



## wwPDB EM Validation Summary Report ⓘ

Mar 13, 2024 – 01:40 PM JST

PDB ID : 3JB9  
EMDB ID : EMD-6413  
Title : Cryo-EM structure of the yeast spliceosome at 3.6 angstrom resolution  
Authors : Yan, C.; Hang, J.; Wan, R.; Huang, M.; Wong, C.; Shi, Y.  
Deposited on : 2015-08-09  
Resolution : 3.60 Å (reported)  
Based on initial models : 2BAY, 1GV2, 2XL2, 3LRV, 3U1L, 4I43, 2YTC, 3J7P, 4WZJ, 4YVD

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

We welcome your comments at [validation@mail.wwpdb.org](mailto: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>.

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

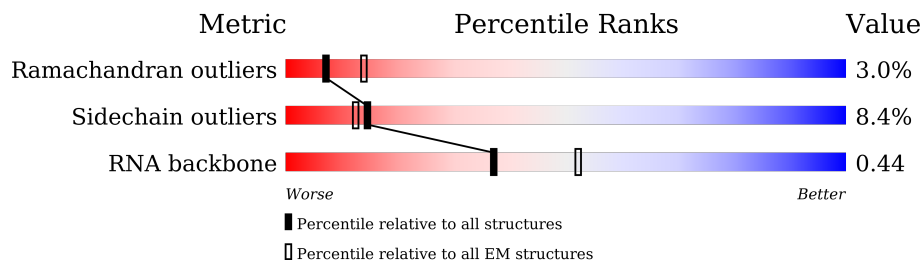
EMDB validation analysis : 0.0.1.dev70  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
MolProbity : 4.02b-467  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
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  $\geq 3$ , 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	2363	 7% 71% 11% 17%
2	B	984	 85% 7% 8%
3	C	120	 42% 45% 12%
4	D	97	 85% 14%
4	Z	97	 82% 73% 9% 18%
5	E	147	 62% 5% 33%
5	b	147	 50% 46% 50%
6	F	117	 63% 6% 30%






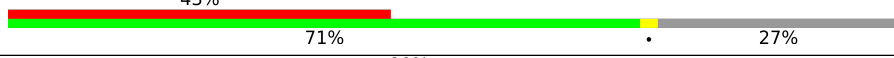
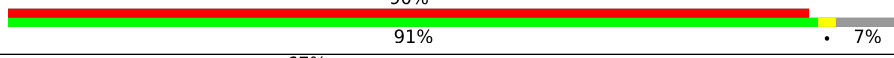
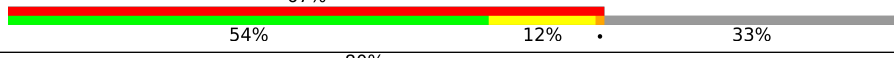
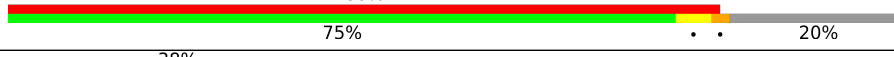

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Mol	Chain	Length	Quality of chain
6	f	117	70% 63% 6% 30%
7	G	115	6% 81% 17%
7	l	115	76% 75% 24%
8	H	84	85% 6% 10%
8	m	84	90% 85% 6% 10%
9	I	78	87% 5% 6%
9	n	78	94% 87% 5% 6%
10	J	77	87% 8% 5%
10	o	77	95% 87% 8% 5%
11	K	473	69% 9% 21%
12	L	340	80% 6% 14%
13	M	557	32% 6% 63%
14	N	99	34% 57% 9%
15	O	8	12% 50% 50%
16	Q	13	100% 69% 31%
17	P	186	47% 29% 27% 40%
18	S	488	9% 25% 73%
18	T	488	25% 73%
18	U	488	50% 76% 10% 12%
18	V	488	8% 25% 73%
19	W	757	9% 52% 44%
20	Y	388	53% 13% 33%
21	a	354	19% 65% 6% 28%
22	c	639	7% 40% 7% 53%
23	d	155	5% 95% 5%

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Mol	Chain	Length	Quality of chain
24	e	146	 90% 8%
25	g	558	 6% 21% 5% 73%
26	h	265	 29% 66%
27	i	187	 11% 80% 6% 14%
28	R	674	 27% 80% 5% 15%
29	r	790	 43% 71% 27%
30	X	1284	 90% 91% 7%
31	j	239	 67% 54% 12% 33%
32	k	111	 80% 75% 20%
33	x	412	 38% 63% 34%

## 2 Entry composition

There are 37 unique types of molecules in this entry. The entry contains 86551 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 spp42.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1964	16230	10413	2859	2893	65	0	0

- Molecule 2 is a protein called Pre-mRNA-splicing factor cwf10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	904	7196	4586	1235	1340	35	0	0

- Molecule 3 is a RNA chain called U5 snRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
3	C	105	2209	990	364	750	105	0	0

- Molecule 4 is a protein called Small nuclear ribonucleoprotein Sm D3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	D	96	760	470	147	136	7	0	0
4	Z	80	639	396	118	118	7	0	0

- Molecule 5 is a protein called Small nuclear ribonucleoprotein-associated protein B.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	E	98	730	464	130	131	5	0	0
5	b	74	576	365	99	107	5	0	0

- Molecule 6 is a protein called Small nuclear ribonucleoprotein Sm D1.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	F	82	Total	C	N	O	S	0	0
			646	412	110	119	5		
6	f	82	Total	C	N	O	S	0	0
			646	412	110	119	5		

- Molecule 7 is a protein called Small nuclear ribonucleoprotein Sm D2.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	G	95	Total	C	N	O	S	0	0
			751	472	141	134	4		
7	l	87	Total	C	N	O	S	0	0
			696	440	128	124	4		

- Molecule 8 is a protein called Small nuclear ribonucleoprotein E.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	H	76	Total	C	N	O	S	0	0
			620	401	107	110	2		
8	m	76	Total	C	N	O	S	0	0
			620	401	107	110	2		

- Molecule 9 is a protein called Small nuclear ribonucleoprotein F.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	I	73	Total	C	N	O	S	0	0
			570	369	95	104	2		
9	n	73	Total	C	N	O	S	0	0
			570	369	95	104	2		

- Molecule 10 is a protein called Small nuclear ribonucleoprotein G.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	J	73	Total	C	N	O	S	0	0
			573	366	98	108	1		
10	o	73	Total	C	N	O	S	0	0
			573	366	98	108	1		

- Molecule 11 is a protein called Pre-mRNA-splicing factor prp5.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	K	373	Total	C	N	O	S	0	0
			2730	1720	492	505	13		

- Molecule 12 is a protein called Pre-mRNA-splicing factor cwf17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	L	293	2273	1425	407	430	11	0	0

- Molecule 13 is a protein called Pre-mRNA-processing protein 45.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	M	207	1661	1044	309	304	4	0	0

- Molecule 14 is a RNA chain called U6 snRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
14	N	90	1928	863	357	618	90	0	0

- Molecule 15 is a RNA chain called RNA (5'-R(P\*GP\*UP\*AP\*UP\*GP\*UP\*AP\*U)-3').

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
15	O	8	170	76	28	58	8	0	0

- Molecule 16 is a RNA chain called RNA (5'-R(P\*UP\*UP\*UP\*AP\*UP\*AP\*CP\*UP\*AP\*A P\*CP\*AP\*C)-3').

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
16	Q	13	270	122	44	91	13	0	0

- Molecule 17 is a RNA chain called U2 snRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
17	P	111	2323	1039	365	808	111	0	0

- Molecule 18 is a protein called Pre-mRNA-processing factor 19.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
18	S	132	1052	663	181	205	3	0	0
18	T	134	1069	671	183	212	3	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace
18	U	430	Total	C	N	O	S	0	0
			2864	1801	492	562	9		
18	V	131	Total	C	N	O	S	0	0
			1037	652	177	205	3		

- Molecule 19 is a protein called Pre-mRNA-splicing factor cdc5.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	W	426	Total	C	N	O	S	0	0
			3024	1881	562	574	7		

- Molecule 20 is a protein called Pre-mRNA-splicing factor cwf2.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	Y	261	Total	C	N	O	S	0	0
			2008	1252	365	381	10		

- Molecule 21 is a protein called Pre-mRNA-splicing factor cwf5.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	a	255	Total	C	N	O	S	0	0
			1751	1088	324	325	14		

- Molecule 22 is a protein called Pre-mRNA-splicing factor cwf19.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	c	300	Total	C	N	O	S	0	0
			2425	1541	422	447	15		

- Molecule 23 is a protein called Peptidyl-prolyl cis-trans isomerase ppi1.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	d	155	Total	C	N	O	S	0	0
			1187	755	203	224	5		

- Molecule 24 is a protein called Pre-mRNA-splicing factor cwf14.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	e	144	Total	C	N	O	S	0	0
			1176	733	216	214	13		



- Molecule 25 is a protein called Pre-mRNA-processing factor 17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
25	g	148	1013	631	181	200	1	0	0

- Molecule 26 is a protein called Pre-mRNA-splicing factor cwf15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
26	h	90	752	467	146	138	1	0	0

- Molecule 27 is a protein called Pre-mRNA-splicing factor cwf7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
27	i	161	1218	758	219	238	3	0	0

- Molecule 28 is a protein called Pre-mRNA-splicing factor cwf4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
28	R	575	3800	2363	718	706	13	0	0

- Molecule 29 is a protein called Pre-mRNA-splicing factor cwf3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
29	r	573	3299	2039	619	640	1	0	0

- Molecule 30 is a protein called Pre-mRNA-splicing factor cwf11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
30	X	1195	9764	6282	1619	1820	43	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
31	j	160	1108	707	187	211	3	0	0

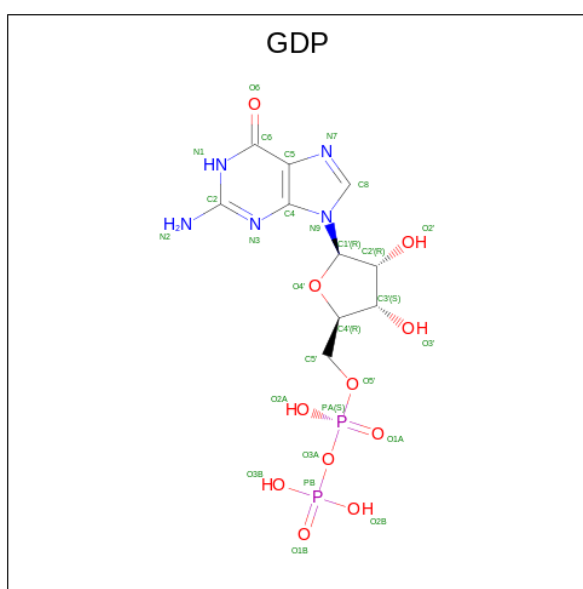
- Molecule 32 is a protein called Probable U2 small nuclear ribonucleoprotein B'.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
32	k	89	618	405	102	109	2	0	0

- Molecule 33 is a protein called unknown chain.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
33	x	272	1360	816	272	272	0	0

- Molecule 34 is GUANOSINE-5'-DIPHOSPHATE (three-letter code: GDP) (formula: C<sub>10</sub>H<sub>15</sub>N<sub>5</sub>O<sub>11</sub>P<sub>2</sub>).



Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
34	B	1	28	10	5	11	2	0

- Molecule 35 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
			Total	Mg	
35	N	4	4	4	0

- Molecule 36 is ZINC ION (three-letter code: ZN) (formula: Zn).

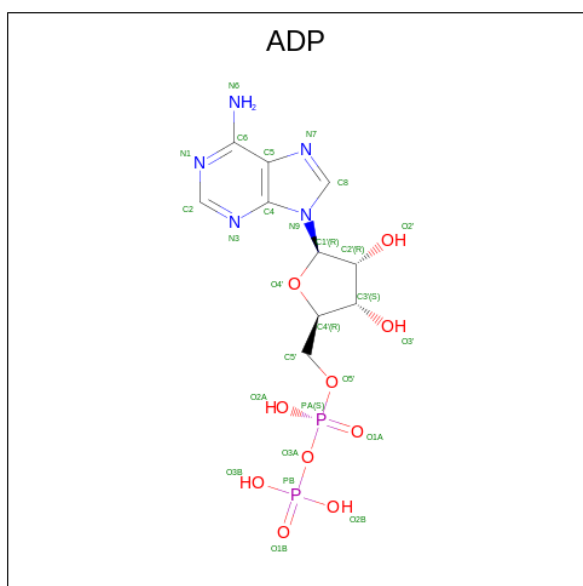
Mol	Chain	Residues	Atoms		AltConf
			Total	Zn	
36	Y	1	1	1	0

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Mol	Chain	Residues	Atoms		AltConf
36	a	2	Total	Zn	0
			2	2	
36	c	1	Total	Zn	0
			1	1	
36	e	3	Total	Zn	0
			3	3	

- Molecule 37 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula:  $C_{10}H_{15}N_5O_{10}P_2$ ).

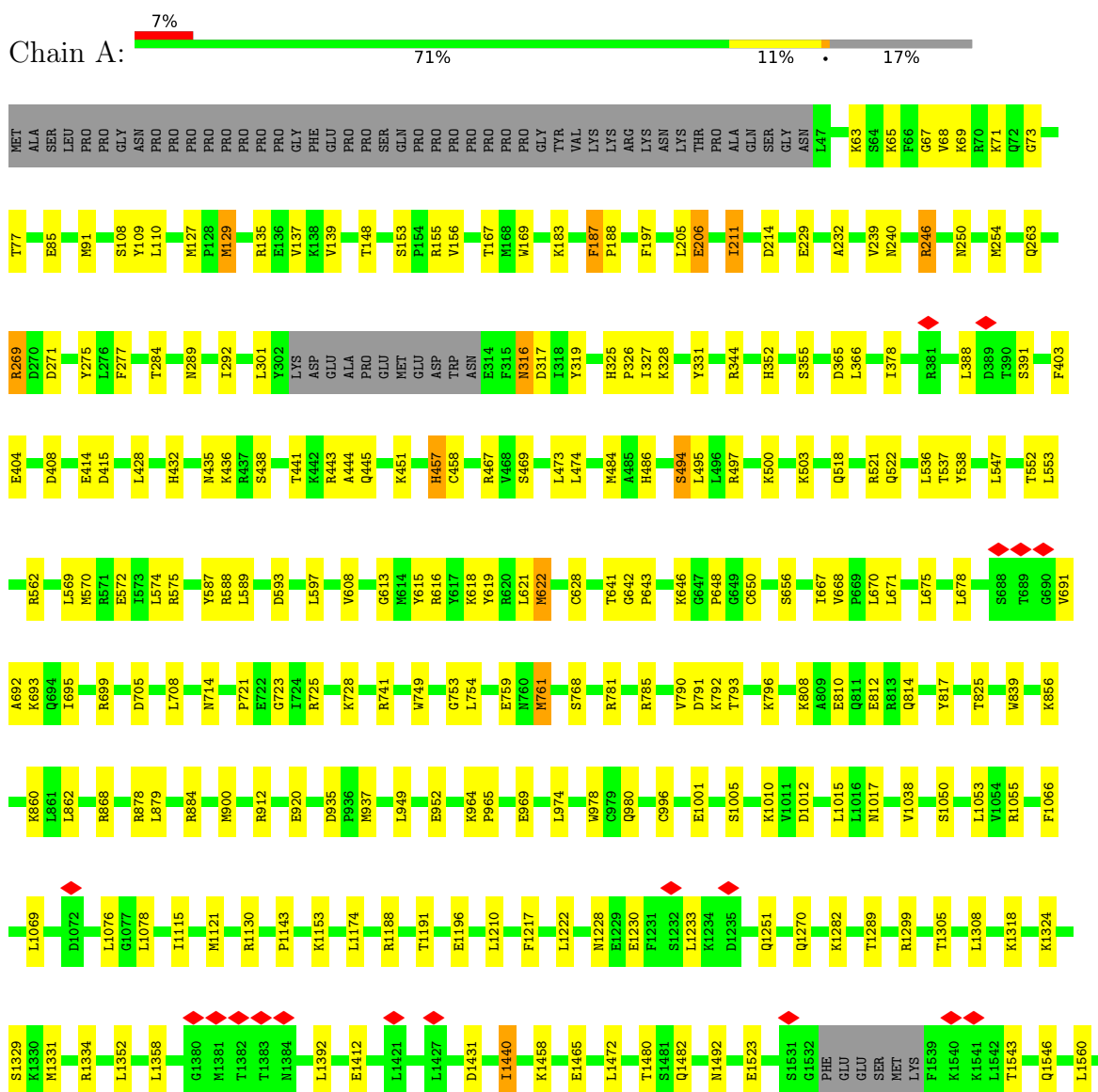


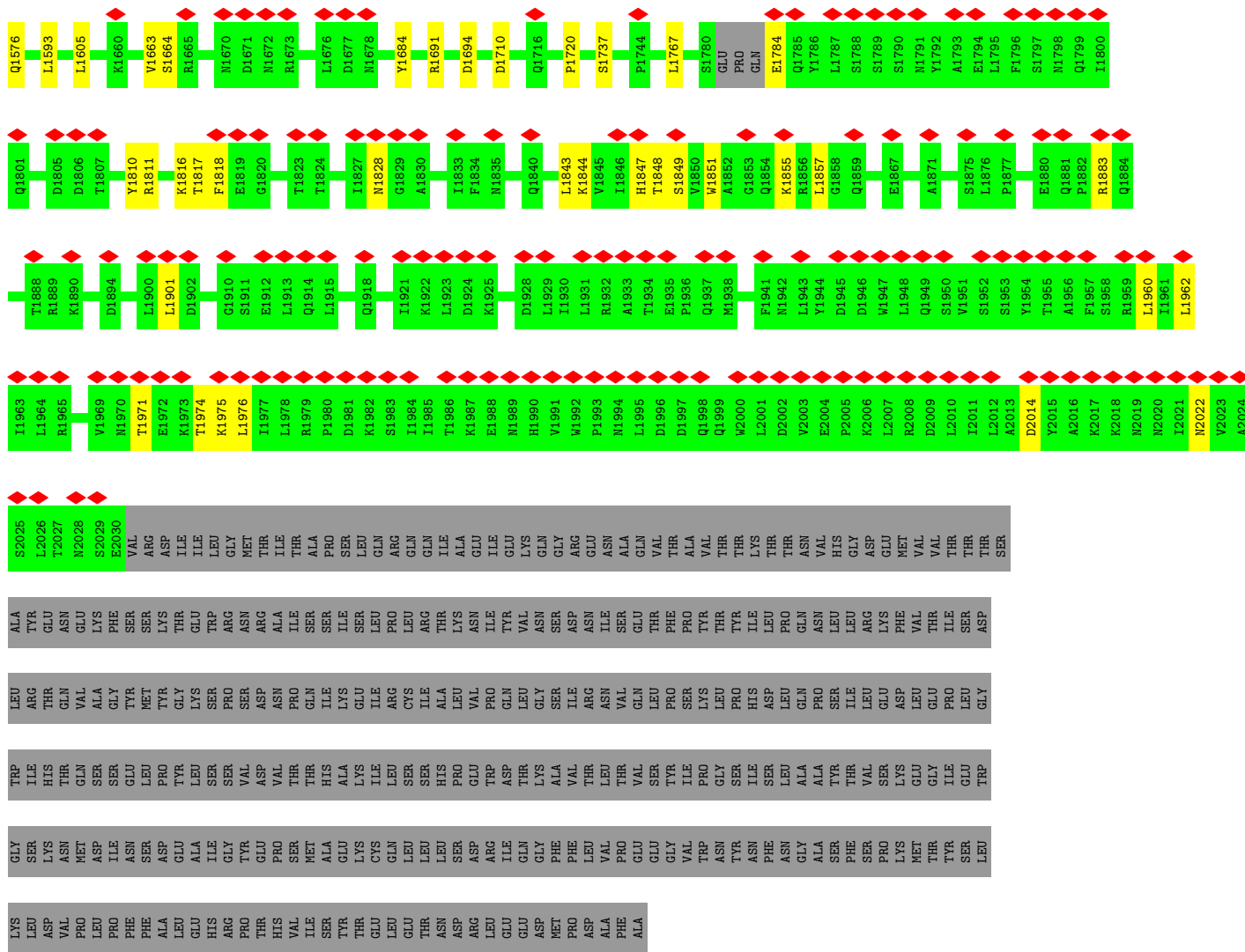
Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
37	X	1	27	10	5	10	2	0

### 3 Residue-property plots

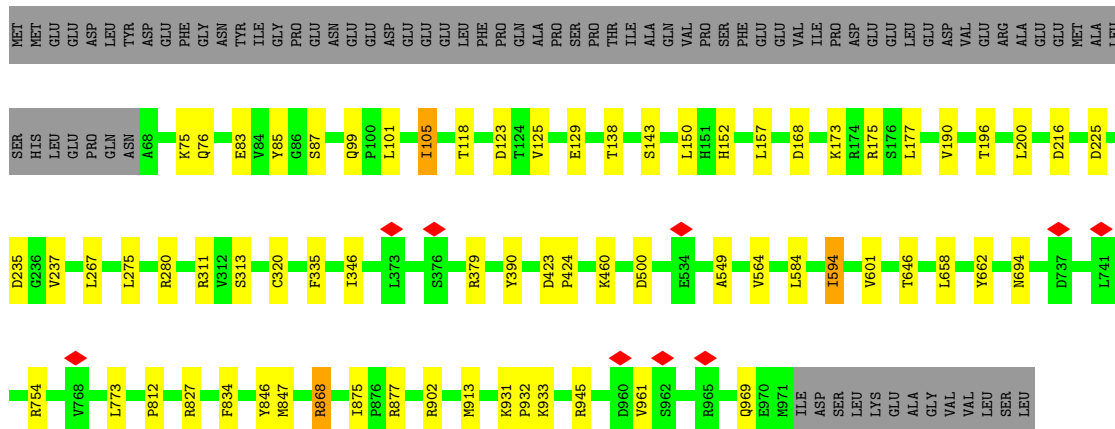
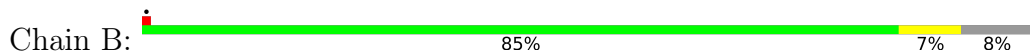
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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: Pre-mRNA-splicing factor spp42

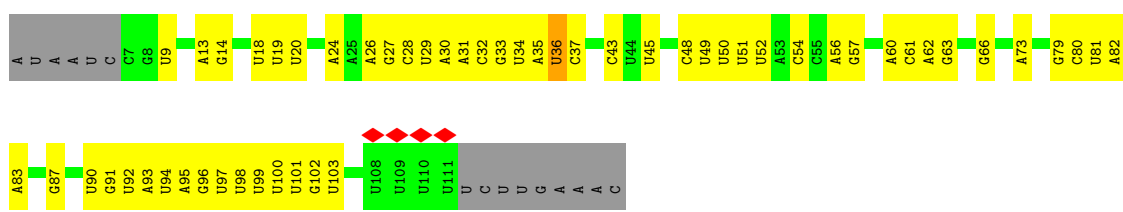




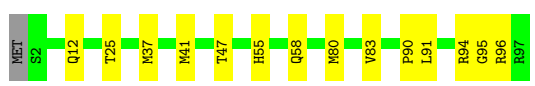
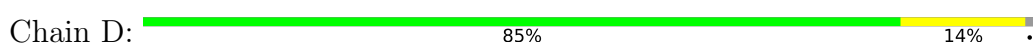
• Molecule 2: Pre-mRNA-splicing factor cwf10



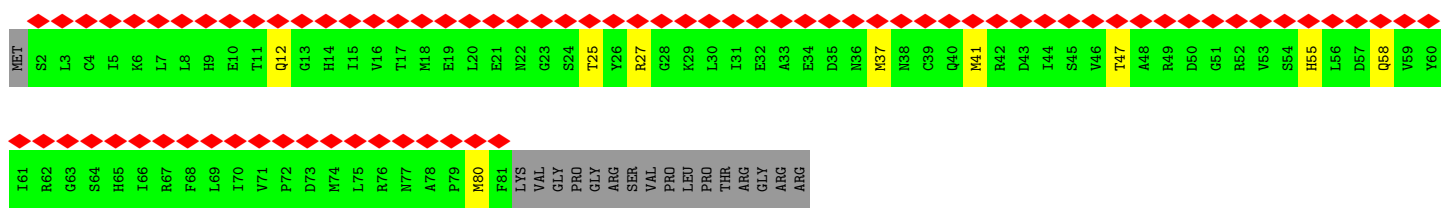
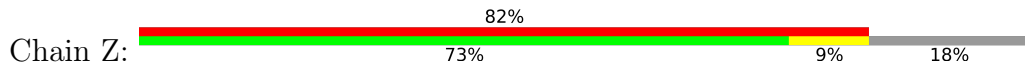
• Molecule 3: U5 snRNA



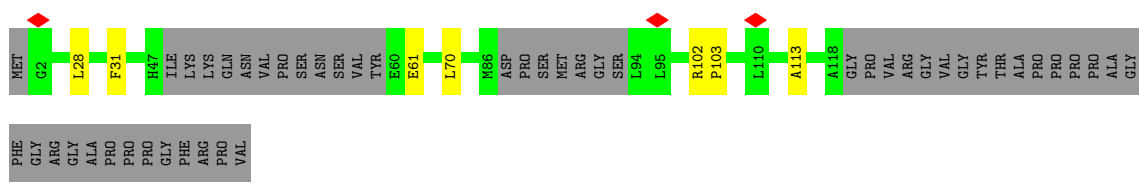
• Molecule 4: Small nuclear ribonucleoprotein Sm D3



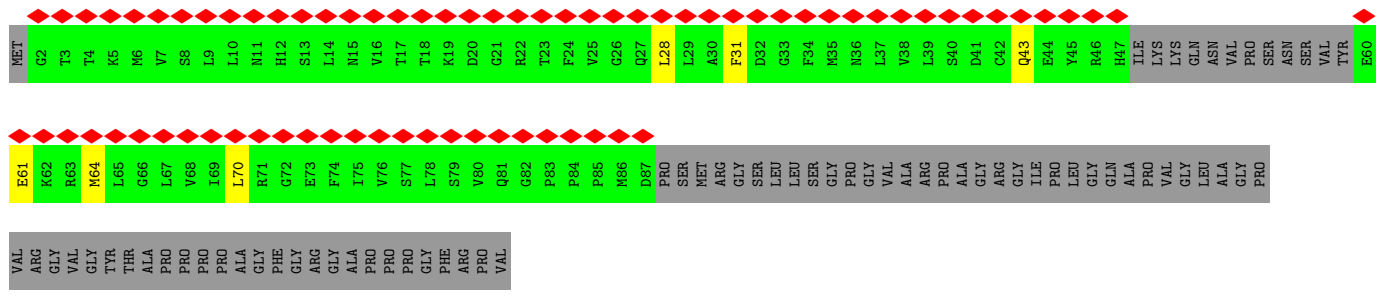
• Molecule 4: Small nuclear ribonucleoprotein Sm D3



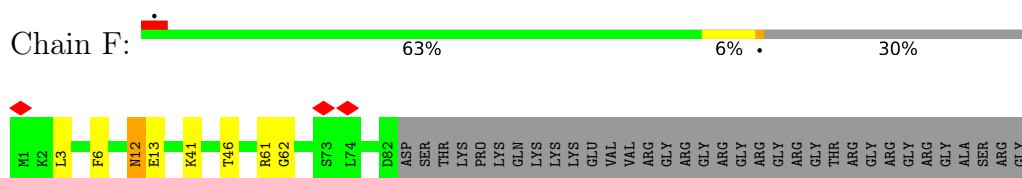
• Molecule 5: Small nuclear ribonucleoprotein-associated protein B



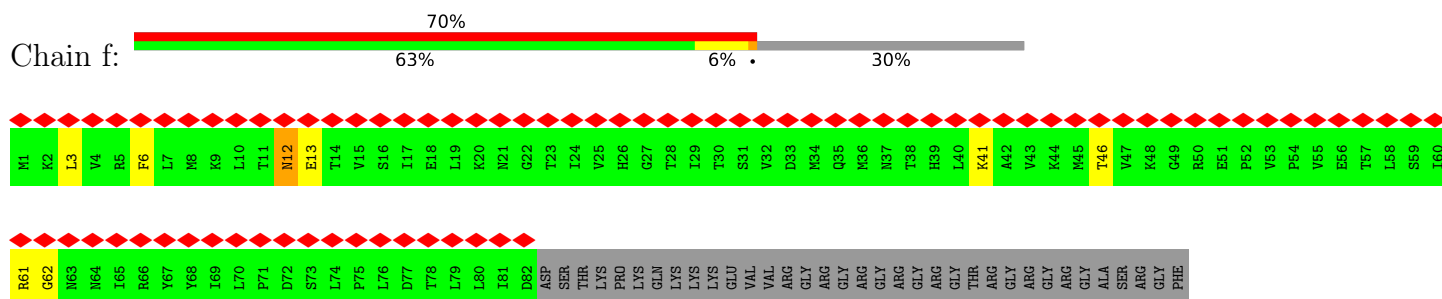
• Molecule 5: Small nuclear ribonucleoprotein-associated protein B



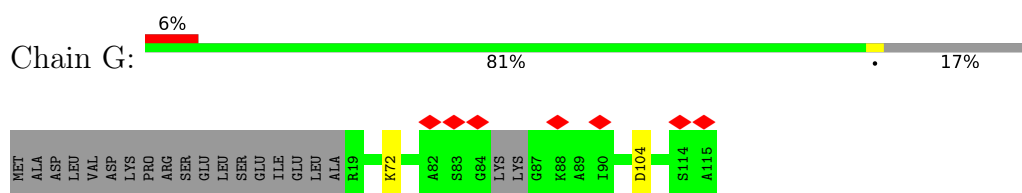
• Molecule 6: Small nuclear ribonucleoprotein Sm D1



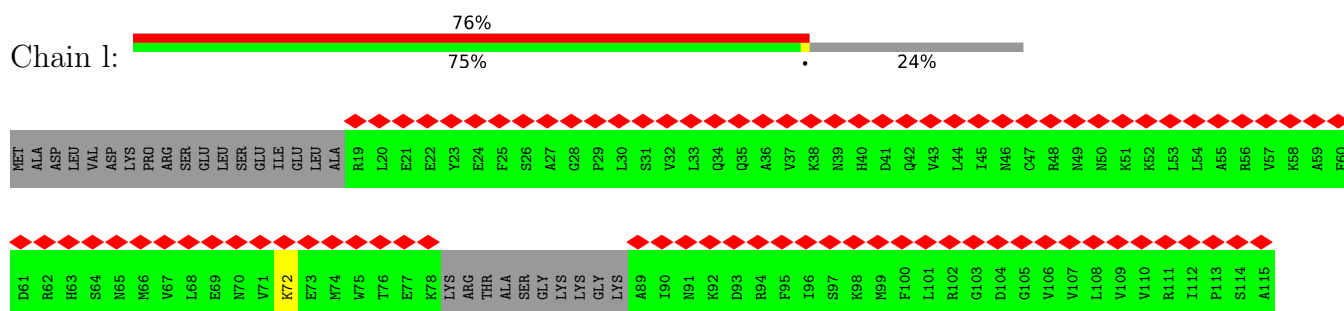
• Molecule 6: Small nuclear ribonucleoprotein Sm D1



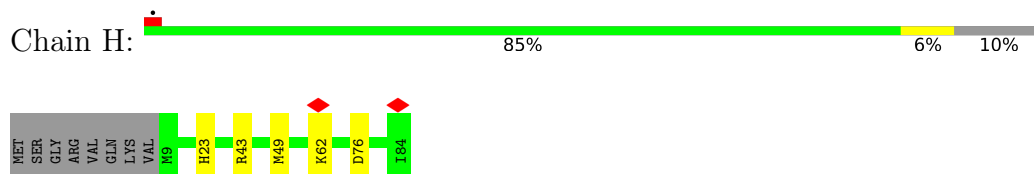
• Molecule 7: Small nuclear ribonucleoprotein Sm D2



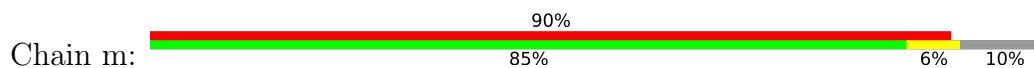
• Molecule 7: Small nuclear ribonucleoprotein Sm D2

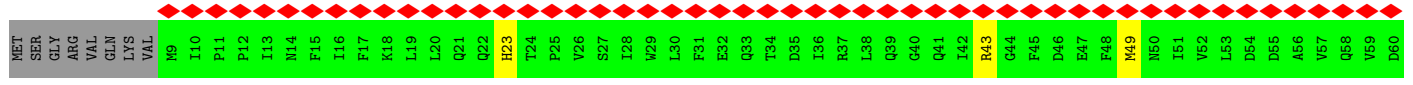


• Molecule 8: Small nuclear ribonucleoprotein E

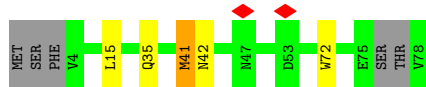
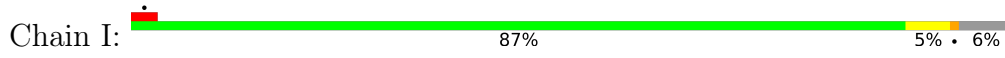


• Molecule 8: Small nuclear ribonucleoprotein E

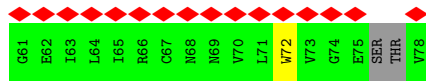
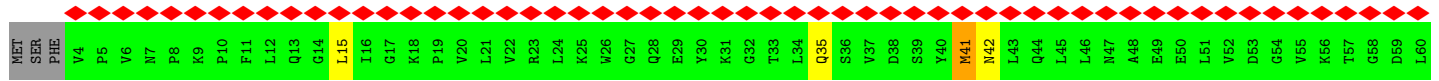
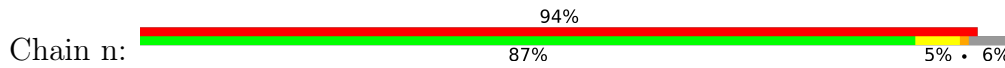




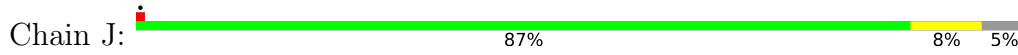
• Molecule 9: Small nuclear ribonucleoprotein F



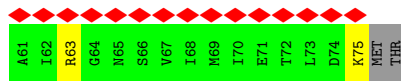
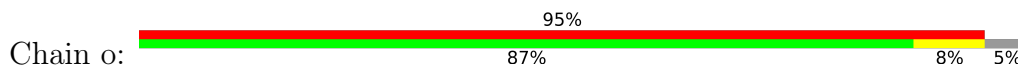
• Molecule 9: Small nuclear ribonucleoprotein F



• Molecule 10: Small nuclear ribonucleoprotein G



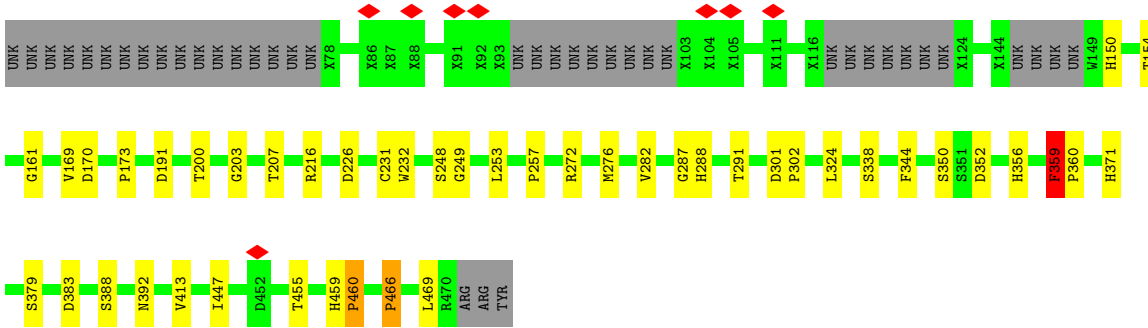
• Molecule 10: Small nuclear ribonucleoprotein G



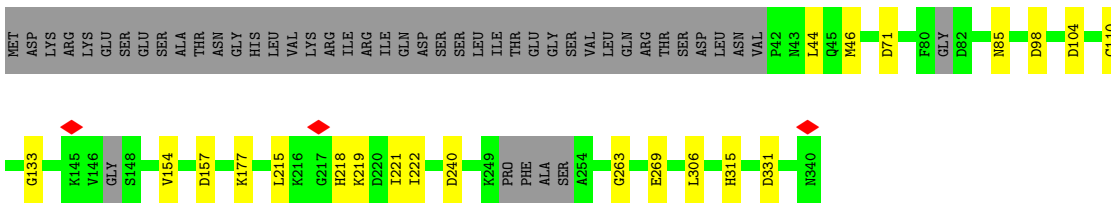
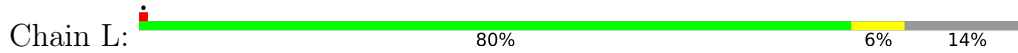
• Molecule 11: Pre-mRNA-splicing factor prp5



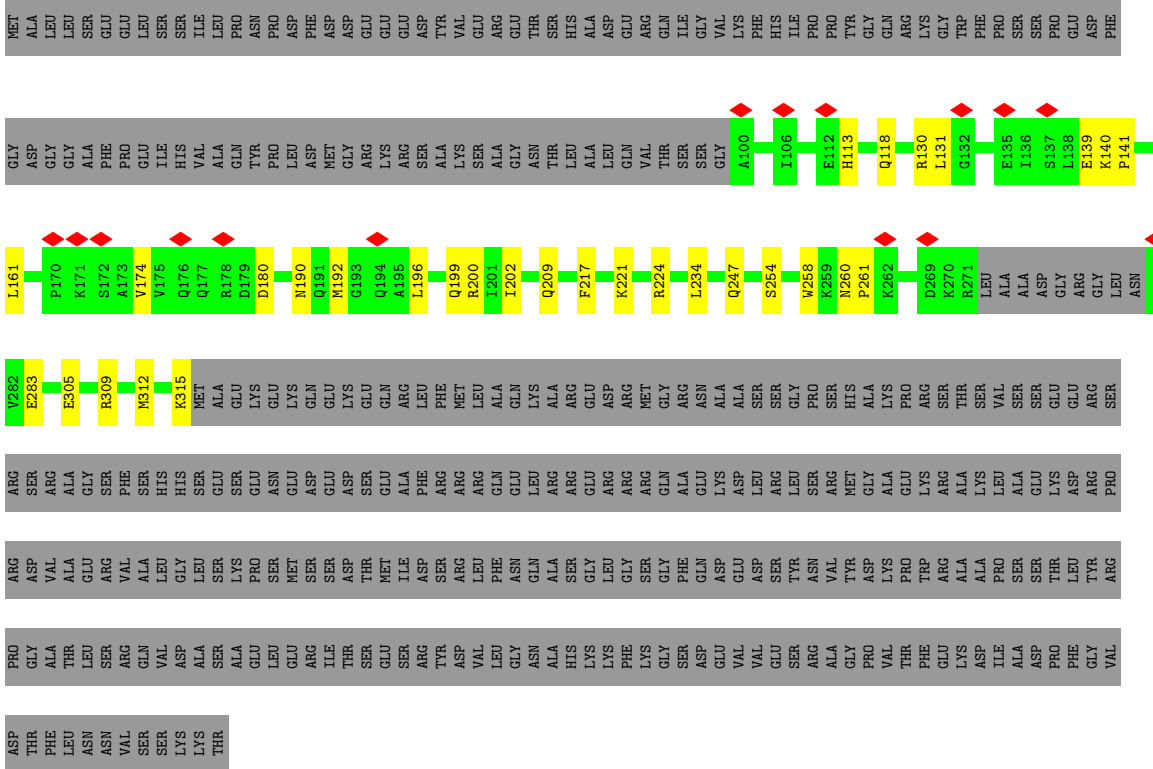




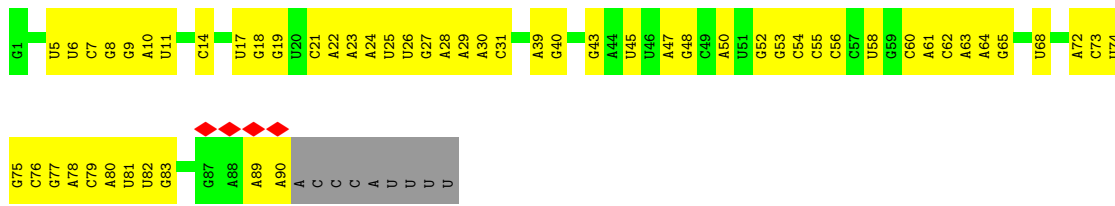
• Molecule 12: Pre-mRNA-splicing factor cwf17



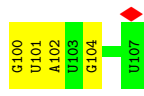
• Molecule 13: Pre-mRNA-processing protein 45



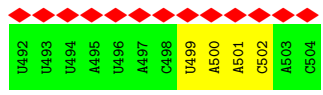
• Molecule 14: U6 snRNA



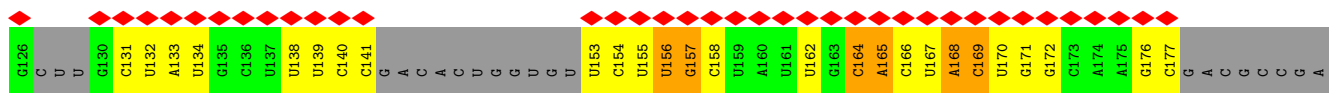
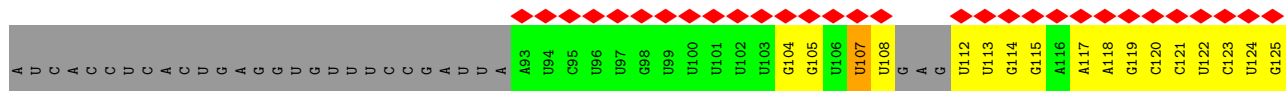
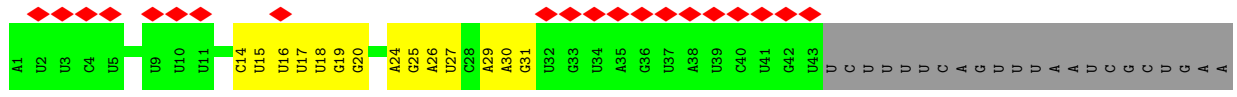
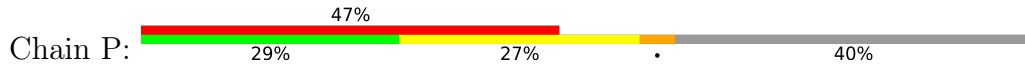
• Molecule 15: RNA (5'-R(P\*GP\*UP\*AP\*UP\*GP\*UP\*AP\*U)-3')



• Molecule 16: RNA (5'-R(P\*UP\*UP\*UP\*AP\*UP\*AP\*CP\*UP\*AP\*AP\*CP\*AP\*C)-3')

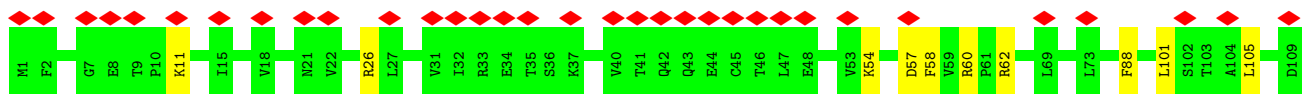


• Molecule 17: U2 snRNA

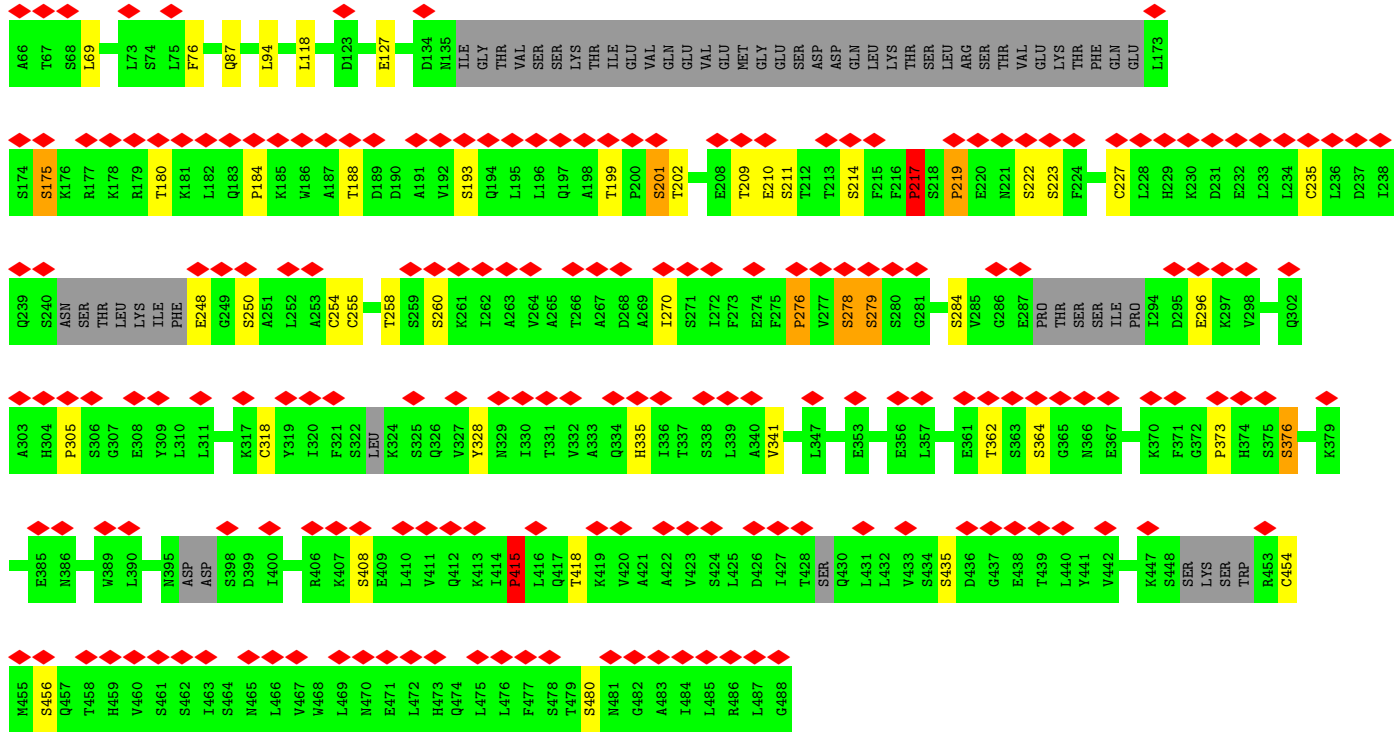


A

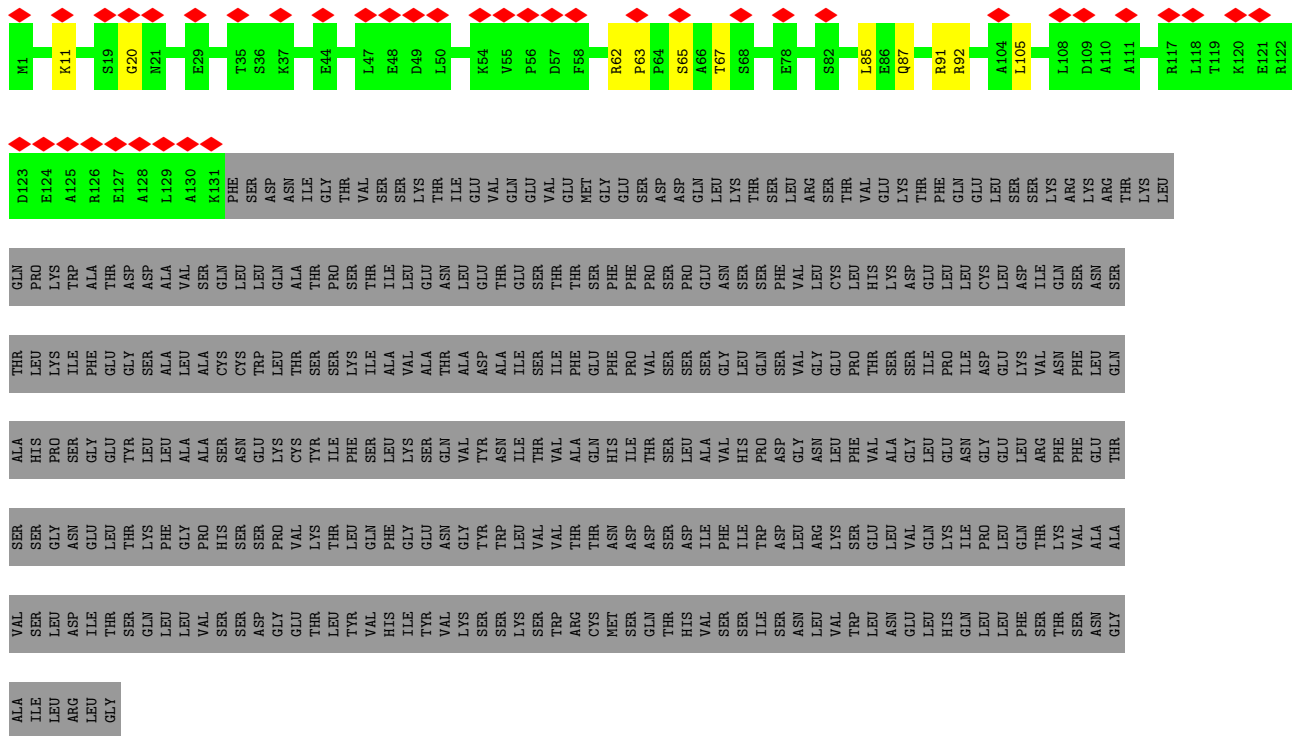
• Molecule 18: Pre-mRNA-processing factor 19







• Molecule 18: Pre-mRNA-processing factor 19



• Molecule 19: Pre-mRNA-splicing factor cdc5

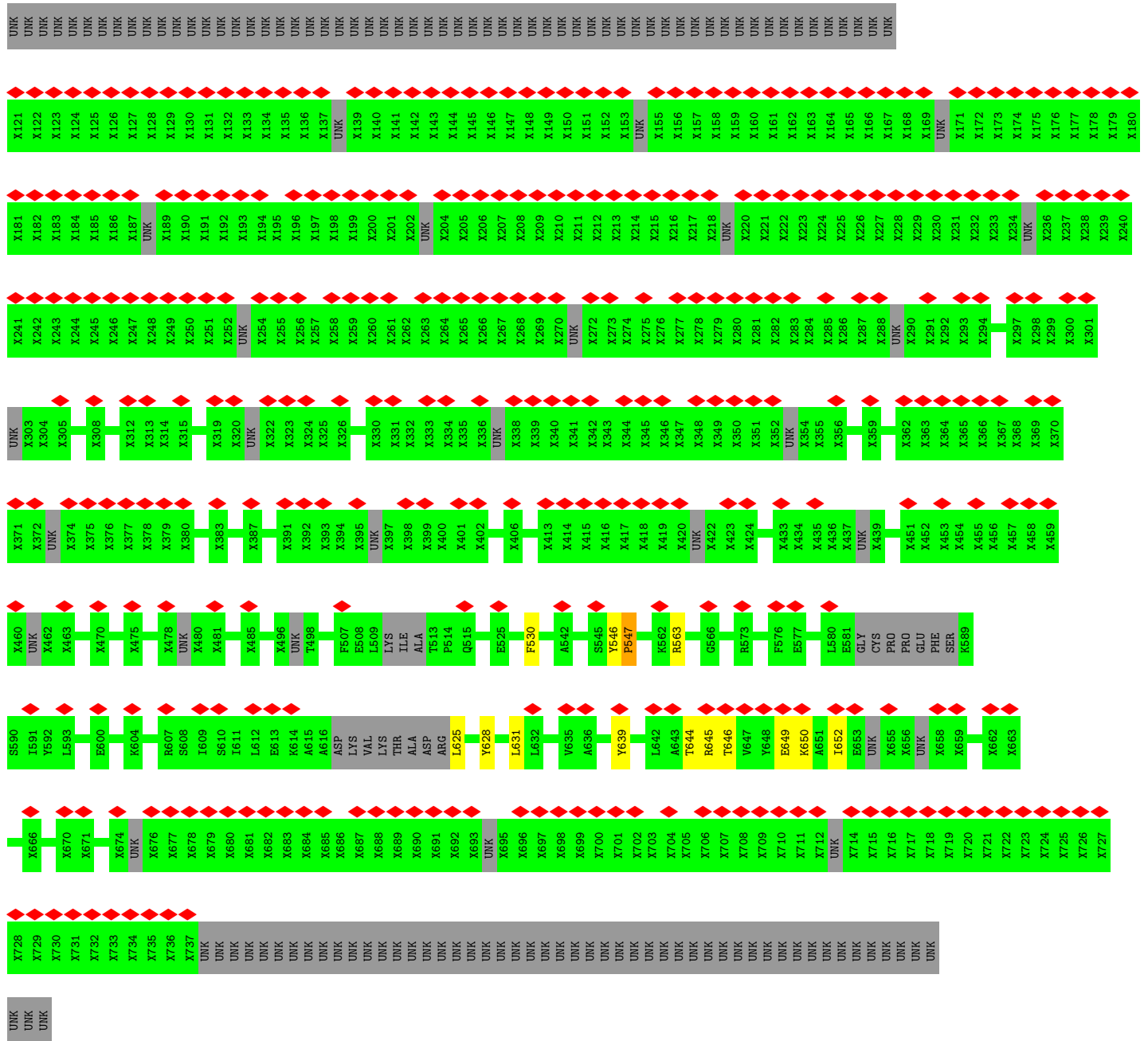




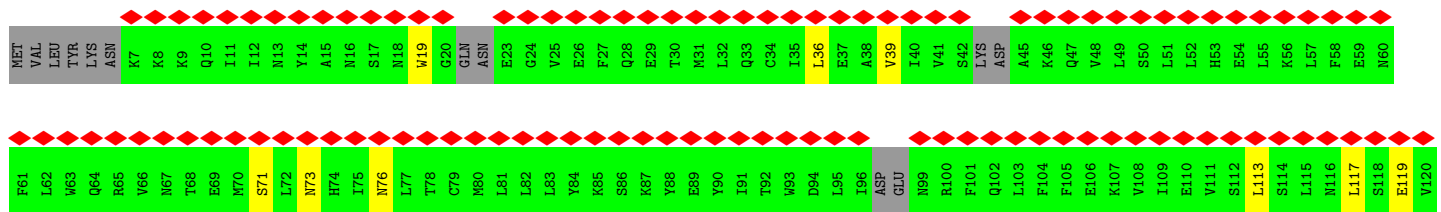
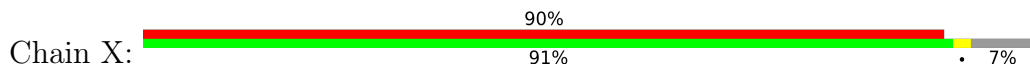




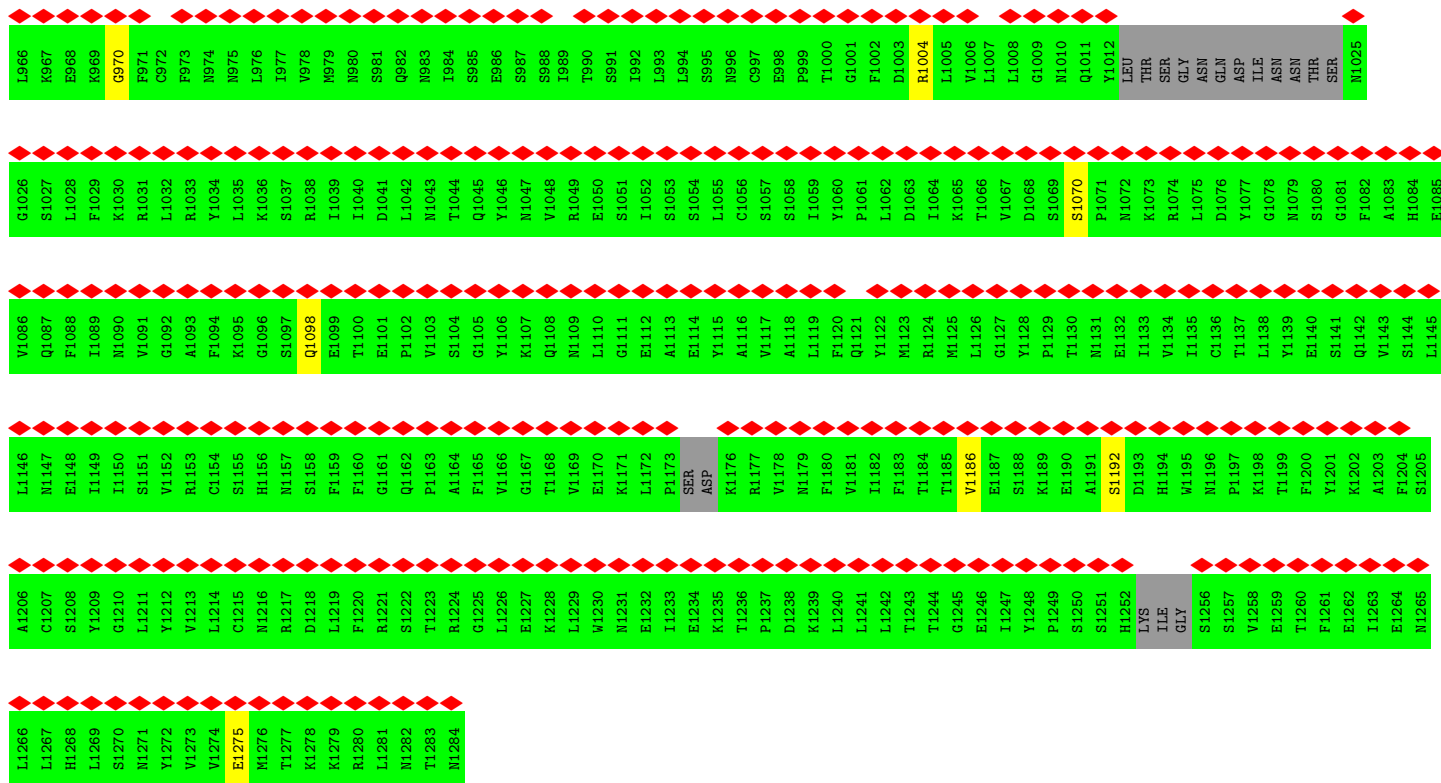




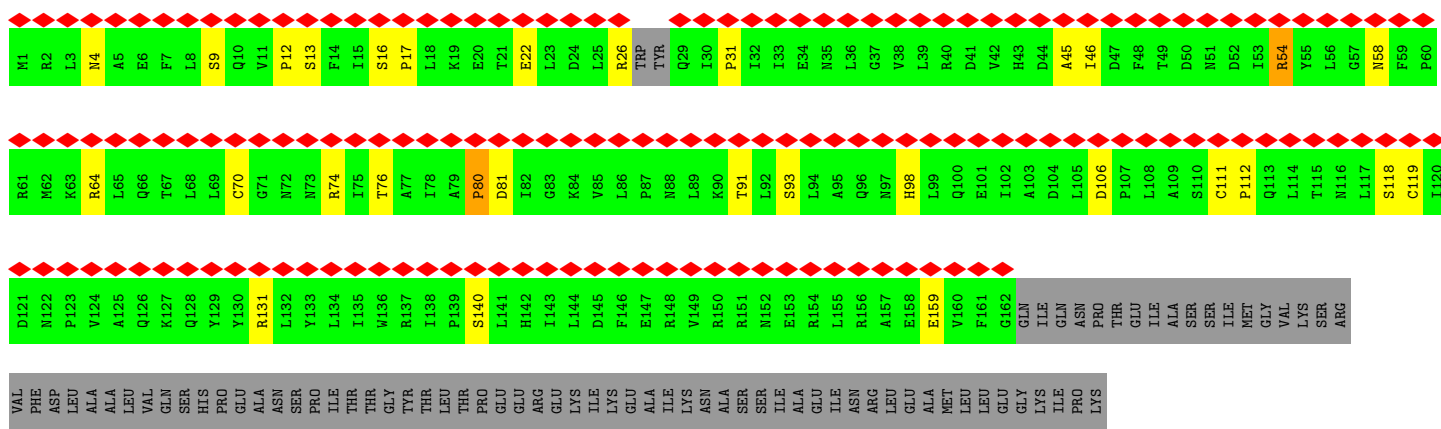
• Molecule 30: Pre-mRNA-splicing factor cwf11



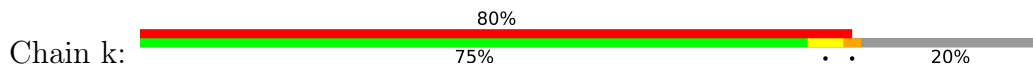
V121	K181	F941	L301	Y364	Q426	T486	N546	L606	V666	T726	T786	S846	N906	
Y122	R182	A942	V302	A365	Y427	S487	A547	K607	A667	Y727	L787	H847	F907	
M123	P183	H943	Q307	I366	L428	V488	L548	F608	R668	M728	F788	D848	F908	
I124	ILE	P944	L308	K367	S429	A489	D549	N609	N669	D729	T789	A849	D909	
Q125	V186	I246	L309	P368	I430	P490	P650	F610	N669	K730	L790	S850	Y910	
F126	E187	E247	L310	D369	S431	GLN	GLN	L612	F671	Q731	L791	P851	A911	
I127	K188	E247	F311	F370	F432	ILE	E552	L613	N672	L732	E792	D852	T912	
T128	F189	D248	S312	E371	M434	GLY	N554	V613	T673	E733	K793	T853	K913	
L129	P190	S249	S314	F372	R435	GLN	T555	L614	V674	S734	A794	A854	L914	
C130	L191	C250	F314	L373	L436	VAL	D556	S615	E675	T735	R795	L855	Y915	
F131	H192	F251	Q315	K374	Q436	L497	D557	S616	Q676	L736	C796	Y856	G916	
Q132	N193	Y252	LYS	F377	S438	P498	F557	GLU	R677	R737	F797	F857	E917	
F133	I194	T253	GLU	I378	K439	Q499	T558	PRO	G678	G738	H798	R858	L918	
S134	L194	A254	LEU	N379	F800	F900	L559	ALA	S679	S739	GLN	D859	E919	
N135	L195	L255	LEU	A440	V501	V501	A560	GLY	K620	Q740	GLY	D860	Y920	
I136	S196	R256	ASP	D382	K442	K502	T561	Y621	N622	Q741	H801	A861	M921	
E137	R197	M257	VAL	R383	K443	C503	L562	N622	L623	G742	L802	T862	F922	
K138	W198	M257	PHE	THR	K443	Q804	S563	L624	D624	G743	L803	K863	Q923	
L139	I199	S258	CYS	L444	L444	M505	N564	L625	C684	T744	Y804	R864	Q924	
R140	H200	Y260	THR	L446	L446	G506	N565	N626	H685	M745	L805	L865	L925	
K141	S201	Y261	THR	L447	R447	L507	D566	L627	H686	W746	S806	W866	E926	
L142	L202	D262	SER	V387	S448	S808	V567	L628	V687	N747	D807	D867	E927	
V143	L203	S263	L329	N388	R448	R509	G568	L629	S688	G748	E808	R868	I928	
Y144	L204	N264	Q330	Y390	L449	R509	M569	V629	N689	F749	S809	Y869	R929	
Q145	K205	E265	Q331	D391	Y450	GLY	F570	S630	L690	T750	LYS	L870	P930	
L146	S206	L266	R332	A451	A451	PRO	GLN	L631	L691	R751	ASP	L871	P931	
T147	I207	F267	Q333	E392	E452	PHE	ASP	L632	S692	C752	GLU	T872	G932	
N148	S208	K268	K334	I393	L453	HIS	N574	N633	T692	G753	T813	H873	L933	
I149	Y209	K269	K334	I394	L454	A516	Q575	R634	E693	K754	L814	W874	L934	
S150	A210	M270	E336	N395	N455	L517	S576	K636	S694	H755	E815	D874	L935	
I151	Q211	T271	E337	F396	F456	R518	S577	E637	L696	V756	Y817	K876	Y936	
L152	THR	T272	I338	T397	S457	D519	D577	E638	L697	L757	G818	D877	Y937	
N153	GLU	D273	T339	L398	E458	L520	S578	F638	K698	W758	T819	S878	E938	
Q154	Q215	L274	S340	K399	Q459	L521	D579	N639	N699	F759	L820	V879	D939	
L155	E216	M275	F941	D400	Y460	N522	N580	K640	N640	K760	S821	D880	Q940	
ASP	A217	Y276	L342	D401	R461	N523	K581	N641	T701	L761	S822	A881	E941	
L158	K218	L277	S943	L402	R462	ILE	S582	F642	M702	L762	W823	Y882	L942	
D159	V219	L278	F344	G403	L463	LYS	L583	E643	Q703	E763	L824	Y943	Y943	
K160	T220	K279	N345	E404	S464	S526	N584	D644	M704	W764	S825	A944	A944	
V161	P221	F280	N346	R405	I465	P527	N585	L645	N705	L765	K826	F885	L945	
K162	L222	P281	S346	S406	K466	F528	S586	F646	Y586	Q766	L827	P886	L946	
Y163	L223	P282	K348	V407	K466	L529	L587	L647	Y587	L647	P828	F887	Q947	
L164	A224	F282	S349	M408	A468	C530	S588	G648	S588	G648	P829	H888	Q948	
L165	L225	N284	L350	D409	T469	L531	F589	F649	F589	F649	L830	H888	Q949	
H166	I226	T285	C351	Q410	K470	N533	F590	G650	F590	G650	L831	S889	S949	
D167	N227	R286	S352	E411	N471	L534	N591	T651	N591	T651	R832	Y890	R950	
S168	M228	K287	K353	M412	L472	S535	H593	P652	H593	P652	R833	F891	I951	
S169	S229	N288	C354	S413	L472	K536	S594	D653	H594	D653	E834	G892	I952	
S170	L230	E289	Y355	L414	LYS	D537	S595	L654	S594	L654	L834	G892	Q953	
L171	L231	Y290	L356	M416	ASP	M416	L595	A656	L595	A656	G835	K894	C954	
T172	L232	E291	L356	PHE	T477	E539	G597	F657	G597	F657	H716	K894	T955	
K173	L233	K292	T358	LEU	F478	N540	L598	P658	L598	F658	F717	K896	W956	
A174	L234	E293	S359	LEU	S479	K541	G599	N659	G599	N659	LEU	R897	S958	
F175	A235	Q294	F360	GLN	L480	L542	E600	A660	E600	A660	PRO	S840	L959	
D176	F236	K295	E362	ASN	N481	L543	N481	G662	N481	G662	PRO	D779	S960	
S177	P237	I296	K363	A423	N482	H544	G545	G663	G545	G663	S721	T781	T961	
Y178	T238	N298		A424	F483	H544	G545	N663	N722	F782	N722	F782	R962	
K179	R239	D299		I425	K484	G485	G485	S664	R723	S783	R723	S783	L963	
E180	R240	E300			V485			L665	L724	W784	L724	W784	G964	
													K904	T965
													D905	



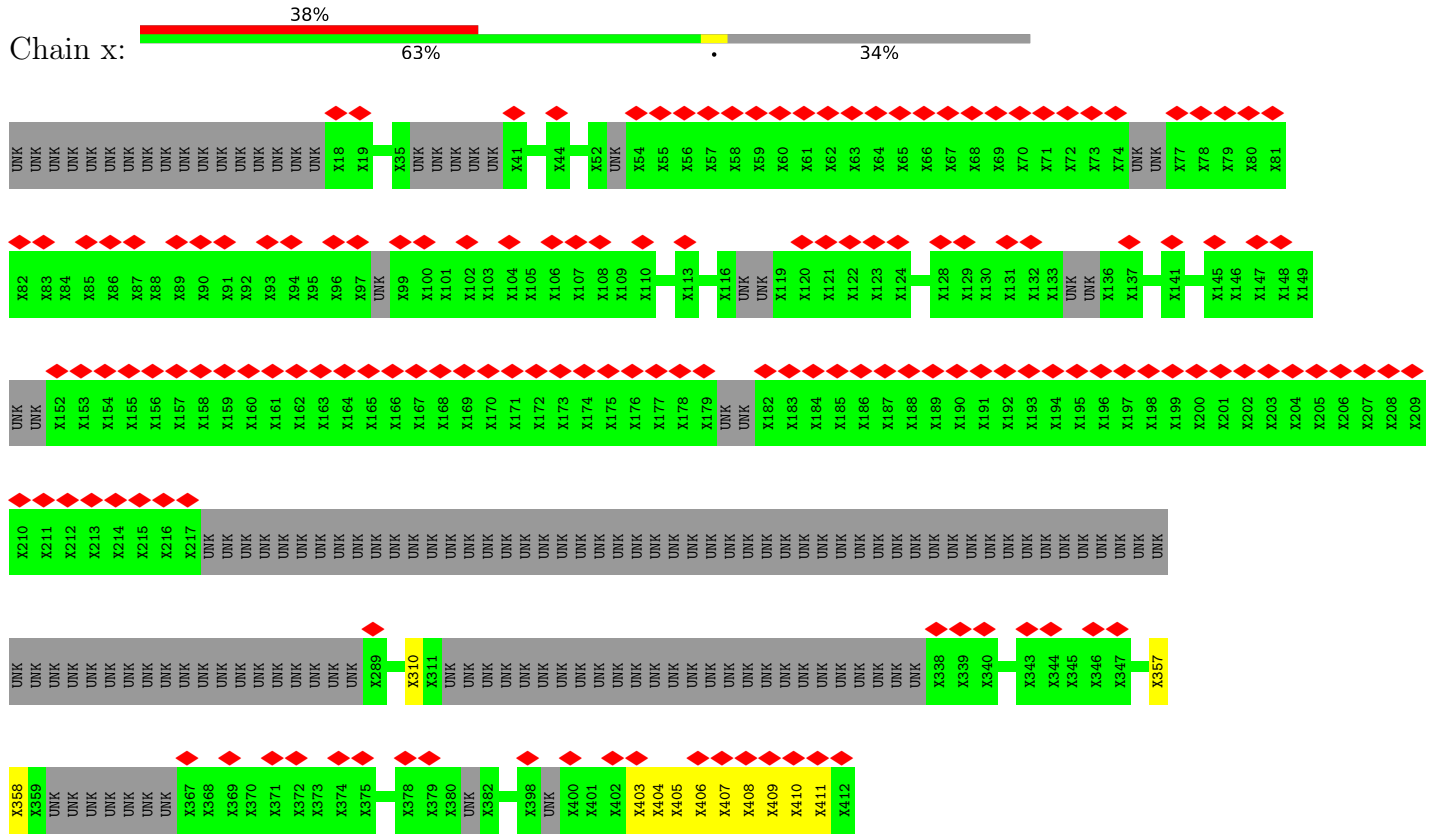
● Molecule 31: U2 small nuclear ribonucleoprotein A'



● Molecule 32: Probable U2 small nuclear ribonucleoprotein B''



• Molecule 33: unknown chain



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	112795	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	Not provided	
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	Not provided	
Minimum defocus (nm)	3.0	Depositor
Maximum defocus (nm)	1.5	Depositor
Magnification	Not provided	
Image detector	GATAN K2 (4k x 4k)	Depositor
Maximum map value	0.189	Depositor
Minimum map value	-0.087	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.006	Depositor
Recommended contour level	0.0203	Depositor
Map size ( $\text{\AA}$ )	475.2, 475.2, 475.2	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles ( $^\circ$ )	90.0, 90.0, 90.0	wwPDB
Pixel spacing ( $\text{\AA}$ )	1.32, 1.32, 1.32	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, ADP, MG, GDP

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	0.35	0/16654	0.57	0/22571
2	B	0.33	0/7357	0.57	0/9980
3	C	0.32	0/2463	0.72	1/3829 (0.0%)
4	D	0.29	0/772	0.56	0/1038
4	Z	0.29	0/648	0.54	0/871
5	E	0.30	0/741	0.54	0/998
5	b	0.32	0/584	0.55	0/785
6	F	0.27	0/654	0.50	0/885
6	f	0.27	0/654	0.50	0/885
7	G	0.27	0/760	0.46	0/1016
7	l	0.27	0/705	0.47	0/945
8	H	0.28	0/630	0.47	0/851
8	m	0.28	0/630	0.47	0/851
9	I	0.28	0/579	0.50	0/785
9	n	0.28	0/579	0.50	0/785
10	J	0.27	0/578	0.51	0/774
10	o	0.27	0/578	0.51	0/774
11	K	0.39	0/2539	0.67	2/3453 (0.1%)
12	L	0.30	0/2317	0.56	0/3130
13	M	0.33	0/1698	0.54	0/2295
14	N	0.22	0/2160	0.68	0/3365
15	O	0.19	0/189	0.65	0/292
16	Q	0.18	0/300	0.63	0/463
17	P	0.92	22/2580 (0.9%)	1.48	66/4000 (1.6%)
18	S	0.30	0/1069	0.48	0/1449
18	T	0.29	0/1086	0.51	0/1472
18	U	1.33	36/2888 (1.2%)	0.78	4/3898 (0.1%)
18	V	0.30	0/1053	0.48	0/1429
19	W	0.30	0/2300	0.50	1/3087 (0.0%)
20	Y	0.44	5/1934 (0.3%)	0.69	7/2609 (0.3%)
21	a	0.57	5/1479 (0.3%)	0.60	2/1980 (0.1%)
22	c	0.31	0/2486	0.52	1/3360 (0.0%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
23	d	0.30	0/1214	0.47	0/1646
24	e	0.33	0/1199	0.60	0/1609
25	g	0.47	2/1033 (0.2%)	0.65	6/1412 (0.4%)
26	h	0.33	0/767	0.55	0/1028
27	i	0.30	0/1231	0.44	0/1657
28	R	0.31	0/2243	0.52	0/3016
29	r	0.42	0/1161	0.57	1/1565 (0.1%)
30	X	0.32	0/9957	0.53	0/13430
31	j	1.67	12/1118 (1.1%)	1.71	18/1513 (1.2%)
32	k	0.81	2/624 (0.3%)	1.36	5/838 (0.6%)
All	All	0.48	84/82191 (0.1%)	0.67	114/112619 (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
1	A	0	5
11	K	0	2
20	Y	0	3
33	x	0	12
All	All	0	22

The worst 5 of 84 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
31	j	118	SER	CB-OG	31.06	1.82	1.42
18	U	318	CYS	CB-SG	-19.87	1.48	1.82
18	U	227	CYS	CB-SG	-19.43	1.49	1.82
31	j	70	CYS	CB-SG	-17.93	1.51	1.82
31	j	111	CYS	CB-SG	-17.52	1.52	1.82

The worst 5 of 114 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
20	Y	57	ARG	C-N-CD	-16.30	84.75	120.60
31	j	54	ARG	NE-CZ-NH1	14.95	127.77	120.30
31	j	54	ARG	CD-NE-CZ	13.77	142.87	123.60
17	P	167	U	C5-C4-O4	11.99	133.10	125.90
31	j	54	ARG	NE-CZ-NH2	-11.81	114.40	120.30

There are no chirality outliers.

5 of 22 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	1191	THR	Peptide
1	A	1440	ILE	Peptide
1	A	187	PHE	Peptide
1	A	457	HIS	Peptide
1	A	964	LYS	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	1956/2363 (83%)	1657 (85%)	220 (11%)	79 (4%)	3	26
2	B	902/984 (92%)	783 (87%)	97 (11%)	22 (2%)	6	37
4	D	94/97 (97%)	80 (85%)	8 (8%)	6 (6%)	1	17
4	Z	78/97 (80%)	71 (91%)	6 (8%)	1 (1%)	12	50
5	E	92/147 (63%)	81 (88%)	9 (10%)	2 (2%)	6	39
5	b	70/147 (48%)	67 (96%)	3 (4%)	0	100	100
6	F	80/117 (68%)	72 (90%)	6 (8%)	2 (2%)	5	36
6	f	80/117 (68%)	72 (90%)	6 (8%)	2 (2%)	5	36
7	G	91/115 (79%)	88 (97%)	3 (3%)	0	100	100
7	l	83/115 (72%)	81 (98%)	2 (2%)	0	100	100
8	H	74/84 (88%)	69 (93%)	5 (7%)	0	100	100
8	m	74/84 (88%)	69 (93%)	5 (7%)	0	100	100
9	I	70/78 (90%)	64 (91%)	4 (6%)	2 (3%)	4	33

*Continued on next page...*



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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
9	n	70/78 (90%)	65 (93%)	3 (4%)	2 (3%)	4	33
10	J	71/77 (92%)	66 (93%)	5 (7%)	0	100	100
10	o	71/77 (92%)	66 (93%)	5 (7%)	0	100	100
11	K	320/473 (68%)	246 (77%)	50 (16%)	24 (8%)	1	12
12	L	285/340 (84%)	239 (84%)	41 (14%)	5 (2%)	8	43
13	M	203/557 (36%)	172 (85%)	22 (11%)	9 (4%)	2	23
18	S	130/488 (27%)	122 (94%)	7 (5%)	1 (1%)	19	59
18	T	132/488 (27%)	123 (93%)	8 (6%)	1 (1%)	19	59
18	U	414/488 (85%)	383 (92%)	20 (5%)	11 (3%)	5	35
18	V	129/488 (26%)	121 (94%)	4 (3%)	4 (3%)	4	32
19	W	266/757 (35%)	244 (92%)	13 (5%)	9 (3%)	3	31
20	Y	234/388 (60%)	200 (86%)	24 (10%)	10 (4%)	2	24
21	a	189/354 (53%)	167 (88%)	18 (10%)	4 (2%)	7	40
22	c	298/639 (47%)	254 (85%)	31 (10%)	13 (4%)	2	23
23	d	153/155 (99%)	137 (90%)	13 (8%)	3 (2%)	7	41
24	e	142/146 (97%)	120 (84%)	17 (12%)	5 (4%)	3	30
25	g	146/558 (26%)	123 (84%)	15 (10%)	8 (6%)	2	19
26	h	86/265 (32%)	75 (87%)	7 (8%)	4 (5%)	2	22
27	i	157/187 (84%)	144 (92%)	10 (6%)	3 (2%)	8	42
28	R	248/674 (37%)	219 (88%)	20 (8%)	9 (4%)	3	29
29	r	130/790 (16%)	120 (92%)	6 (5%)	4 (3%)	4	32
30	X	1143/1284 (89%)	1032 (90%)	87 (8%)	24 (2%)	7	40
31	j	156/239 (65%)	140 (90%)	14 (9%)	2 (1%)	12	50
32	k	87/111 (78%)	85 (98%)	2 (2%)	0	100	100
All	All	9004/14646 (62%)	7917 (88%)	816 (9%)	271 (3%)	7	33

5 of 271 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	67	GLY
1	A	68	VAL
1	A	155	ARG
1	A	188	PRO
1	A	232	ALA

### 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	1775/2138 (83%)	1565 (88%)	210 (12%)	5	28
2	B	809/881 (92%)	758 (94%)	51 (6%)	18	53
4	D	85/86 (99%)	77 (91%)	8 (9%)	8	38
4	Z	72/86 (84%)	64 (89%)	8 (11%)	6	31
5	E	80/118 (68%)	75 (94%)	5 (6%)	18	53
5	b	66/118 (56%)	60 (91%)	6 (9%)	9	39
6	F	77/102 (76%)	70 (91%)	7 (9%)	9	39
6	f	77/102 (76%)	70 (91%)	7 (9%)	9	39
7	G	81/101 (80%)	79 (98%)	2 (2%)	47	75
7	l	76/101 (75%)	75 (99%)	1 (1%)	69	86
8	H	69/76 (91%)	64 (93%)	5 (7%)	14	47
8	m	69/76 (91%)	64 (93%)	5 (7%)	14	47
9	I	64/69 (93%)	60 (94%)	4 (6%)	18	53
9	n	64/69 (93%)	60 (94%)	4 (6%)	18	53
10	J	63/67 (94%)	57 (90%)	6 (10%)	8	37
10	o	63/67 (94%)	57 (90%)	6 (10%)	8	37
11	K	261/278 (94%)	239 (92%)	22 (8%)	11	42
12	L	251/292 (86%)	234 (93%)	17 (7%)	16	50
13	M	182/477 (38%)	160 (88%)	22 (12%)	5	26
18	S	120/443 (27%)	110 (92%)	10 (8%)	11	42
18	T	123/443 (28%)	112 (91%)	11 (9%)	9	40
18	U	223/443 (50%)	206 (92%)	17 (8%)	13	45
18	V	118/443 (27%)	111 (94%)	7 (6%)	19	55
19	W	234/294 (80%)	213 (91%)	21 (9%)	9	39
20	Y	194/253 (77%)	158 (81%)	36 (19%)	1	10
21	a	142/222 (64%)	123 (87%)	19 (13%)	4	23

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
22	c	259/579 (45%)	224 (86%)	35 (14%)	4	23
23	d	129/129 (100%)	125 (97%)	4 (3%)	40	71
24	e	130/132 (98%)	123 (95%)	7 (5%)	22	57
25	g	78/496 (16%)	62 (80%)	16 (20%)	1	7
26	h	79/240 (33%)	70 (89%)	9 (11%)	5	29
27	i	118/163 (72%)	108 (92%)	10 (8%)	10	41
28	R	224/224 (100%)	192 (86%)	32 (14%)	3	21
29	r	117/136 (86%)	107 (92%)	10 (8%)	10	41
30	X	1106/1188 (93%)	1100 (100%)	6 (0%)	88	95
31	j	87/214 (41%)	83 (95%)	4 (5%)	27	61
32	k	49/96 (51%)	46 (94%)	3 (6%)	18	53
All	All	7814/11442 (68%)	7161 (92%)	653 (8%)	14	42

5 of 653 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
21	a	38	GLU
28	R	136	ARG
21	a	237	PRO
21	a	27	LEU
24	e	17	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 137 such sidechains are listed below:

Mol	Chain	Res	Type
30	X	605	GLN
30	X	983	ASN
7	l	34	GLN
5	E	36	ASN
4	D	65	HIS

### 5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
14	N	89/99 (89%)	53 (59%)	12 (13%)
15	O	8/8 (100%)	3 (37%)	1 (12%)

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Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
16	Q	12/13 (92%)	4 (33%)	2 (16%)
17	P	106/186 (56%)	28 (26%)	8 (7%)
3	C	104/120 (86%)	54 (51%)	13 (12%)
All	All	319/426 (74%)	142 (44%)	36 (11%)

5 of 142 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
3	C	9	U
3	C	14	G
3	C	18	U
3	C	19	U
3	C	20	U

5 of 36 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
17	P	14	C
17	P	168	A
17	P	17	U
17	P	104	G
3	C	100	U

## 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 13 ligands modelled in this entry, 11 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	GDP	B	1000	-	24,30,30	1.02	1 (4%)	30,47,47	1.12	3 (10%)
37	ADP	X	1500	-	24,29,29	0.96	1 (4%)	29,45,45	1.50	4 (13%)

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	GDP	B	1000	-	-	5/12/32/32	0/3/3/3
37	ADP	X	1500	-	-	6/12/32/32	0/3/3/3

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
37	X	1500	ADP	C5-C4	2.51	1.47	1.40
34	B	1000	GDP	C6-N1	-2.49	1.34	1.37

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

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
37	X	1500	ADP	PA-O3A-PB	-3.59	120.52	132.83
37	X	1500	ADP	C3'-C2'-C1'	3.50	106.25	100.98
37	X	1500	ADP	N3-C2-N1	-3.14	123.77	128.68
37	X	1500	ADP	C4-C5-N7	-2.70	106.59	109.40
34	B	1000	GDP	O6-C6-C5	-2.36	119.77	124.37

There are no chirality outliers.

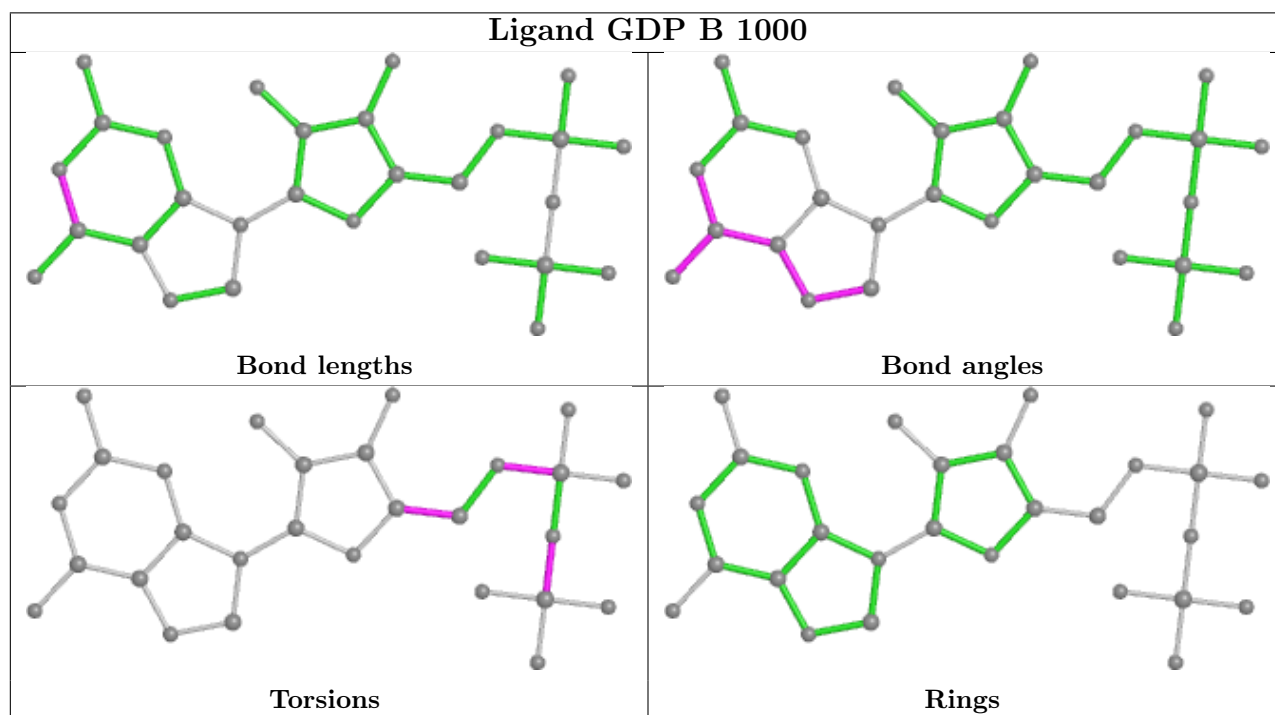
5 of 11 torsion outliers are listed below:

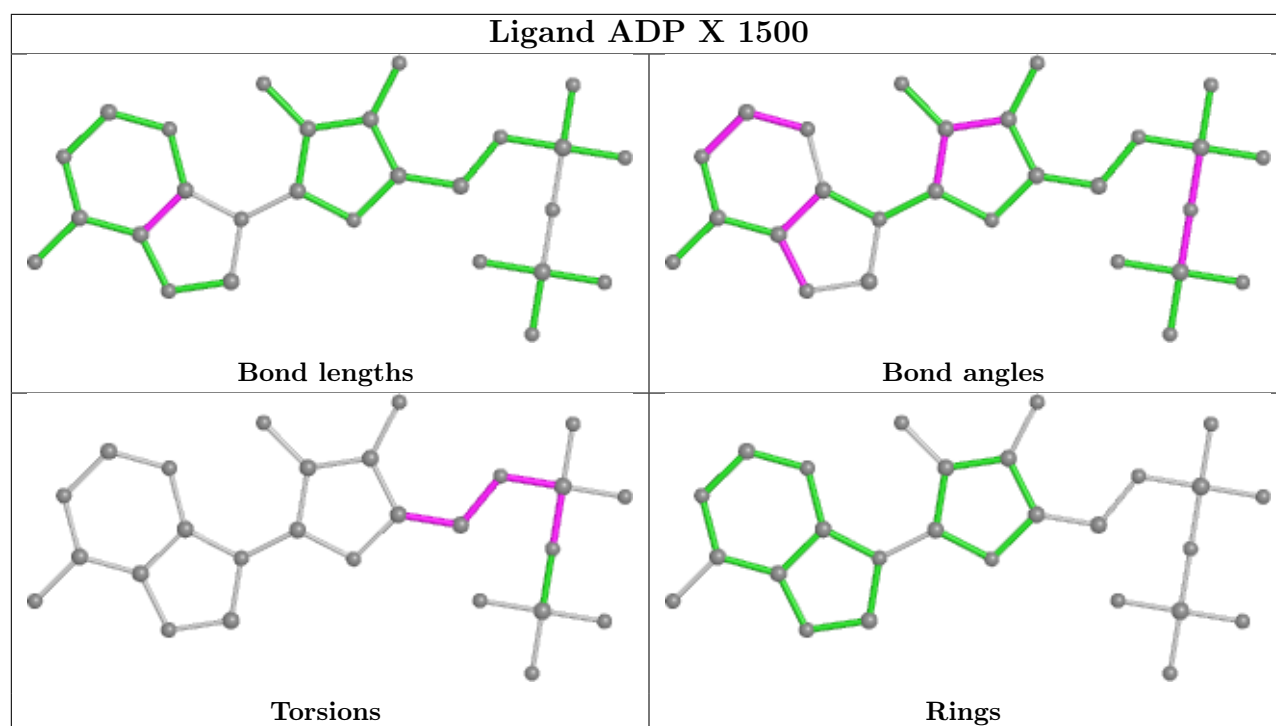
Mol	Chain	Res	Type	Atoms
34	B	1000	GDP	C5'-O5'-PA-O3A
34	B	1000	GDP	C3'-C4'-C5'-O5'
37	X	1500	ADP	C5'-O5'-PA-O3A
37	X	1500	ADP	C4'-C5'-O5'-PA
34	B	1000	GDP	O4'-C4'-C5'-O5'

There are no ring outliers.

No monomer is involved in short contacts.

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

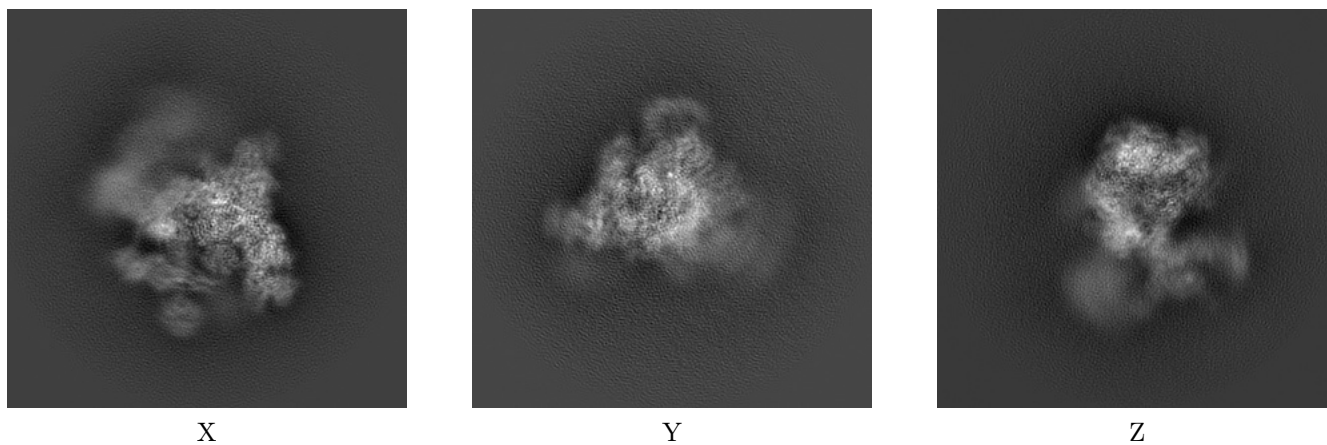
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-6413. 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](#)

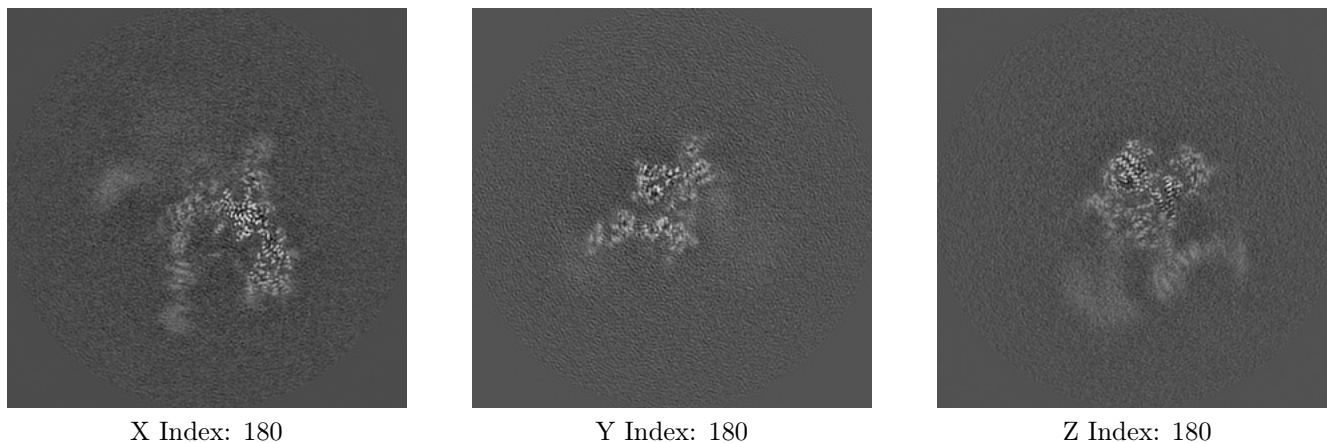
#### 6.1.1 Primary map



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

### 6.2 Central slices [i](#)

#### 6.2.1 Primary map

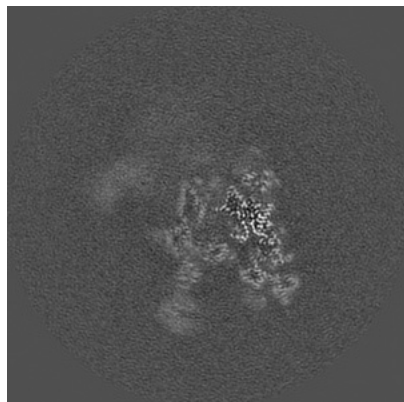




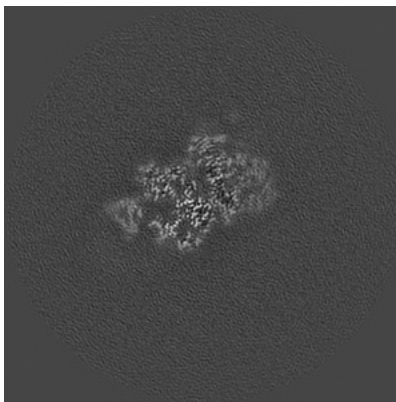
The images above show central slices of the map in three orthogonal directions.

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

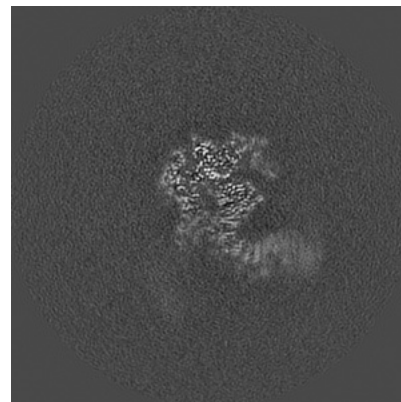
### 6.3.1 Primary map



X Index: 174



Y Index: 217

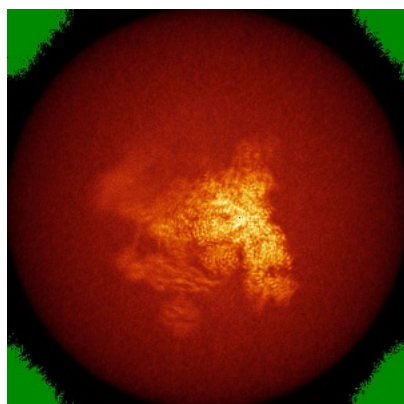


Z Index: 165

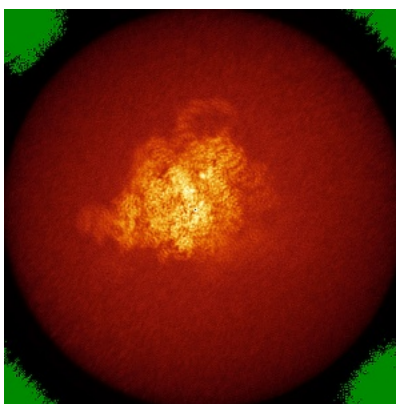
The images above show the largest variance slices of the map in three orthogonal directions.

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

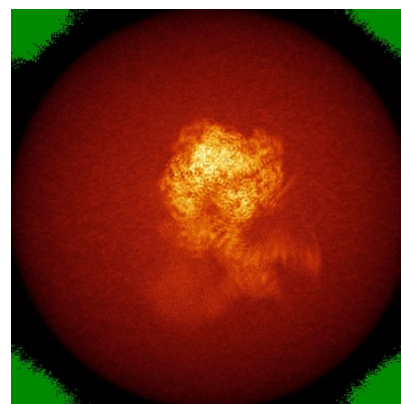
### 6.4.1 Primary map



X



Y

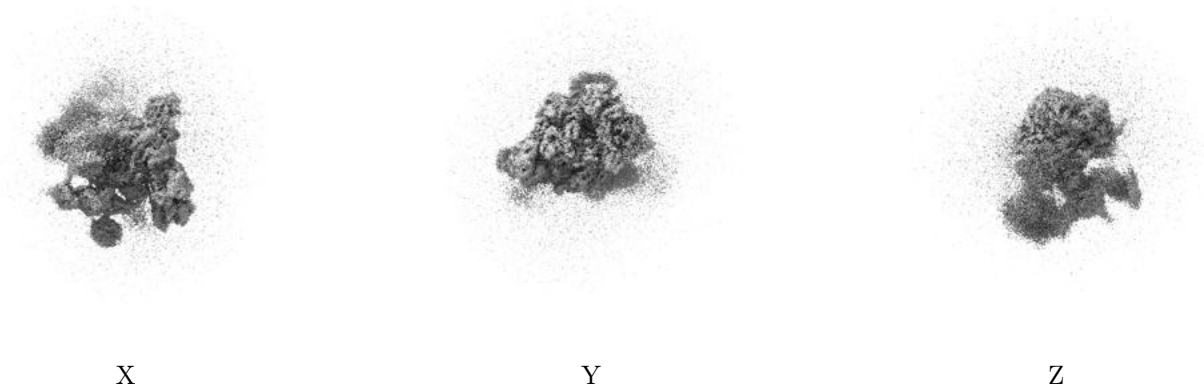


Z

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 0.0203. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

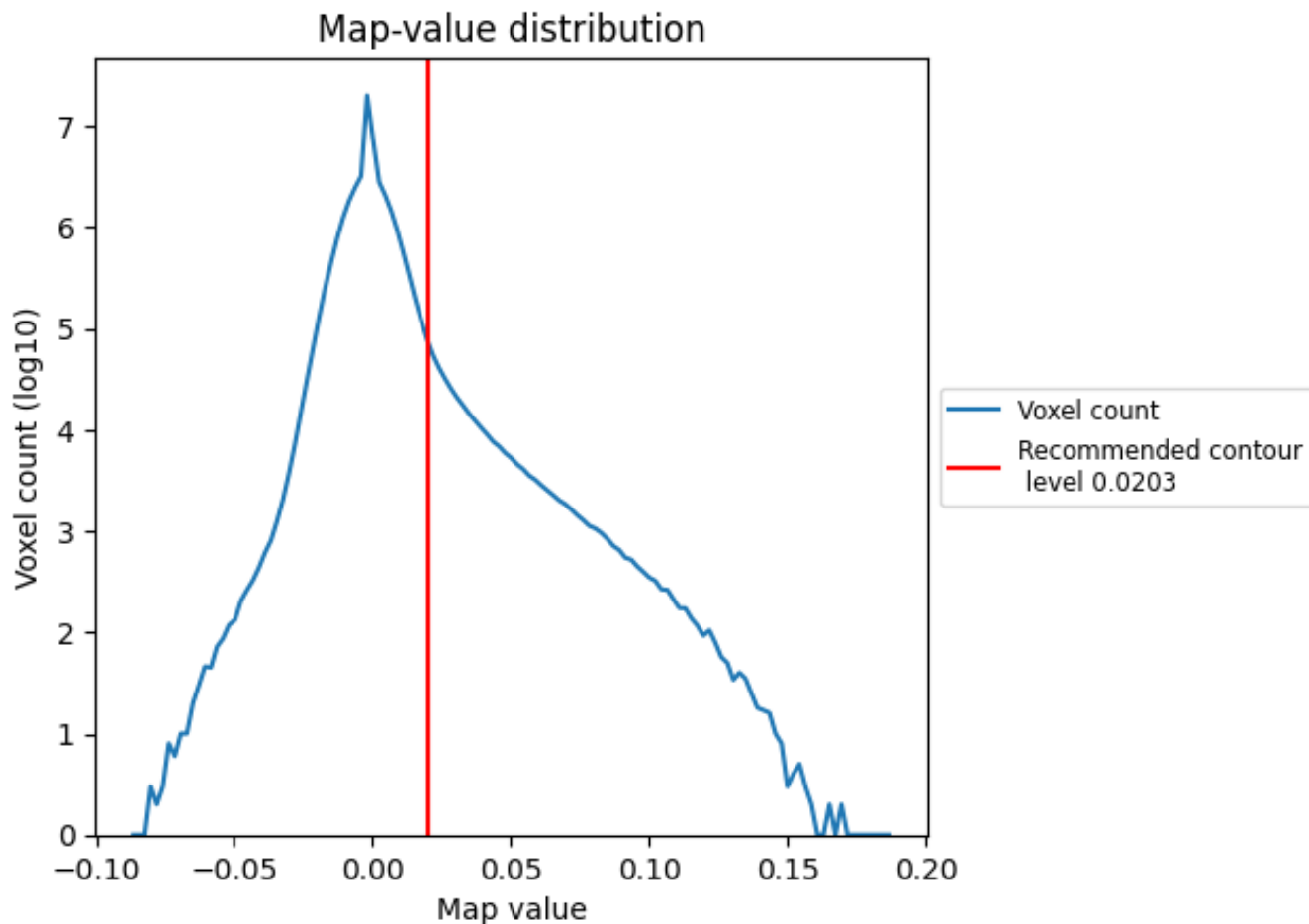
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

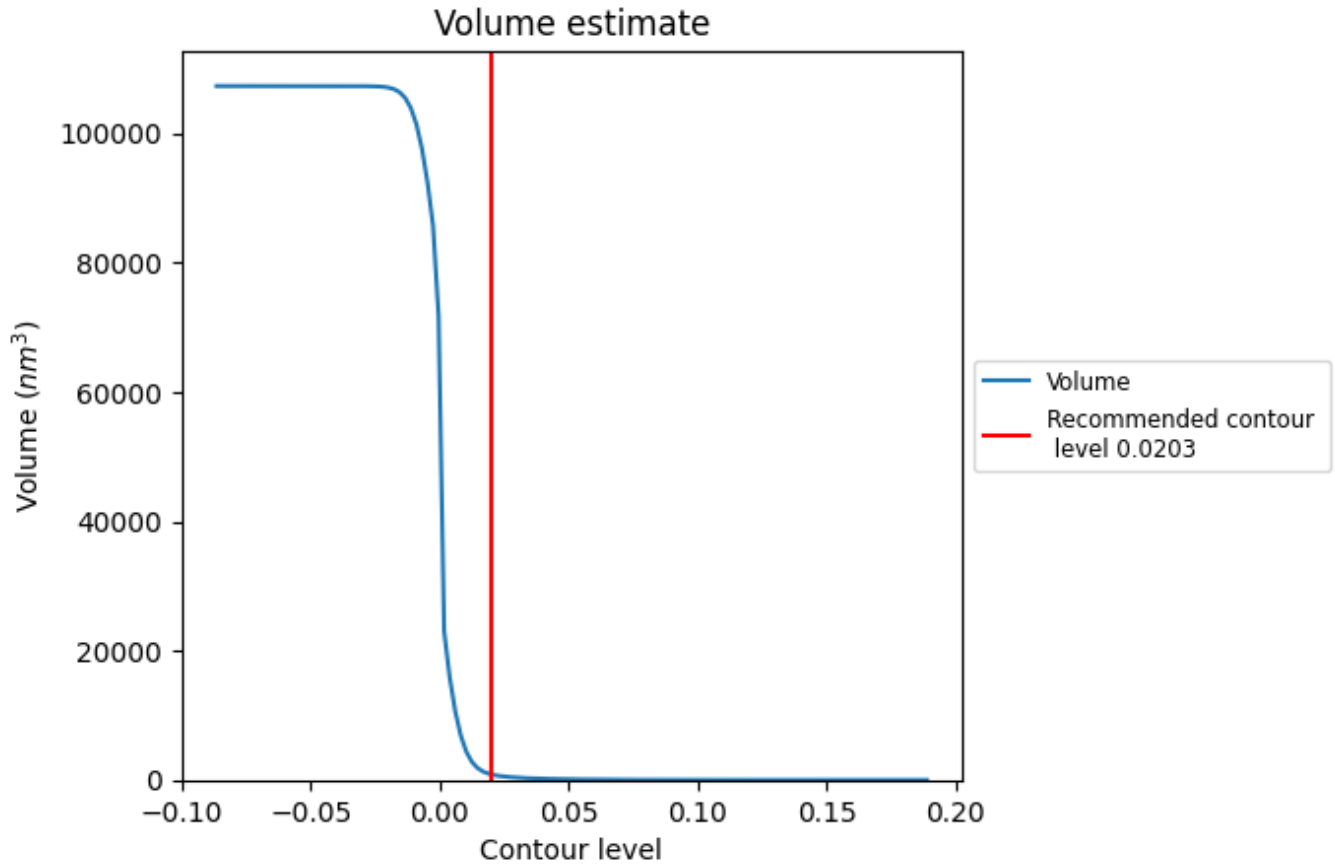
This section contains the results of statistical analysis of the map.

### 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.

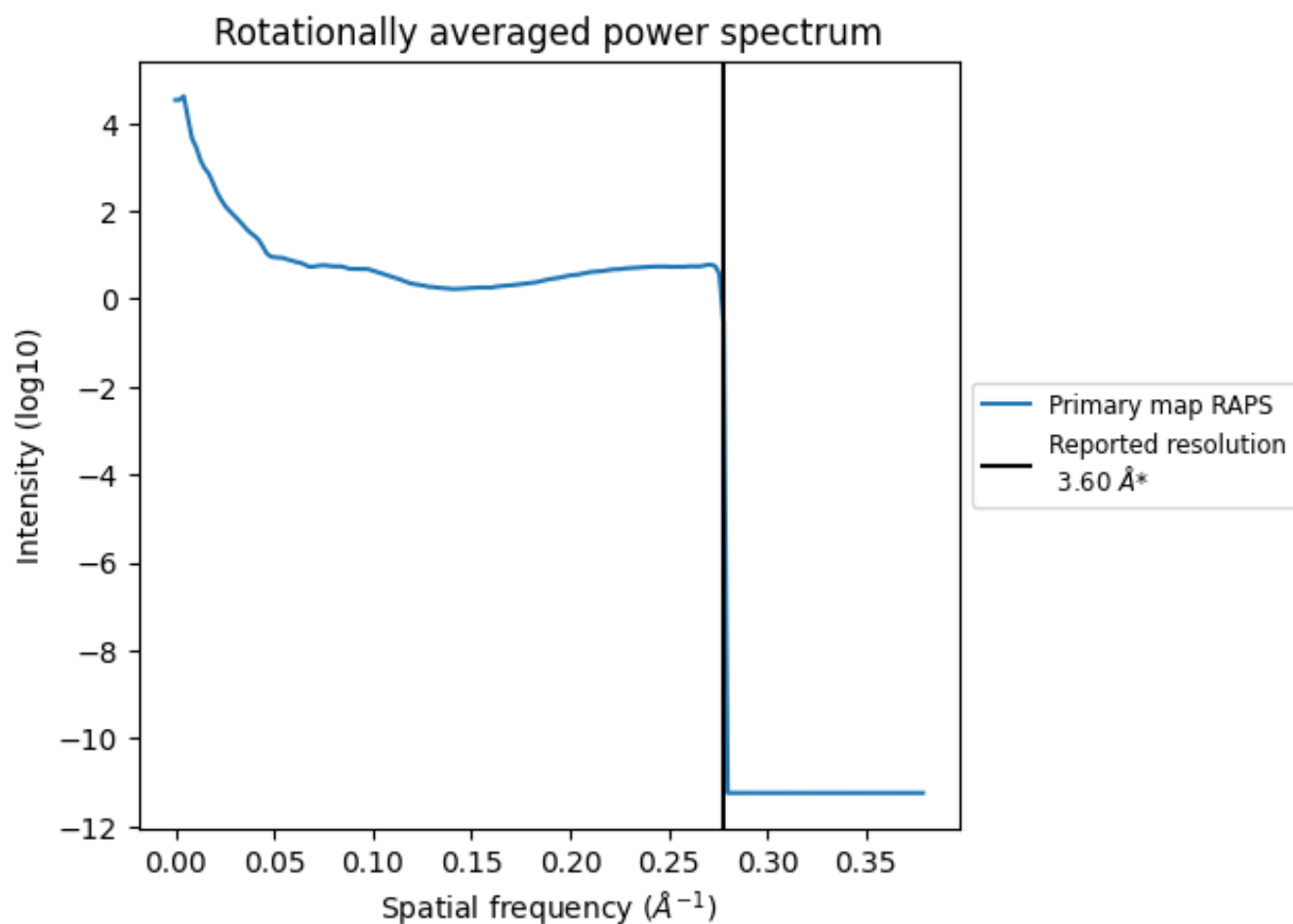
## 7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is  $836 \text{ nm}^3$ ; this corresponds to an approximate mass of 755 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<sup>-1</sup>

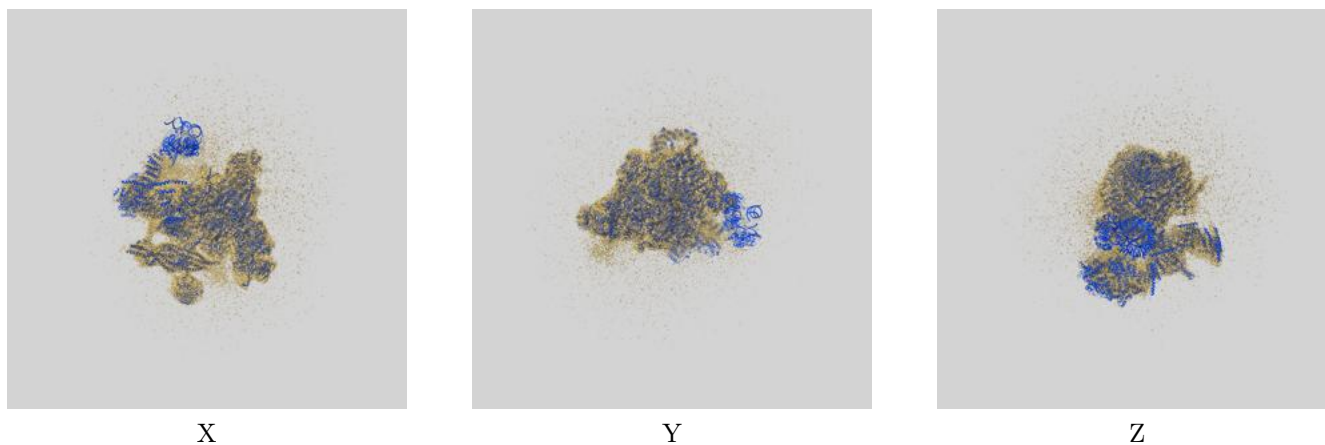
## 8 Fourier-Shell correlation

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

## 9 Map-model fit [i](#)

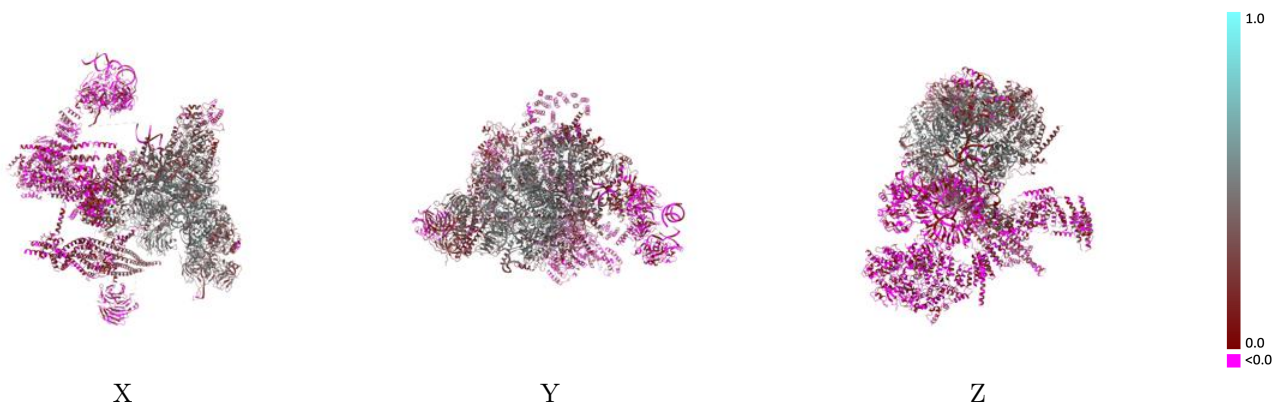
This section contains information regarding the fit between EMDB map EMD-6413 and PDB model 3JB9. Per-residue inclusion information can be found in section [3](#) on page [12](#).

### 9.1 Map-model overlay [i](#)



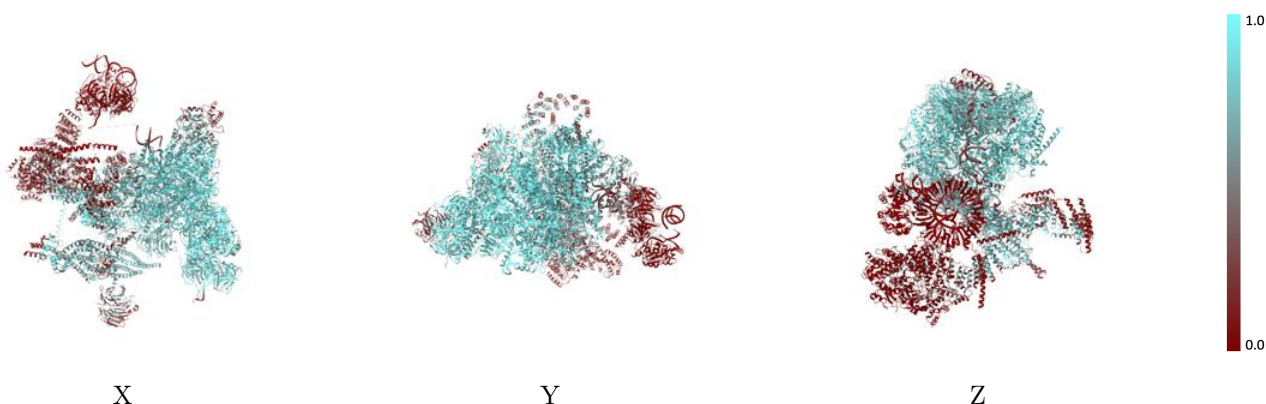
The images above show the 3D surface view of the map at the recommended contour level 0.0203 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

## 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.

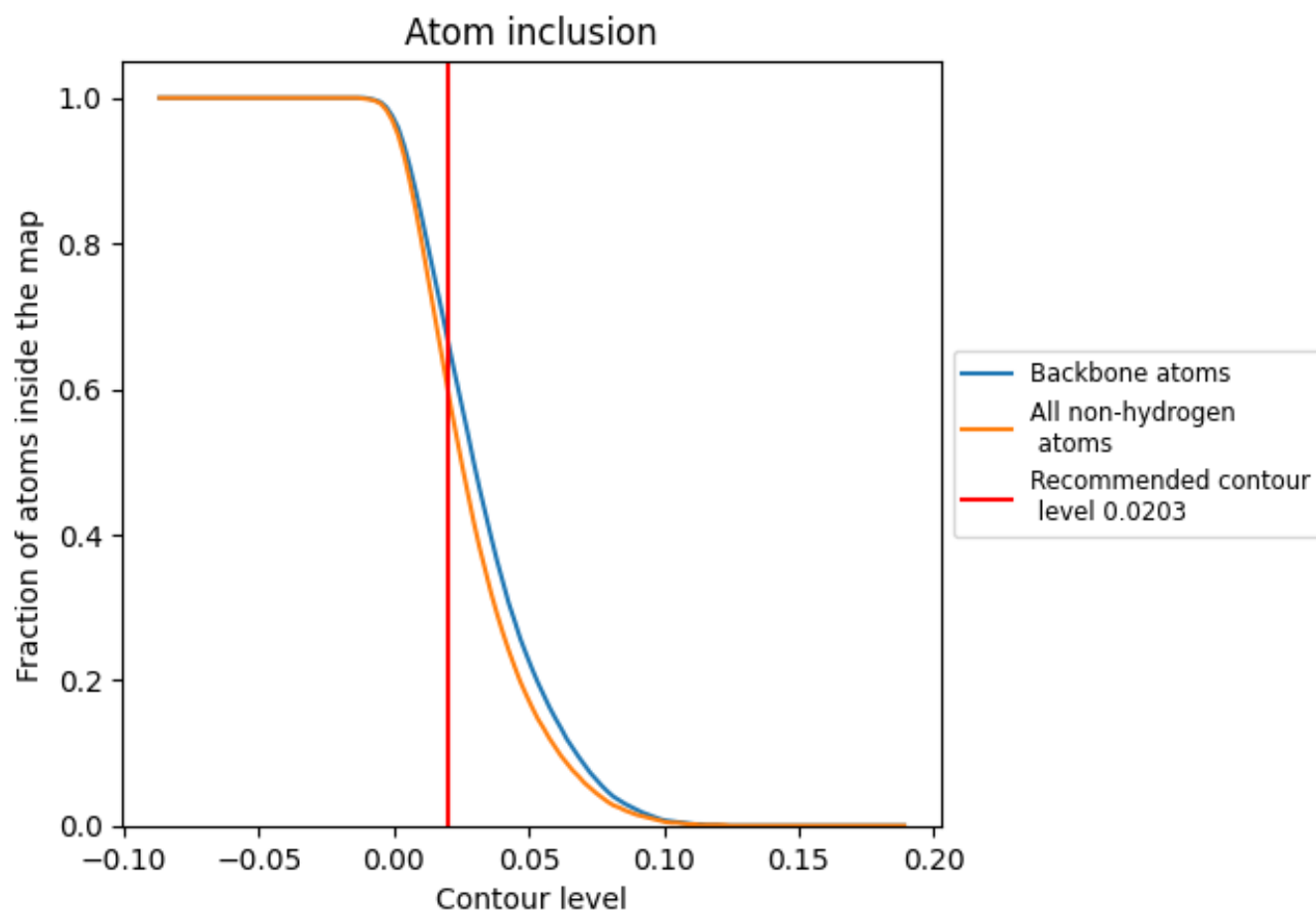
## 9.3 Atom inclusion mapped to coordinate model [i](#)



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 (0.0203).









































































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 66% of all backbone atoms, 59% 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 (0.0203) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.5930	 0.2520
A	 0.8040	 0.4010
B	 0.8680	 0.4180
C	 0.9290	 0.4420
D	 0.8890	 0.4500
E	 0.8480	 0.3960
F	 0.7740	 0.3100
G	 0.7330	 0.2220
H	 0.8070	 0.3130
I	 0.7740	 0.2540
J	 0.8220	 0.3800
K	 0.8760	 0.4390
L	 0.8580	 0.4210
M	 0.7380	 0.3490
N	 0.8110	 0.3390
O	 0.7120	 0.2310
P	 0.1830	 0.0590
Q	 0.2220	 0.0640
R	 0.6470	 0.2420
S	 0.5140	 0.1110
T	 0.6350	 0.1600
U	 0.3930	 0.0610
V	 0.5480	 0.1070
W	 0.6940	 0.2420
X	 0.0760	 0.0030
Y	 0.7700	 0.2860
Z	 0.0080	 0.0210
a	 0.6500	 0.2880
b	 0.0050	 0.0380
c	 0.6500	 0.3140
d	 0.7450	 0.3010
e	 0.8980	 0.4560
f	 0.0030	 0.0210
g	 0.7290	 0.3180
h	 0.7500	 0.4070



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Chain	Atom inclusion	Q-score
i	 0.6580	 0.1600
j	 0.0040	 -0.0160
k	 0.0050	 0.0040
l	 0.0030	 -0.0040
m	 0.0000	 -0.0030
n	 0.0020	 -0.0110
o	 0.0040	 -0.0400
r	 0.4200	 0.0610
x	 0.4110	 0.0850