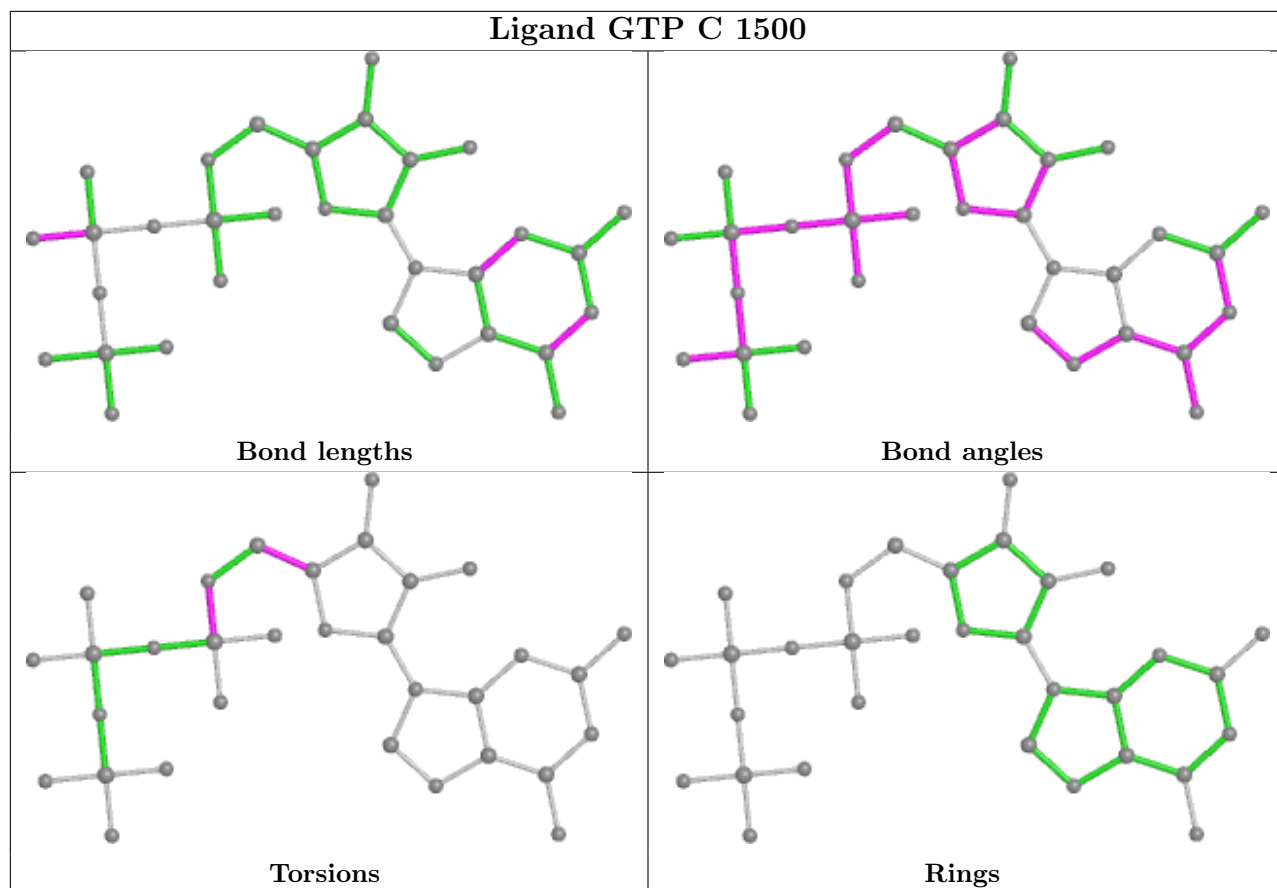
Mol	Chain	Res	Type	Atoms
34	A	3000	IHP	C1-C6-O16-P6
34	A	3000	IHP	C5-C6-O16-P6
34	A	3000	IHP	C2-O12-P2-O22
34	A	3000	IHP	C3-O13-P3-O43
35	C	1500	GTP	C5'-O5'-PA-O3A

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 [\(i\)](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
5	E	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	E	350:G	O3'	351:U	P	3.39

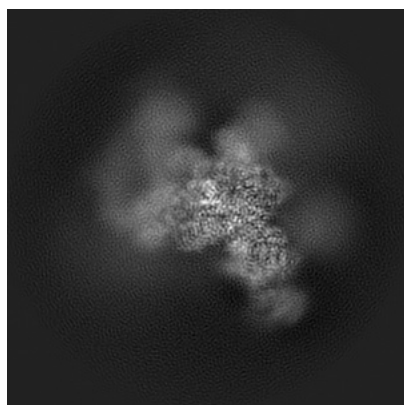
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-6839. These allow visual inspection of the internal detail of the map and identification of artifacts.

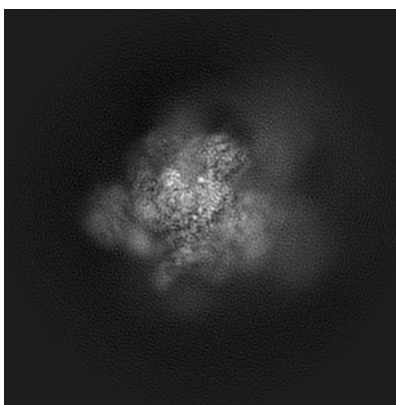
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

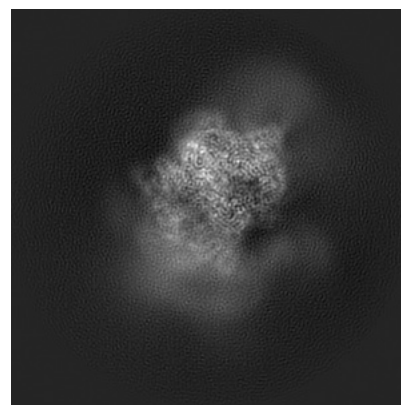
6.1.1 Primary map



X



Y

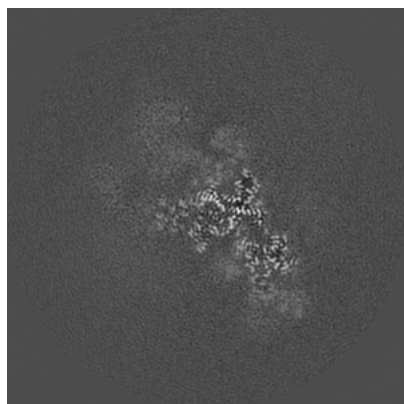


Z

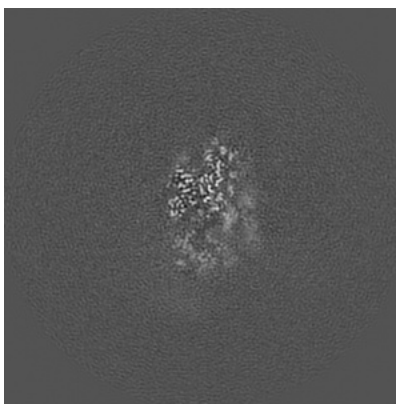
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

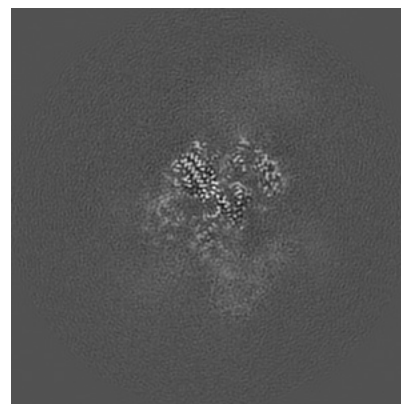
6.2.1 Primary map



X Index: 200



Y Index: 200

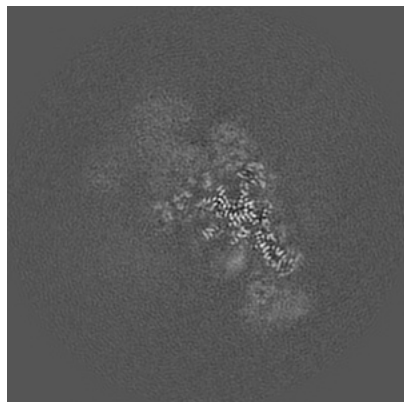


Z Index: 200

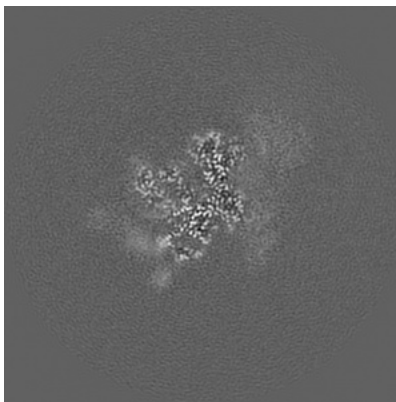
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

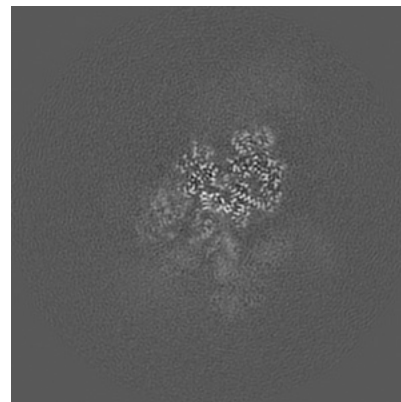
6.3.1 Primary map



X Index: 192



Y Index: 238

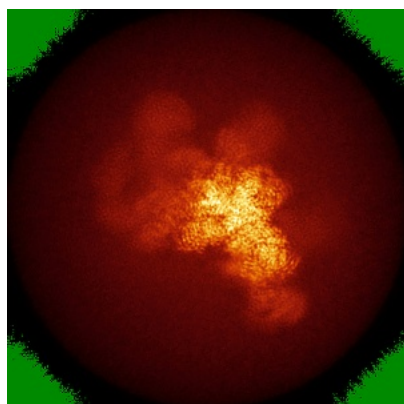


Z Index: 206

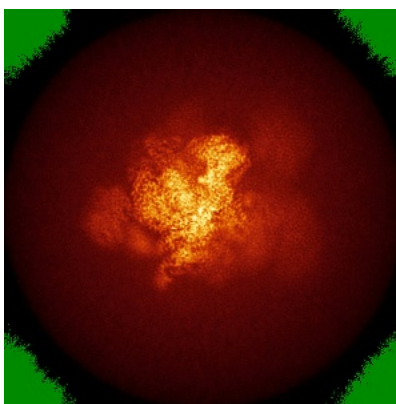
The images above show the largest variance slices of the map in three orthogonal directions.

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

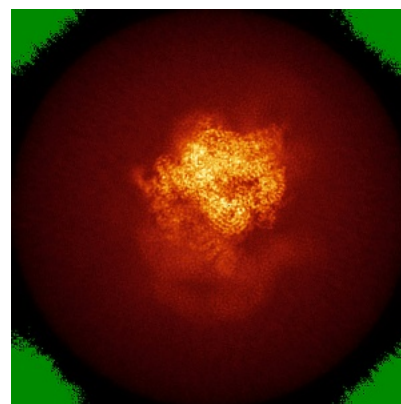
6.4.1 Primary map



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

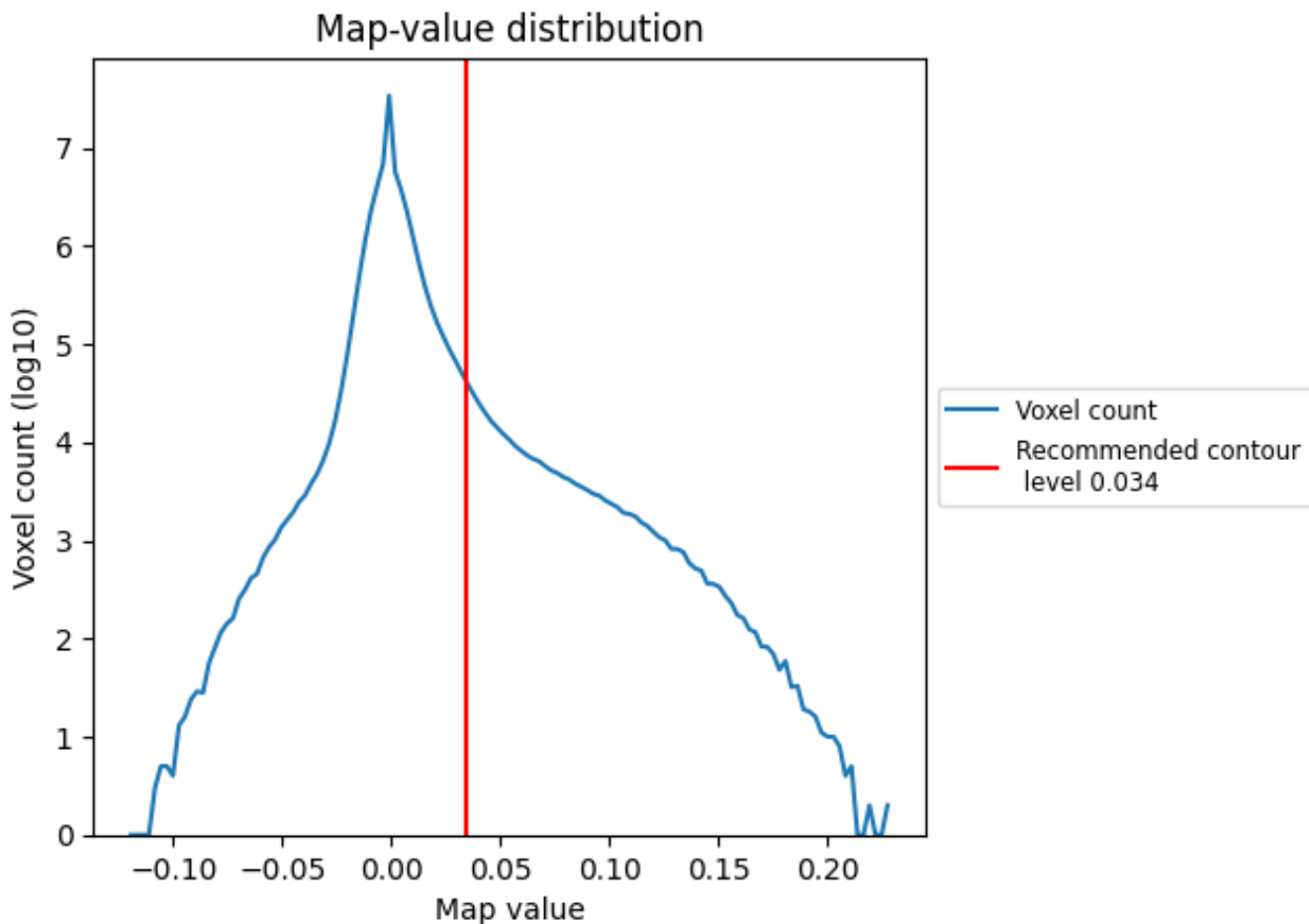
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

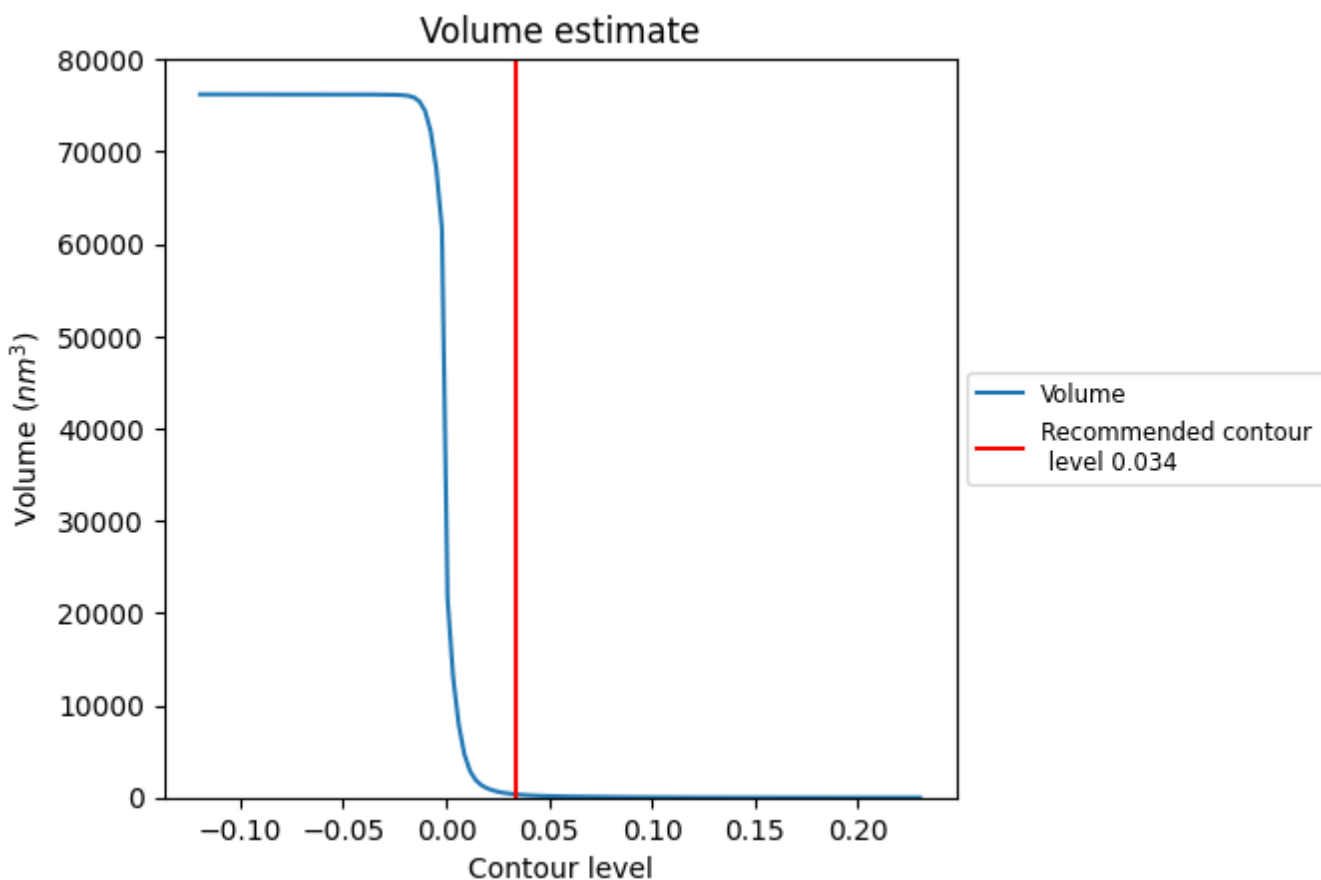
This section contains the results of statistical analysis of the map.

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.

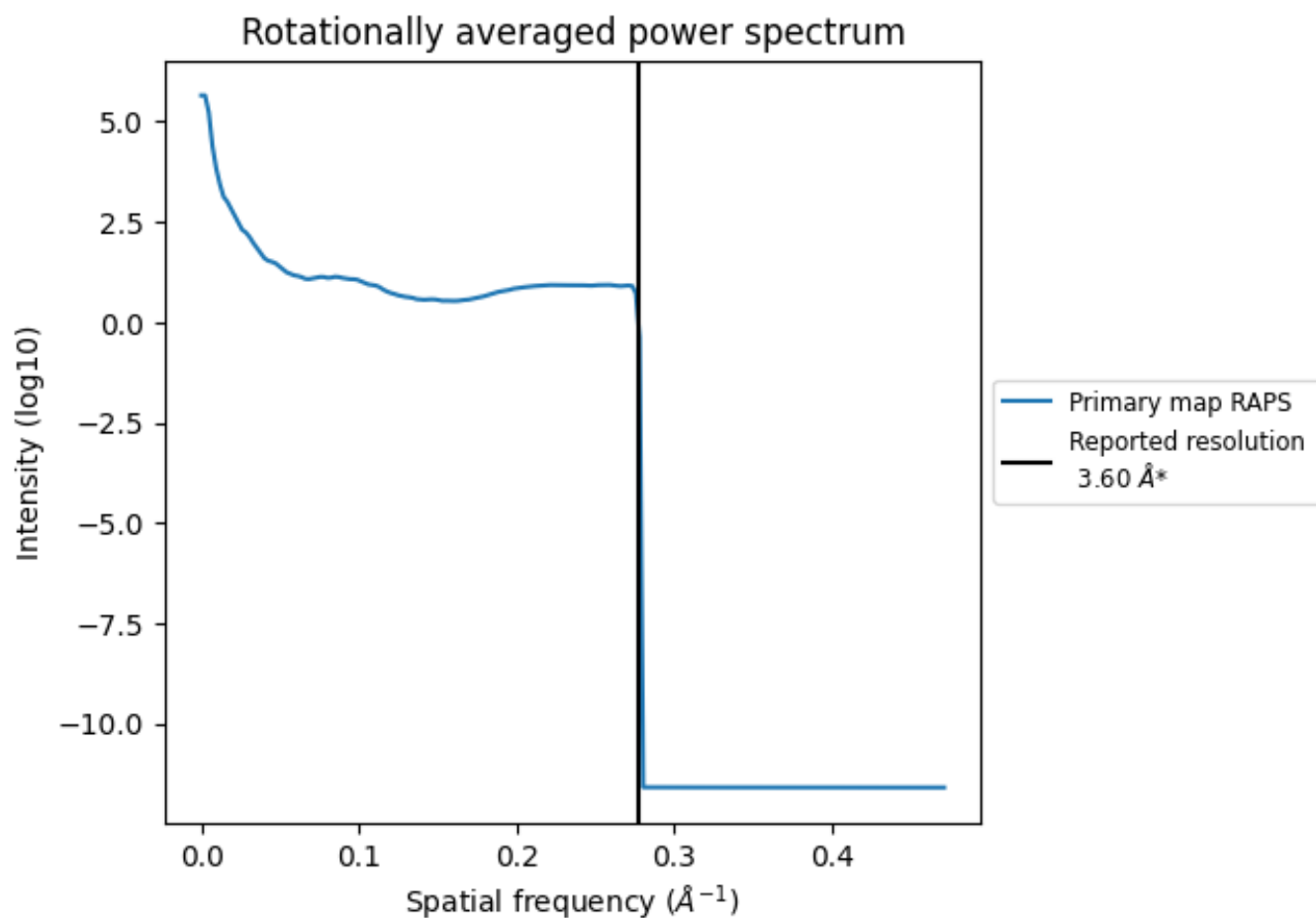
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 343 nm³; this corresponds to an approximate mass of 309 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 0.278 Å⁻¹

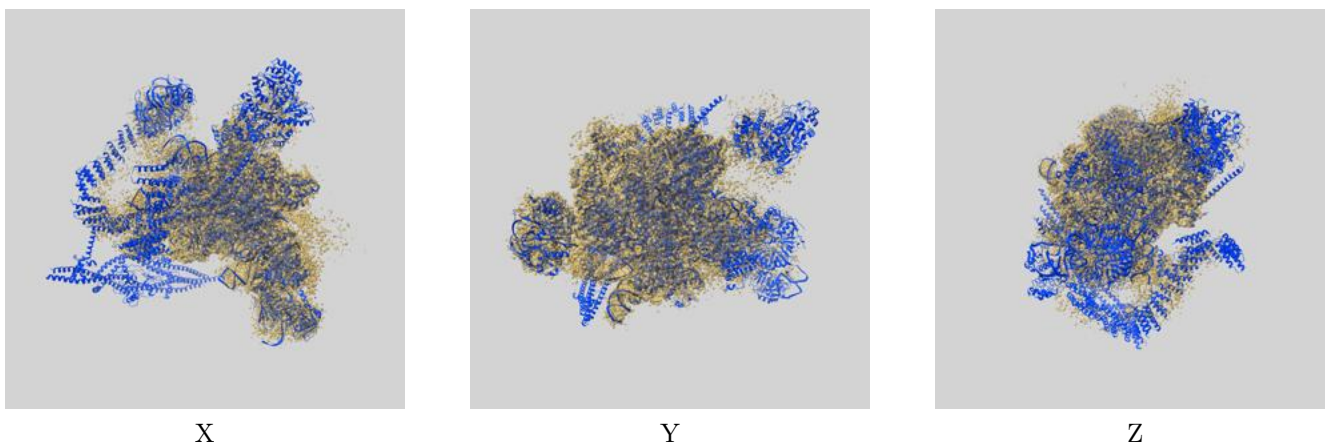
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

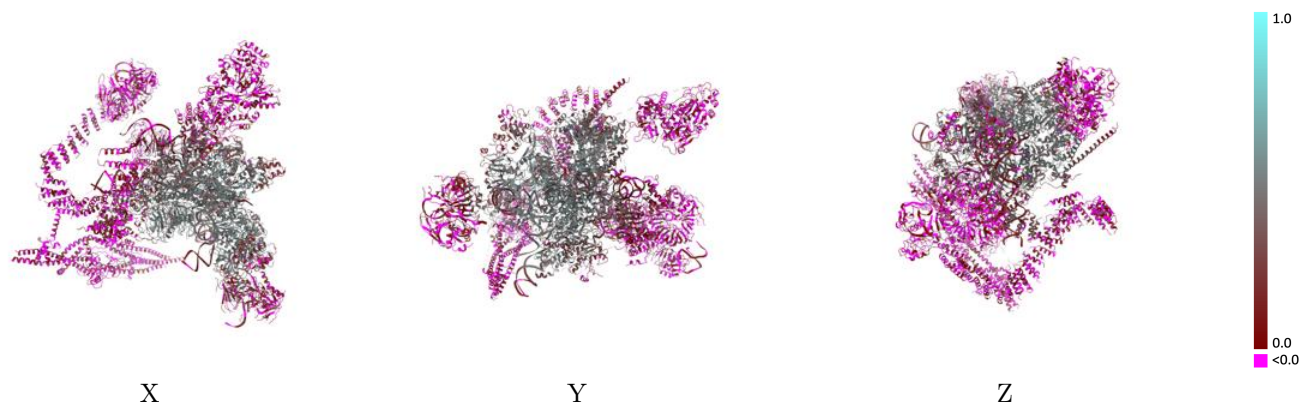
This section contains information regarding the fit between EMDB map EMD-6839 and PDB model 5YLZ. Per-residue inclusion information can be found in section 3 on page 12.

9.1 Map-model overlay [i](#)



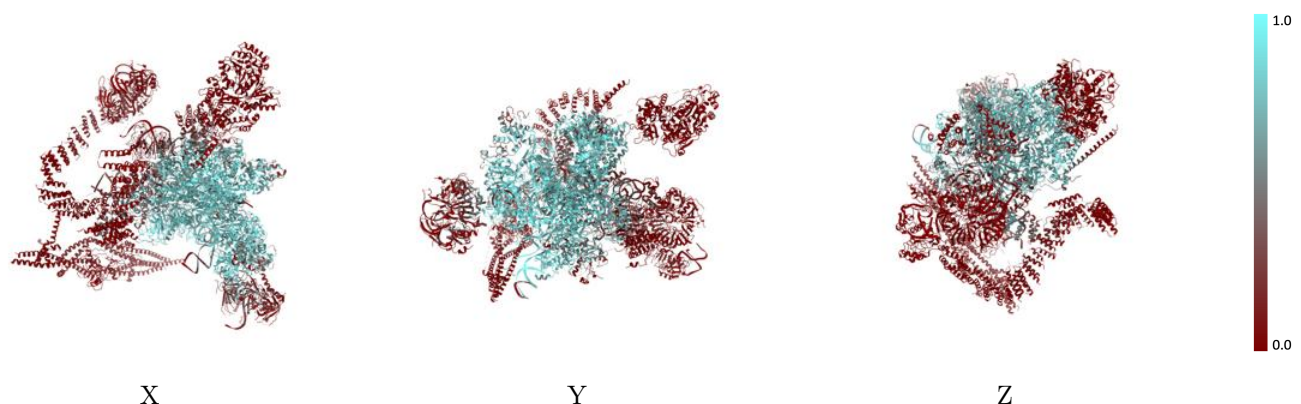
The images above show the 3D surface view of the map at the recommended contour level 0.034 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



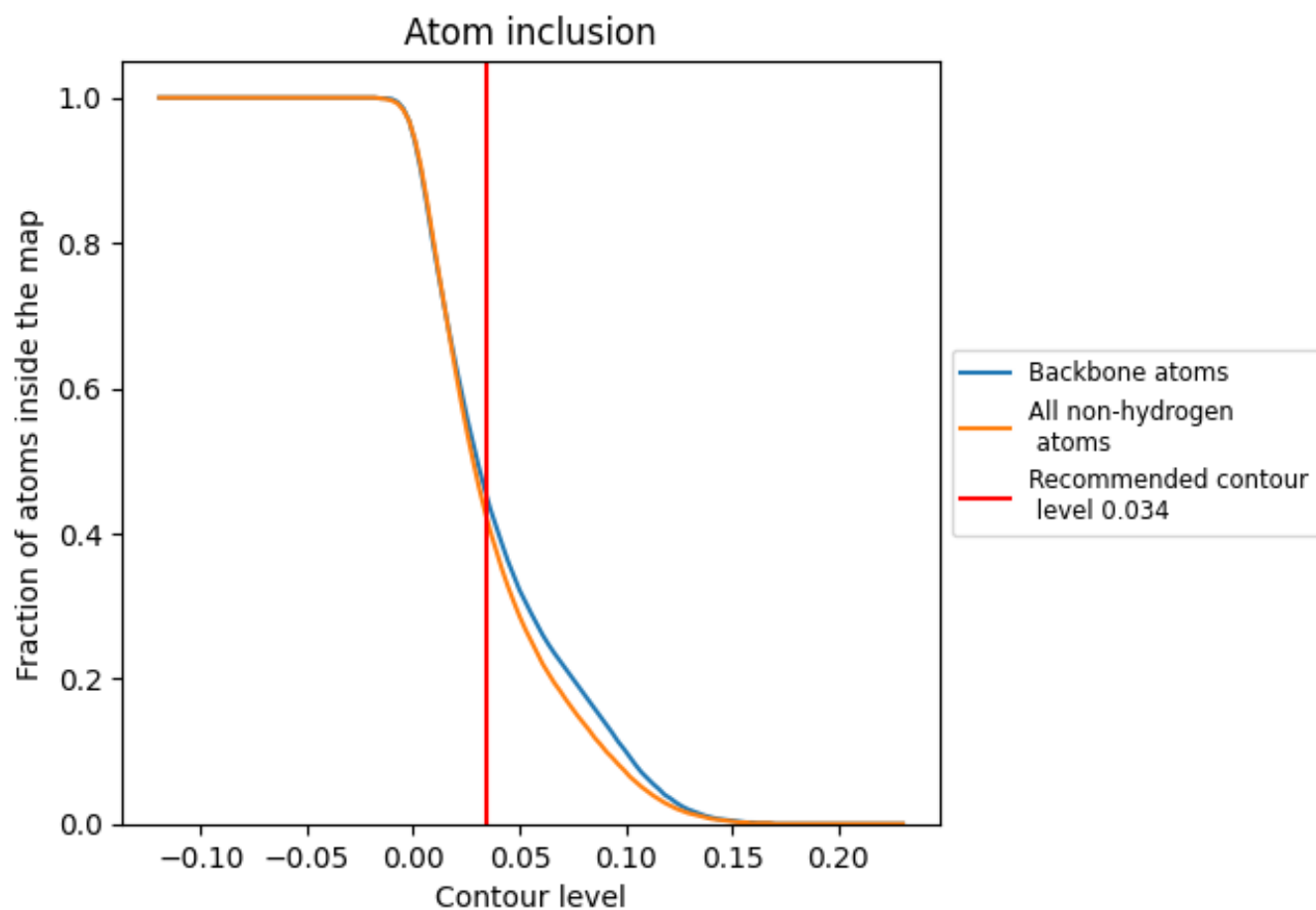
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.034).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 46% of all backbone atoms, 43% 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 (0.034) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.4270	 0.2510
A	 0.7290	 0.4270
B	 0.7080	 0.3360
C	 0.7330	 0.4230
D	 0.7560	 0.3550
E	 0.4950	 0.2470
F	 0.2530	 0.1240
G	 0.0000	 0.0080
H	 0.0190	 0.0080
I	 0.3310	 0.2120
J	 0.3030	 0.1980
K	 0.3330	 0.2530
L	 0.7890	 0.4380
M	 0.4130	 0.3100
N	 0.5740	 0.3440
O	 0.8110	 0.4820
P	 0.6780	 0.4730
Q	 0.4650	 0.3650
R	 0.5400	 0.4360
S	 0.6810	 0.3860
T	 0.1840	 0.1280
U	 0.0200	 0.0470
V	 0.0240	 0.0620
W	 0.0310	 0.0290
a	 0.2710	 0.1470
b	 0.1140	 0.0690
c	 0.1160	 0.0480
d	 0.1860	 0.1130
e	 0.4260	 0.2570
f	 0.2310	 0.0990
g	 0.1260	 0.0380
h	 0.0070	 0.0070
i	 0.0050	 -0.0350
j	 0.0130	 -0.0110
k	 0.0040	 -0.0070



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Chain	Atom inclusion	Q-score
l	 0.0050	 0.0330
m	 0.0270	 -0.0240
n	 0.0190	 0.0030
o	 0.0020	 0.0180
p	 0.0000	 0.0110
q	 0.0000	 -0.0150
r	 0.0000	 0.0230
s	 0.0000	 -0.0180
t	 0.0000	 0.0140