Full wwPDB EM Validation Report ⓘ

Dec 18, 2022 – 04:56 am GMT

PDB ID	:	7A5P
EMDB ID	:	EMD-11570
Title	:	Human C Complex Spliceosome - Medium-resolution PERIPHERY
Authors	:	Bertram, K.; Kastner, B.
Deposited on	:	2020-08-21
Resolution	:	5.00 Å(reported)

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

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

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

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

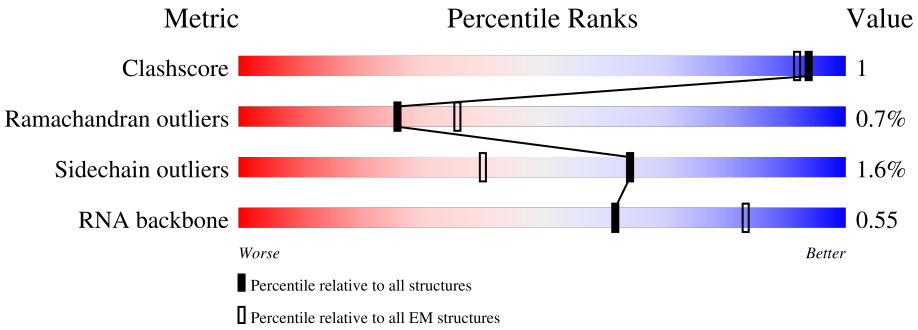
EMDB validation analysis	:	0.0.1.dev43
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.3

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 5.00 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=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	2	975	14% 8% 6% 84%
2	5	116	15% 14% 66%
3	6	106	8% 7% 85%
4	8	204	37% 37% 63%
5	A	2335	10% 20% 79%
6	C	536	97%
7	E	579	50% 47%

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Mol	Chain	Length	Quality of chain
8	G	504	26% 25% 74%
8	H	504	27% 25% 73%
8	I	504	26% 25% 74%
8	J	504	22% 22% 78%
9	K	225	61% 57% 39%
10	L	802	13% 14% 86%
11	M	855	79% 78% 21%
12	N	243	5% 28% 70%
13	O	848	29% 29% 69%
14	P	420	21% 79%
15	S	2752	98%
16	T	908	8% 28% 72%
17	U	1485	87% 87% 13%
18	W	255	68% 68% 32%
19	X	225	41% 41% 59%
20	Y	324	5% 5% 91%
21	a	126	57% 43%
21	l	126	66% 65% 34%
22	b	240	28% 72%
22	m	240	29% 29% 71%
23	c	119	68% 32%
23	n	119	65% 69% 31%
24	d	118	68% 31%
24	h	118	70% 70% 29%
25	e	92	85% 14%

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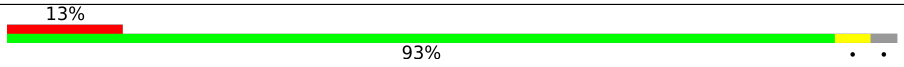
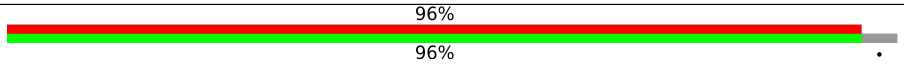
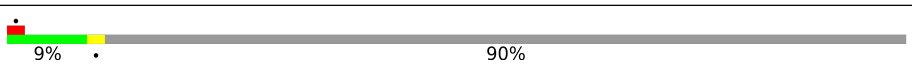
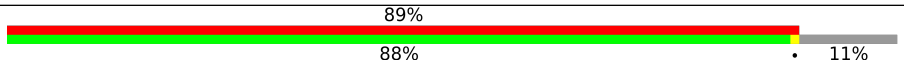
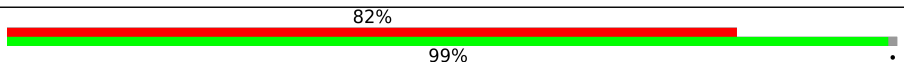
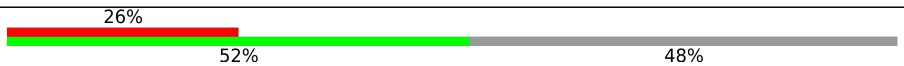
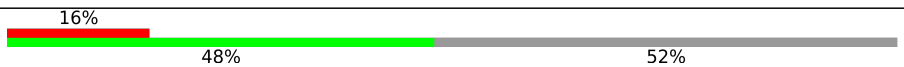
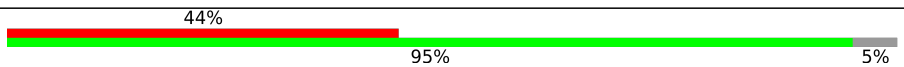
Mol	Chain	Length	Quality of chain
25	j	92	
26	f	86	
26	i	86	
27	g	76	
27	k	76	
28	o	301	
29	p	654	
30	q	2136	
31	r	1227	
32	s	285	
33	u	323	
34	v	146	
35	w	174	
36	x	258	
37	y	411	
38	z	646	

2 Entry composition

There are 38 unique types of molecules in this entry. The entry contains 52703 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a RNA chain called U2 snRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	2	155	2854	1258	396	1045	155	0	0

- Molecule 2 is a RNA chain called U5 snRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	5	40	718	316	93	269	40	0	0

- Molecule 3 is a RNA chain called U6 snRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
3	6	16	296	130	42	108	16	0	0

- Molecule 4 is a protein called UNKNOWN.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
4	8	76	376	224	76	76	0	0

- Molecule 5 is a protein called Pre-mRNA-processing-splicing factor 8.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
5	A	491	2485	1496	497	492	0	0

- Molecule 6 is a protein called SNW domain-containing protein 1.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
6	C	15	75	45	15	15	0	0

- Molecule 7 is a protein called Pre-mRNA-processing factor 17.

Mol	Chain	Residues	Atoms				AltConf	Trace
7	E	305	Total 1525	C 915	N 305	O 305	0	0

- Molecule 8 is a protein called Pre-mRNA-processing factor 19.

Mol	Chain	Residues	Atoms				AltConf	Trace
8	G	132	Total 679	C 415	N 132	O 132	0	0
8	H	135	Total 696	C 426	N 135	O 135	0	0
8	I	133	Total 684	C 418	N 133	O 133	0	0
8	J	110	Total 561	C 341	N 110	O 110	0	0

- Molecule 9 is a protein called Pre-mRNA-splicing factor SPF27.

Mol	Chain	Residues	Atoms				AltConf	Trace
9	K	138	Total 689	C 413	N 138	O 138	0	0

- Molecule 10 is a protein called Cell division cycle 5-like protein.

Mol	Chain	Residues	Atoms				AltConf	Trace
10	L	115	Total 573	C 343	N 115	O 115	0	0

- Molecule 11 is a protein called Pre-mRNA-splicing factor SYF1.

Mol	Chain	Residues	Atoms				AltConf	Trace
11	M	672	Total 3387	C 2043	N 672	O 672	0	0

- Molecule 12 is a protein called Pre-mRNA-splicing factor SYF2.

Mol	Chain	Residues	Atoms				AltConf	Trace
12	N	73	Total 369	C 223	N 73	O 73	0	0

- Molecule 13 is a protein called Crooked neck-like protein 1.

Mol	Chain	Residues	Atoms				AltConf	Trace
13	O	261	Total 1320	C 798	N 261	O 261	0	0

- Molecule 14 is a protein called Pre-mRNA-splicing factor RBM22.

Mol	Chain	Residues	Atoms				AltConf	Trace
14	P	90	Total 452	C 271	N 90	O 91	0	0

- Molecule 15 is a protein called Serine/arginine repetitive matrix protein 2.

Mol	Chain	Residues	Atoms				AltConf	Trace
15	S	46	Total 229	C 137	N 46	O 46	0	0

- Molecule 16 is a protein called Pre-mRNA-splicing factor CWC22 homolog.

Mol	Chain	Residues	Atoms				AltConf	Trace
16	T	253	Total 1271	C 765	N 253	O 253	0	0

- Molecule 17 is a protein called Intron-binding protein aquarius.

Mol	Chain	Residues	Atoms				AltConf	Trace
17	U	1293	Total 6546	C 3960	N 1293	O 1293	0	0

- Molecule 18 is a protein called U2 small nuclear ribonucleoprotein A'.

Mol	Chain	Residues	Atoms				AltConf	Trace
18	W	174	Total 874	C 526	N 174	O 174	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
W	89	ASP	CYS	conflict	UNP P09661
W	119	CYS	SER	conflict	UNP P09661

- Molecule 19 is a protein called U2 small nuclear ribonucleoprotein B".

Mol	Chain	Residues	Atoms				AltConf	Trace
19	X	93	Total 466	C 280	N 93	O 93	0	0

- Molecule 20 is a RNA chain called pre-mRNA.

Mol	Chain	Residues	Atoms				AltConf	Trace
20	Y	29	Total 348	C 145	O 174	P 29	0	0

- Molecule 21 is a protein called Small nuclear ribonucleoprotein Sm D3.

Mol	Chain	Residues	Atoms				AltConf	Trace
21	a	72	Total 358	C 214	N 72	O 72	0	0
21	l	83	Total 415	C 249	N 83	O 83	0	0

- Molecule 22 is a protein called Small nuclear ribonucleoprotein-associated proteins B and B'.

Mol	Chain	Residues	Atoms				AltConf	Trace
22	b	66	Total 327	C 195	N 66	O 66	0	0
22	m	70	Total 351	C 211	N 70	O 70	0	0

- Molecule 23 is a protein called Small nuclear ribonucleoprotein Sm D1.

Mol	Chain	Residues	Atoms				AltConf	Trace
23	c	81	Total 407	C 245	N 81	O 81	0	0
23	n	82	Total 412	C 248	N 82	O 82	0	0

- Molecule 24 is a protein called Small nuclear ribonucleoprotein Sm D2.

Mol	Chain	Residues	Atoms				AltConf	Trace
24	d	81	Total 406	C 244	N 81	O 81	0	0
24	h	84	Total 421	C 253	N 84	O 84	0	0

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

Mol	Chain	Residues	Atoms				AltConf	Trace
25	e	79	Total 393	C 235	N 79	O 79	0	0
25	j	78	Total 388	C 232	N 78	O 78	0	0

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

Mol	Chain	Residues	Atoms				AltConf	Trace
26	f	74	Total 369	C 221	N 74	O 74	0	0
26	i	71	Total 352	C 210	N 71	O 71	0	0

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

Mol	Chain	Residues	Atoms				AltConf	Trace
27	g	74	Total 369	C 221	N 74	O 74	0	0
27	k	73	Total 364	C 218	N 73	O 73	0	0

- Molecule 28 is a protein called Peptidyl-prolyl cis-trans isomerase E.

Mol	Chain	Residues	Atoms				AltConf	Trace
28	o	77	Total 384	C 230	N 77	O 77	0	0

- Molecule 29 is a protein called WD repeat-containing protein 70.

Mol	Chain	Residues	Atoms				AltConf	Trace
29	p	68	Total 333	C 197	N 68	O 68	0	0

- Molecule 30 is a protein called U5 small nuclear ribonucleoprotein 200 kDa helicase.

Mol	Chain	Residues	Atoms				AltConf	Trace
30	q	1896	Total 9558	C 5766	N 1896	O 1896	0	0

- Molecule 31 is a protein called Pre-mRNA-splicing factor ATP-dependent RNA helicase PRP16.

Mol	Chain	Residues	Atoms				AltConf	Trace
31	r	593	Total	C	N	O	0	0
			2982	1796	593	593		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
r	855	ASN	GLY	conflict	UNP Q92620

- Molecule 32 is a protein called Pre-mRNA-splicing factor ISY1 homolog.

Mol	Chain	Residues	Atoms				AltConf	Trace
32	s	76	Total	C	N	O	0	0
			376	224	76	76		

- Molecule 33 is a protein called Splicing factor YJU2.

Mol	Chain	Residues	Atoms				AltConf	Trace
33	u	43	Total	C	N	O	0	0
			216	129	43	44		

- Molecule 34 is a protein called Protein mago nashi homolog.

Mol	Chain	Residues	Atoms				AltConf	Trace
34	v	144	Total	C	N	O	0	0
			723	435	144	144		

- Molecule 35 is a protein called RNA-binding protein 8A.

Mol	Chain	Residues	Atoms				AltConf	Trace
35	w	91	Total	C	N	O	0	0
			453	271	91	91		

- Molecule 36 is a protein called Protein FRG1.

Mol	Chain	Residues	Atoms				AltConf	Trace
36	x	125	Total	C	N	O	0	0
			621	371	125	125		

- Molecule 37 is a protein called Eukaryotic initiation factor 4A-III.

Mol	Chain	Residues	Atoms				AltConf	Trace
37	y	390	Total 1951	C 1171	N 390	O 390	0	0

- Molecule 38 is a protein called Peptidylprolyl isomerase domain and WD repeat-containing protein 1.

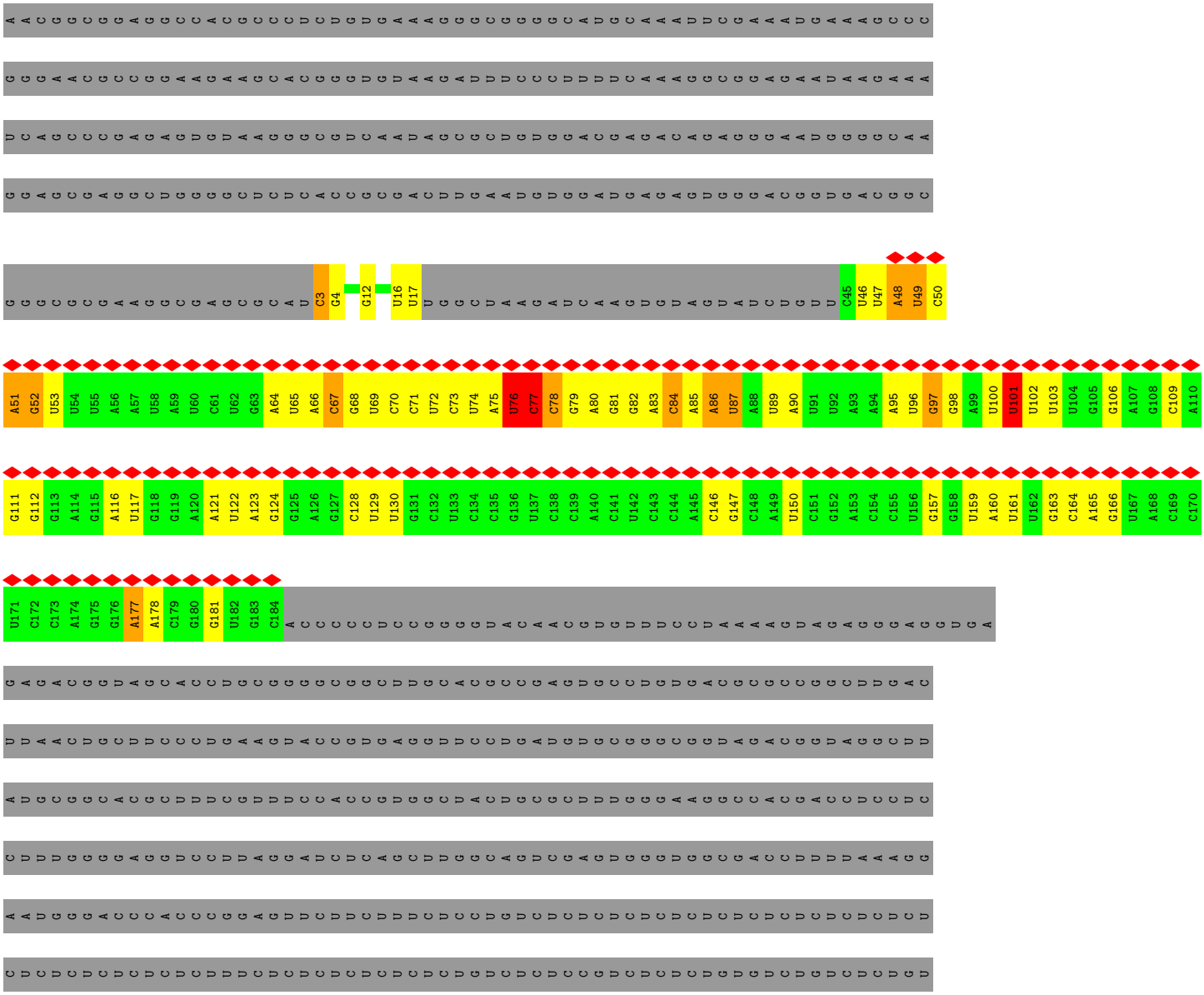
Mol	Chain	Residues	Atoms				AltConf	Trace
38	z	460	Total 2301	C 1381	N 460	O 460	0	0

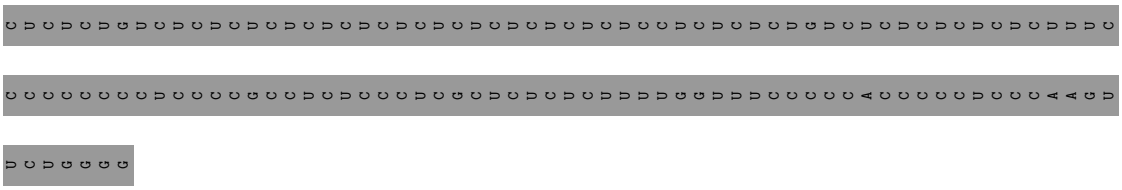
3 Residue-property plots (i)

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: U2 snRNA

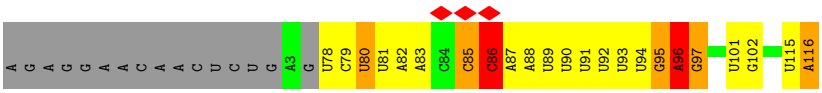
Chain 2:





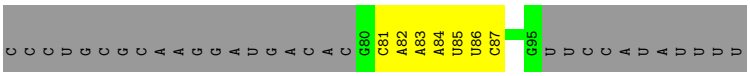
• Molecule 2: U5 snRNA

Chain 5:



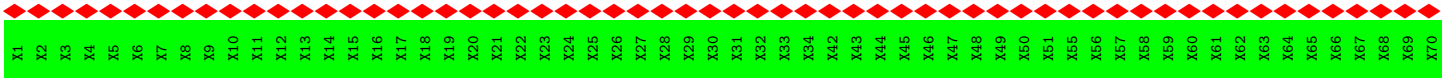
• Molecule 3: U6 snRNA

Chain 6:



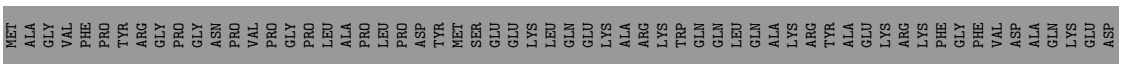
• Molecule 4: UNKNOWN

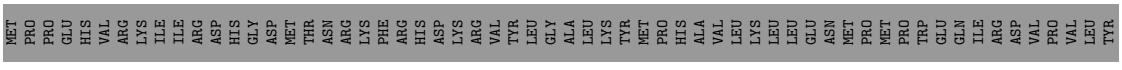
Chain 8:



• Molecule 5: Pre-mRNA-processing-splicing factor 8

Chain A:





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

LEU ALA ASN GLN LEU LEU THR ASP LEU VAL ASP ASP ASN TYR PHE TYR LEU PHE ASP LEU LYS ALA PHE PHE THR SER LYS ALA LEU ASN MET ALA ILE PRO GLY GLY PRO LYS PHE GLU PRO LEU VAL ARG ASP ILE ASN LEU GLN ASP GLU ASP TRP ASN GLU PHE ASN ASP ILE ASN

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

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

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

PHE PHE GLN SER THR LYS LEU ASP TRP VAL GLU VAL GLY LEU GLN VAL CYS ARG GLN GLY TYR ASN MET LEU ASN LEU LEU ILE HIS ARG LYS ASN LEU ASN TYR LEU HIS LEU ASP TYR ASN PHE ASN LEU LYS PRO VAL LYS THR LEU THR THR LYS GLU ARG LYS LYS SER ARG PHE

GLY ASN ALA PHE HIS LEU CYS ARG GLU VAL LEU ARG LEU THR LYS LEU VAL VAL ASP SER HIS VAL GLN TYR ARG LEU GLY ASN VAL ASP ALA PHE GLN LEU ALA ASP GLY LEU GLN TYR ILE PHE ALA HIS VAL GLY GLN LEU THR GLY MET TYR ARG TYR LYS TYR LYS LEU MET ARG

GLN ILE ARG MET CYS LYS ASP LEU LYS HIS LEU ILE TYR TYR ARG PHE ASN THR GLY PRO VAL GLY LYS GLY PRO GLY CYS GLY PHE TRP ALA ALA GLY TRP ARG VAL TRP LEU PHE PHE MET ARG GLY ILE THR PRO LEU LEU GLU ARG TRP LEU GLY ASN LEU LEU ALA ARG GLN PHE

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

LYS ALA ASN ILE PRO TRP LYS VAL PRO GLY LEU PRO THR PRO ILE GLU ASN MET ILE LEU ARG TYR VAL LYS ALA LYS ALA ASP TRP TRP THR ASN THR ALA HIS TYR ASN ARG GLU ARG ILE ARG ARG GLY ALA THR VAL ASP LYS THR VAL CYS LYS LYS ASN LEU GLY ARG LEU THR

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

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

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

ASN LEU GLN ASP VAL TRP GLU THR SER GLU GLY GLU CYS ASN VAL MET LEU GLU SER ARG PHE GLU LYS MET TYR GLU LYS ILE ASP LEU THR LEU LEU ASN ARG LEU LEU ARG LEU ILE VAL ASP HIS ASN ILE ALA ASP TYR MET THR ALA LYS ASN ASN VAL VAL ILE ASN TYR LYS

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

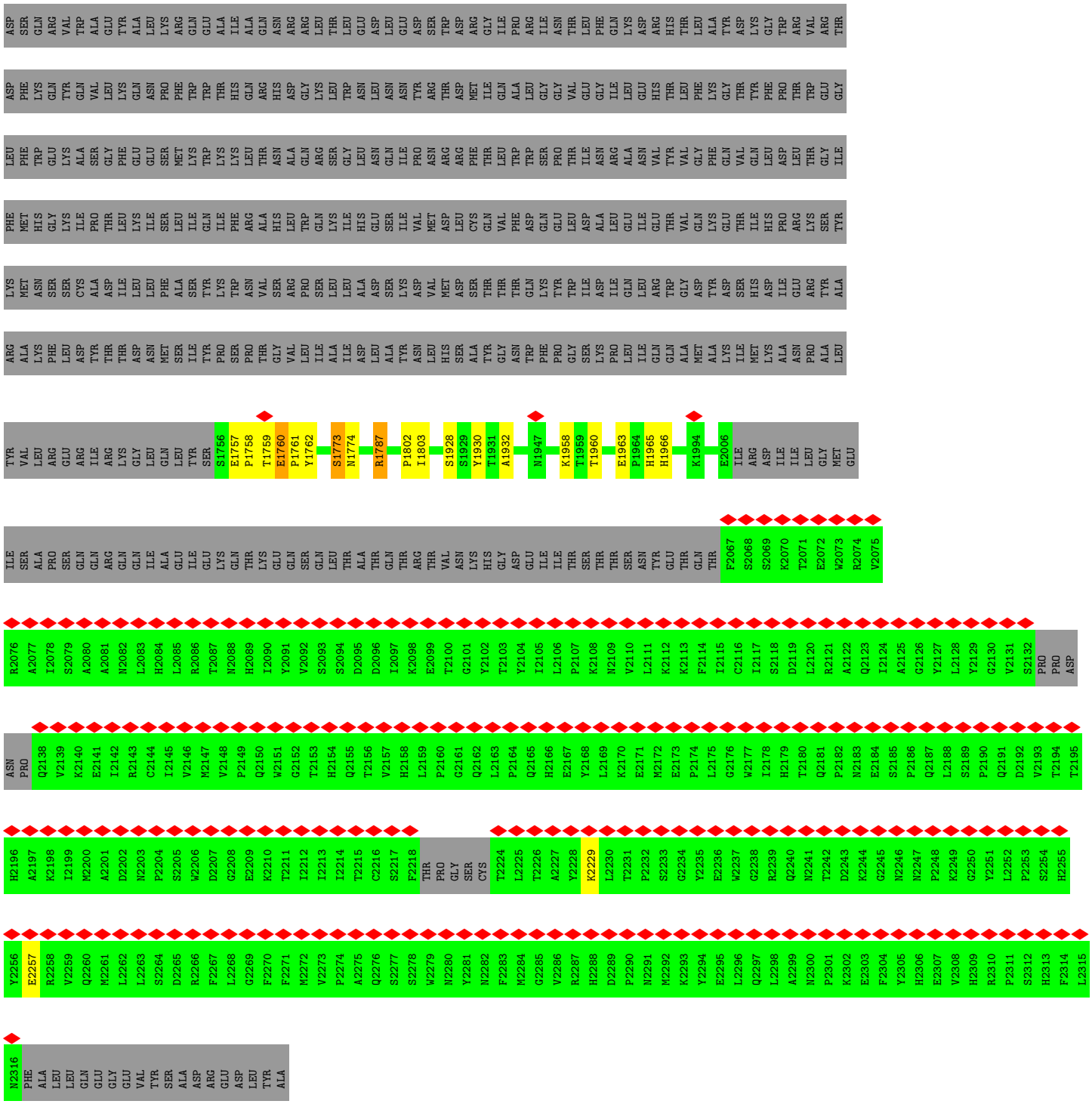
ALA ALA HIS PRO ILE ARG LEU PHE CYS ARG TYR ILE ASP ARG ILE HIS ILE PHE PHE ARG PHE THR ALA ASP GLU ALA ARG ASP LEU ILE GLN ARG TYR LEU THR GLU HIS PRO ASP PRO ASN ASN GLU ASN ILE VAL GLY TYR ASN ASN LYS LYS CYS TRP PRO ARG ASP ALA ARG MET

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

ARG THR SER TYR GLU GLU PHE THR HIS LYS ASP GLY VAL TRP ASN LEU GLN ASN GLU VAL THR LYS GLU ARG THR ALA GLN CYS PHE LEU ARG VAL ASP ASP GLU SER MET GLN ARG PHE HIS ASN ARG VAL ARG GLN ILE LEU MET ALA SER GLY SER THR THR PHE THR LYS ILE VAL

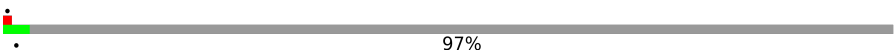
ASN LYS TRP ASN THR ALA LEU ILE GLY LEU MET THR TYR PHE ARG GLU ALA VAL VAL ASN THR GLN GLU LEU LEU ASP LEU LEU VAL LYS CYS GLU ASN LYS ILE GLN THR ARG ILE LYS ILE GLY LEU ASN SER LYS MET PRO SER ARG PHE PRO PRO VAL VAL PHE TYR THR PRO LYS

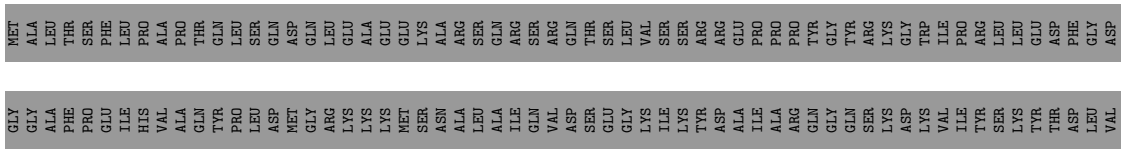
GLU LEU GLY GLY LEU GLY MET LEU SER MET GLY HIS VAL LEU ILE PRO GLN SER ASP LEU ARG TRP SER LYS GLN THR ASP VAL GLY ILE THR HIS PHE ARG SER GLY MET SER HIS GLU GLU ASP GLN LEU ILE PRO ASN LEU TYR ARG TYR ILE GLN PRO TRP GLU SER GLU PHE ILE

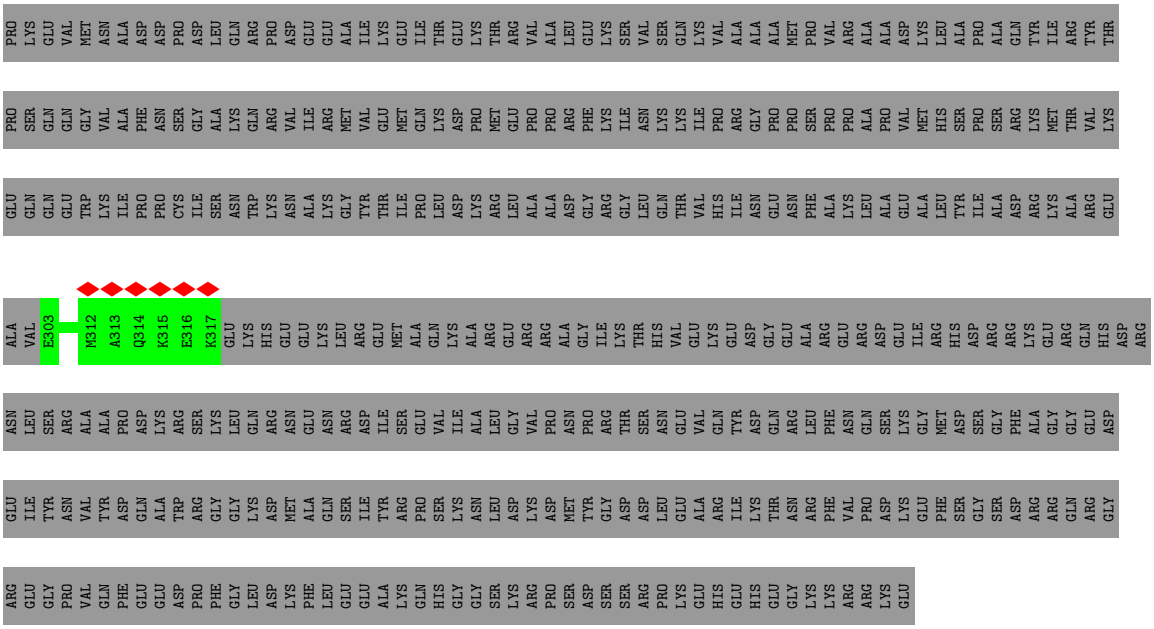


• Molecule 6: SNW domain-containing protein 1

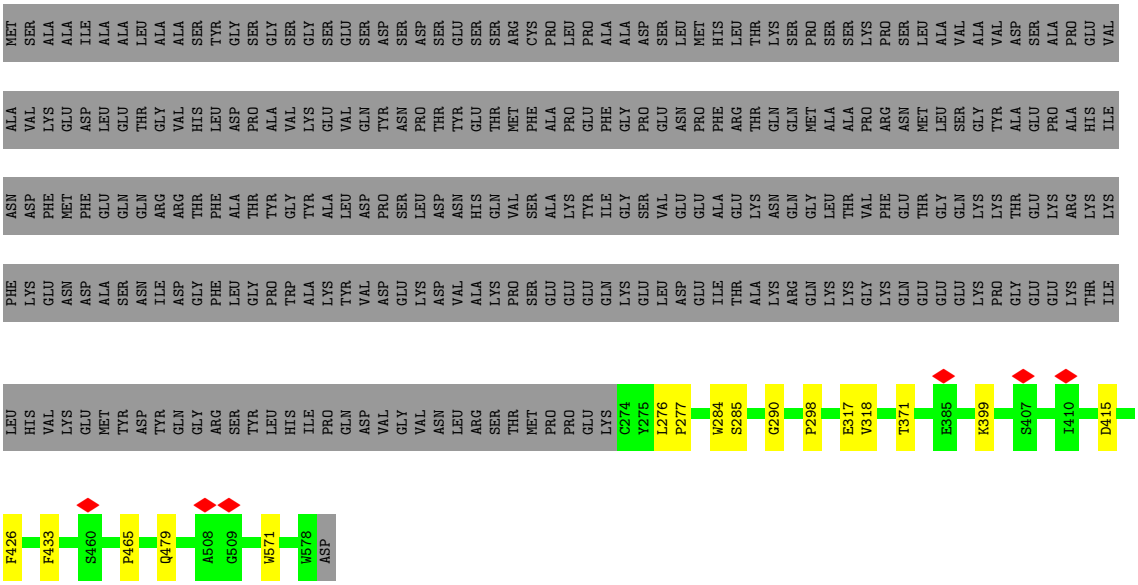
Chain C:



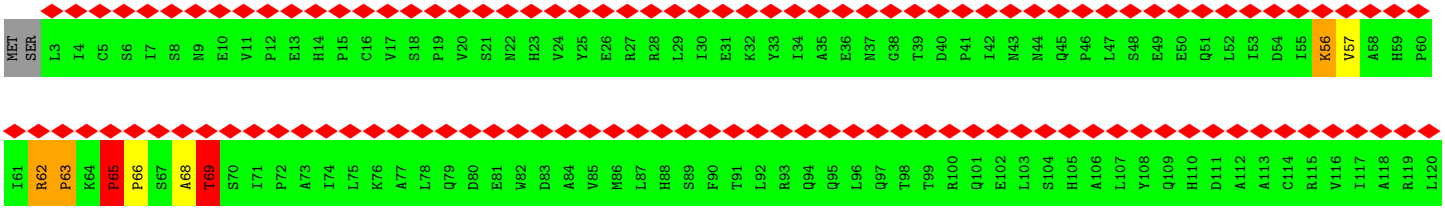


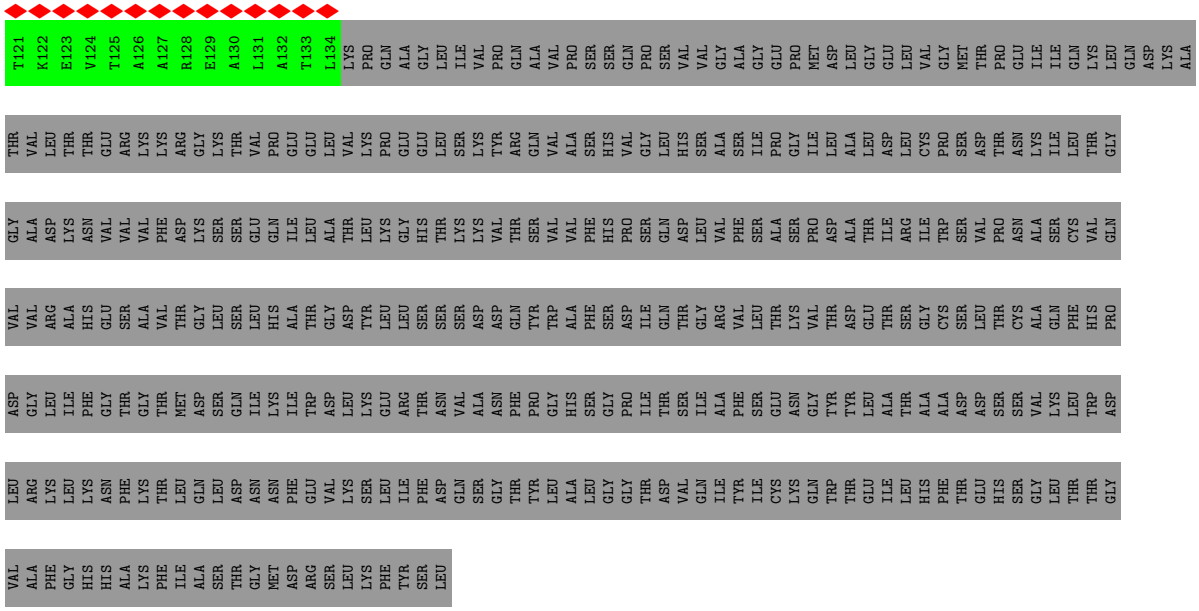


• Molecule 7: Pre-mRNA-processing factor 17



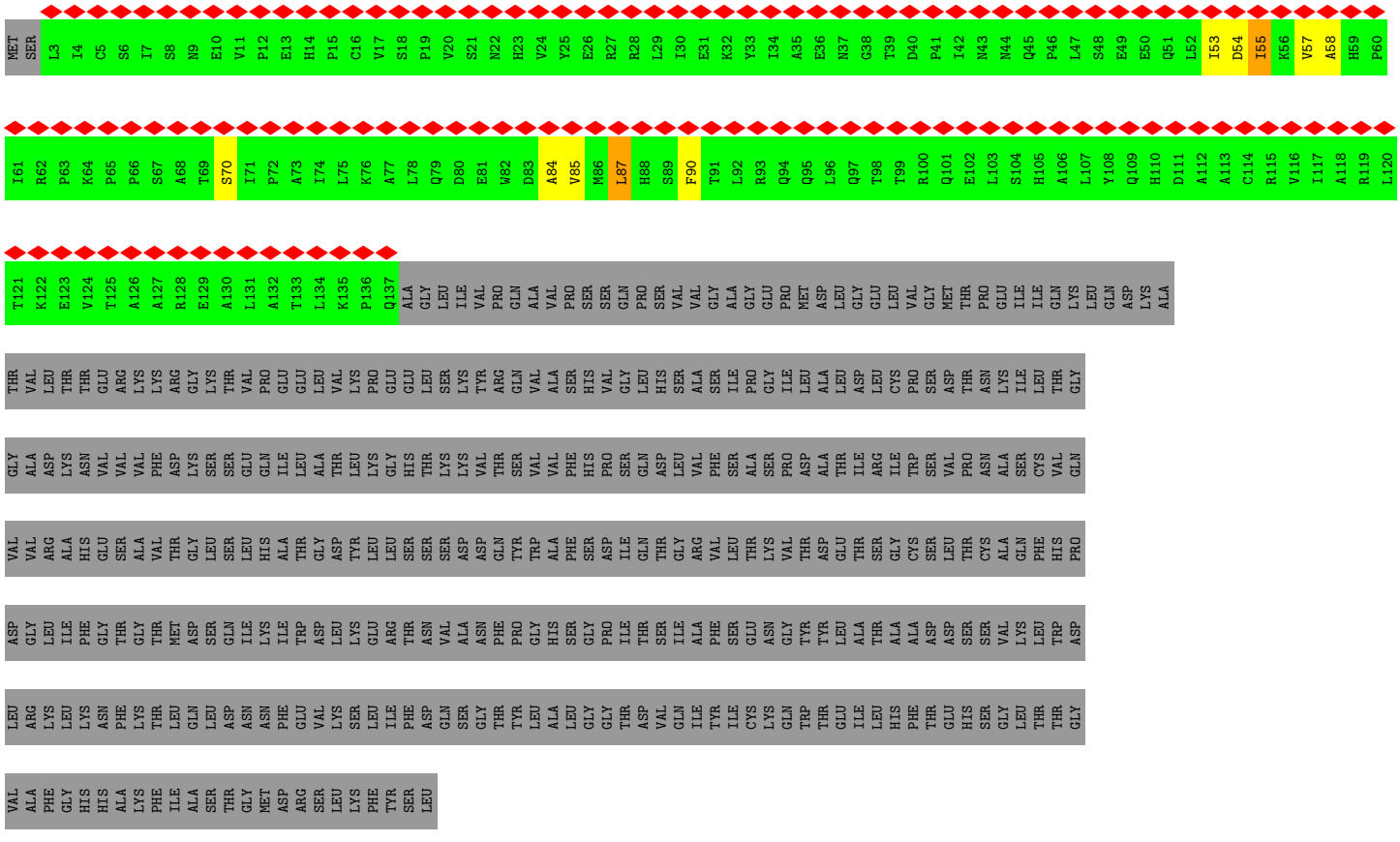
• Molecule 8: Pre-mRNA-processing factor 19





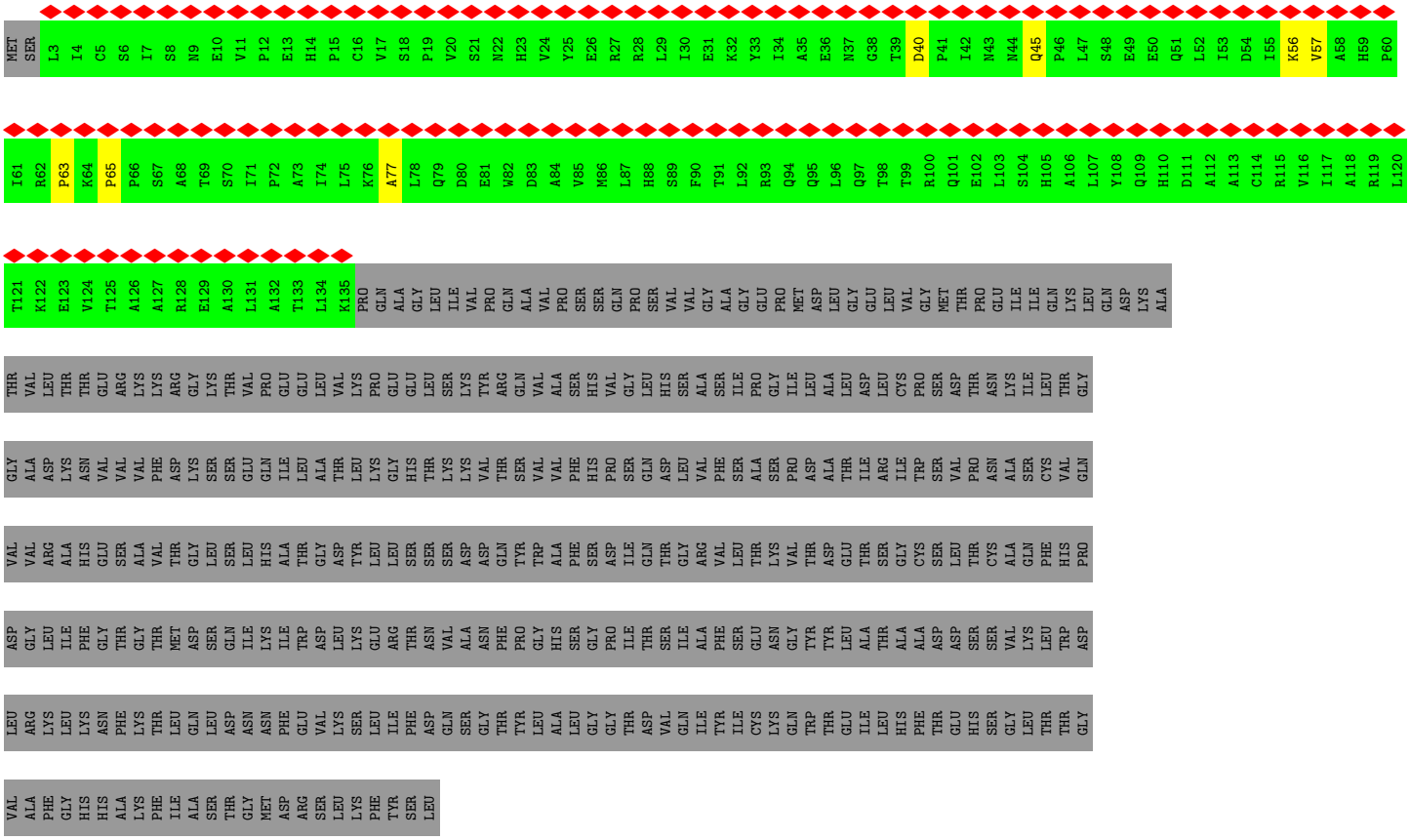
• Molecule 8: Pre-mRNA-processing factor 19

Chain H:



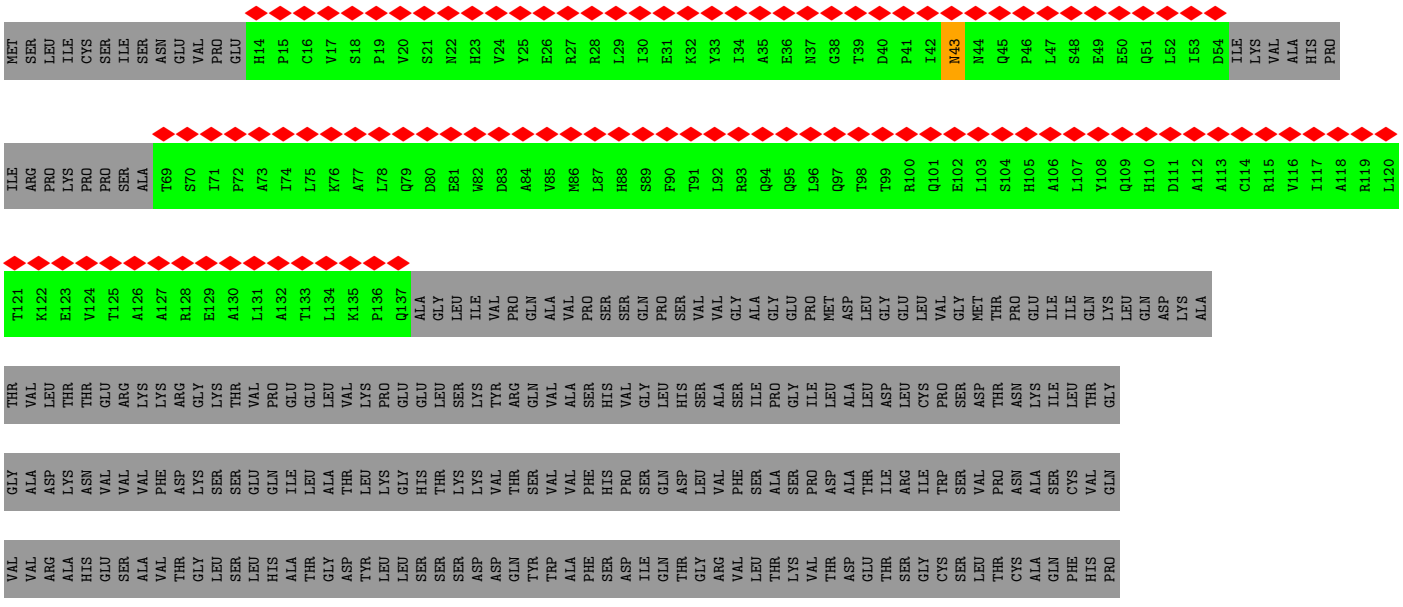
• Molecule 8: Pre-mRNA-processing factor 19

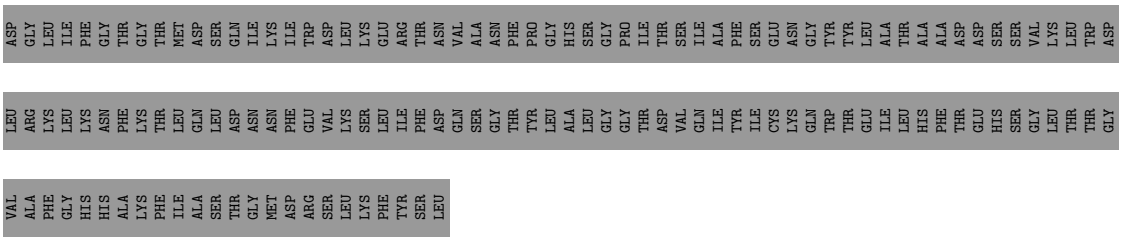
Chain I:



• Molecule 8: Pre-mRNA-processing factor 19

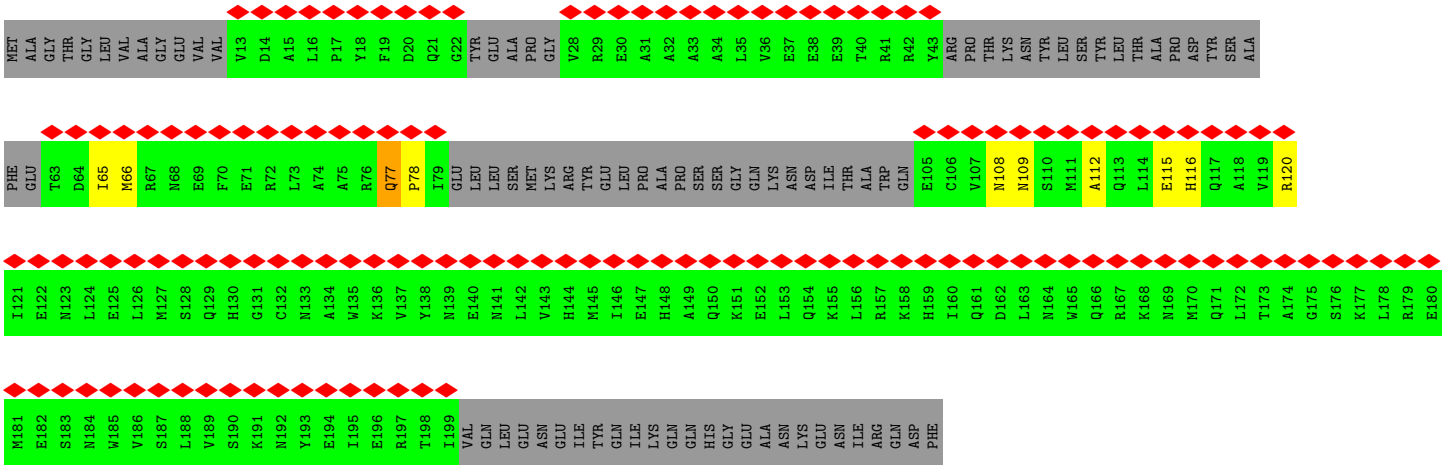
Chain J:





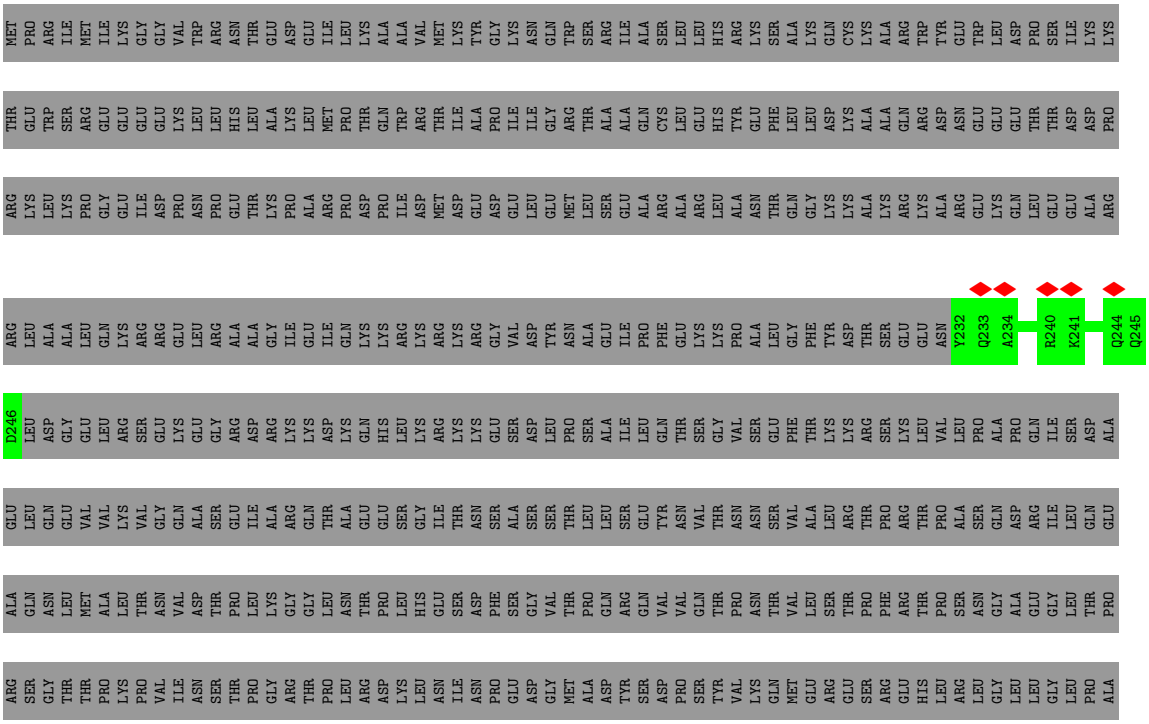
• Molecule 9: Pre-mRNA-splicing factor SPF27

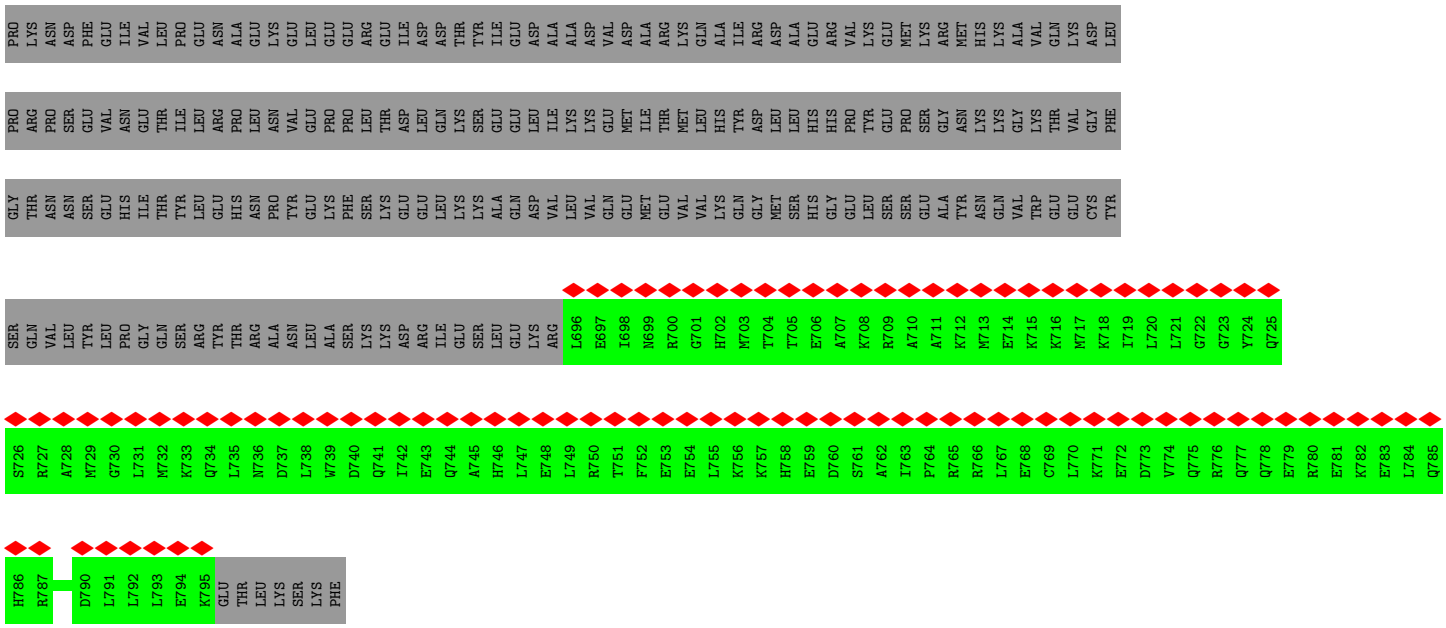
Chain K:



• Molecule 10: Cell division cycle 5-like protein

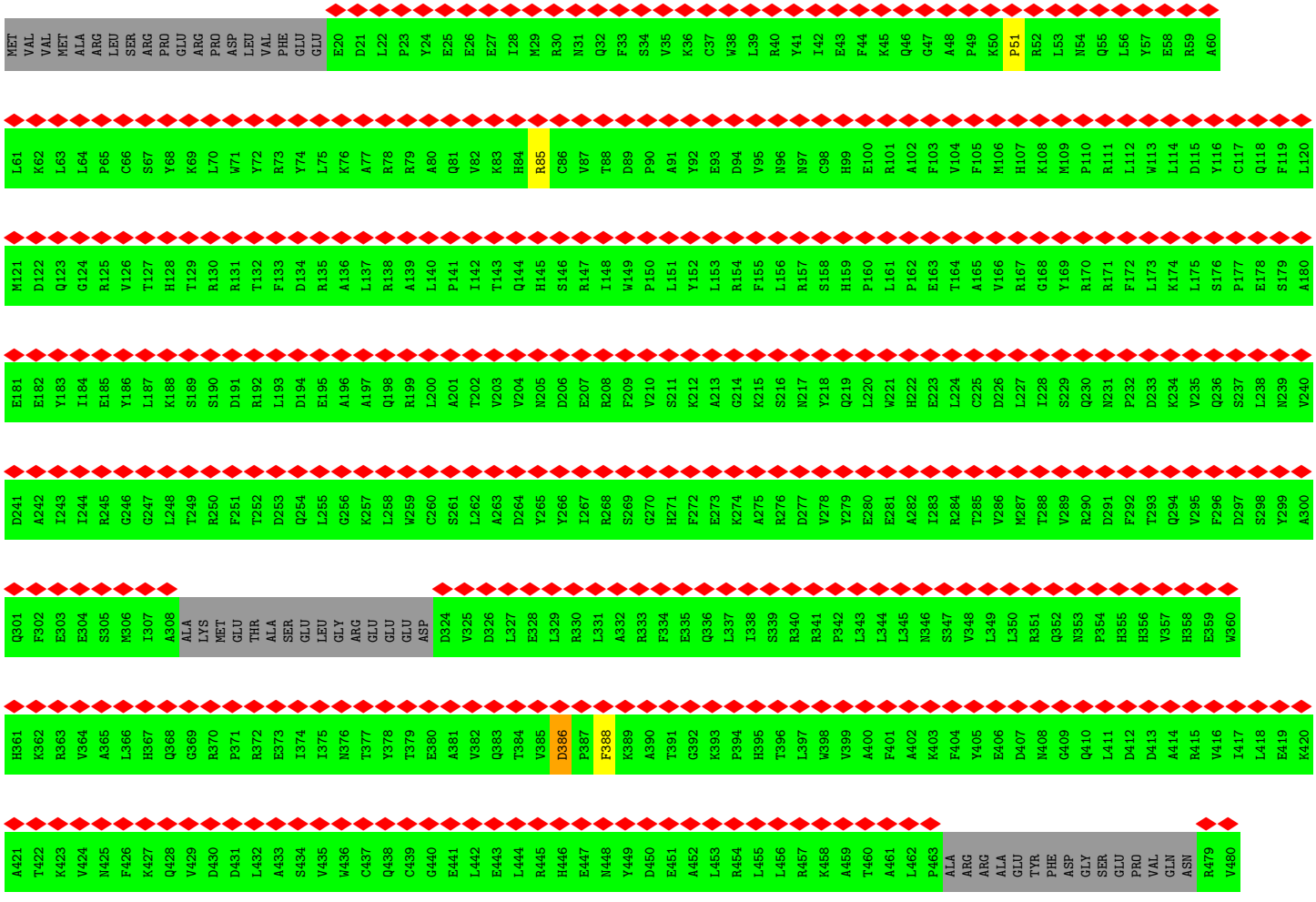
Chain L:

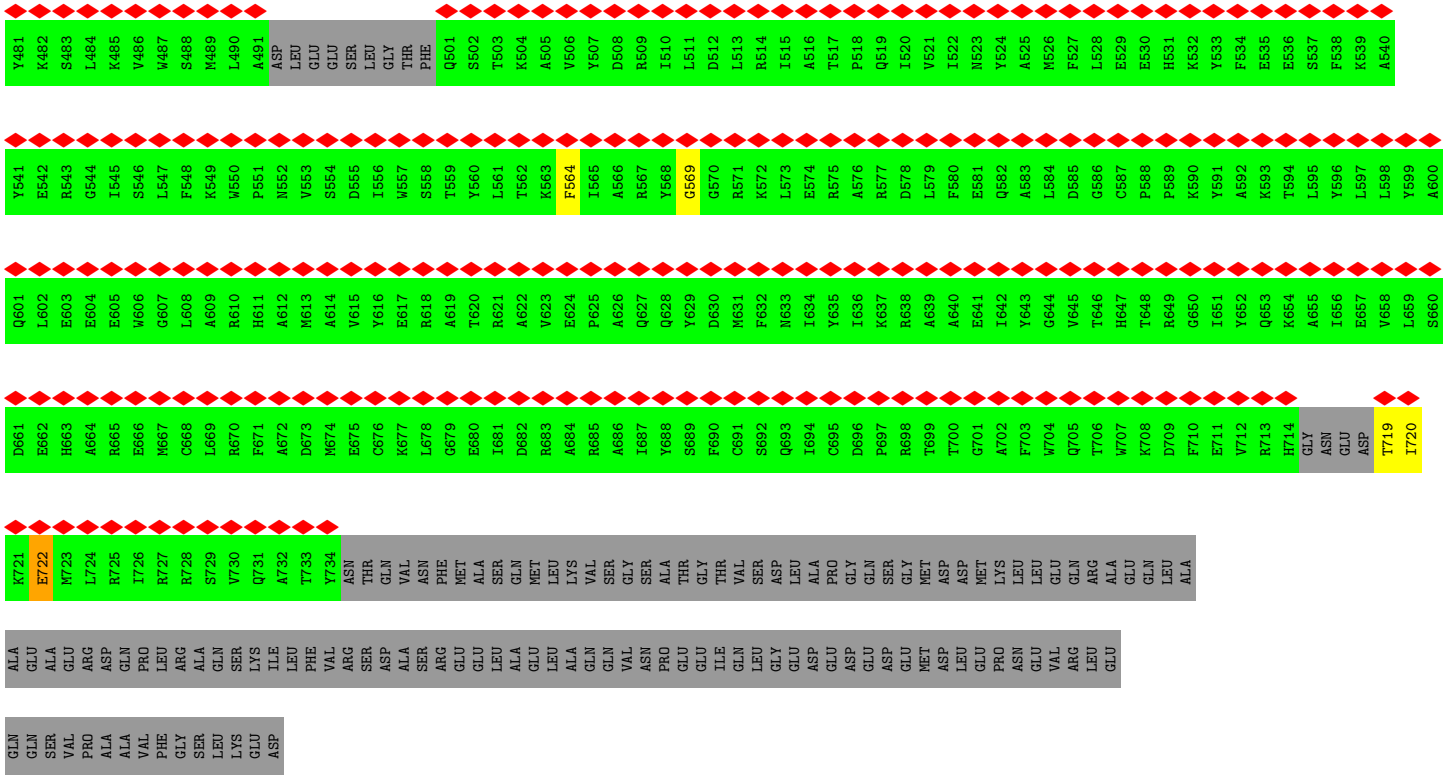




• Molecule 11: Pre-mRNA-splicing factor SYF1

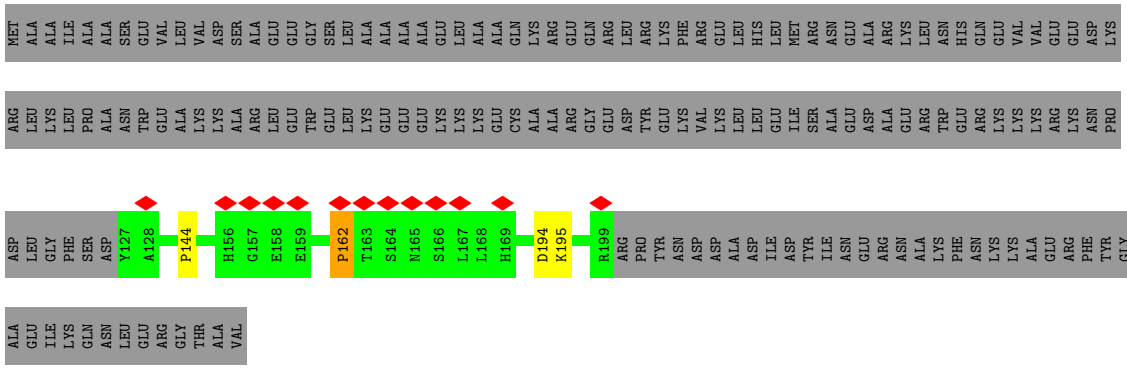
Chain M:





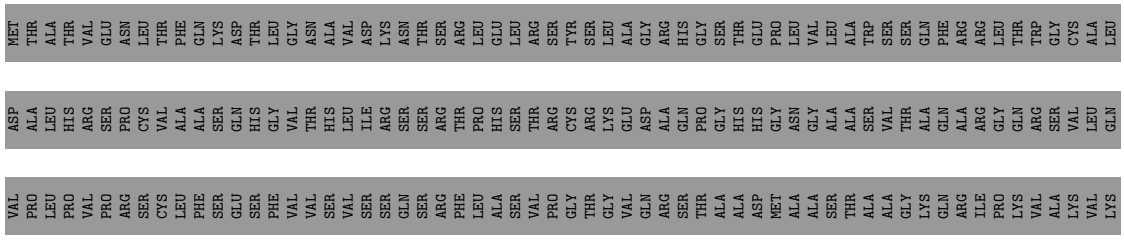
• Molecule 12: Pre-mRNA-splicing factor SYF2

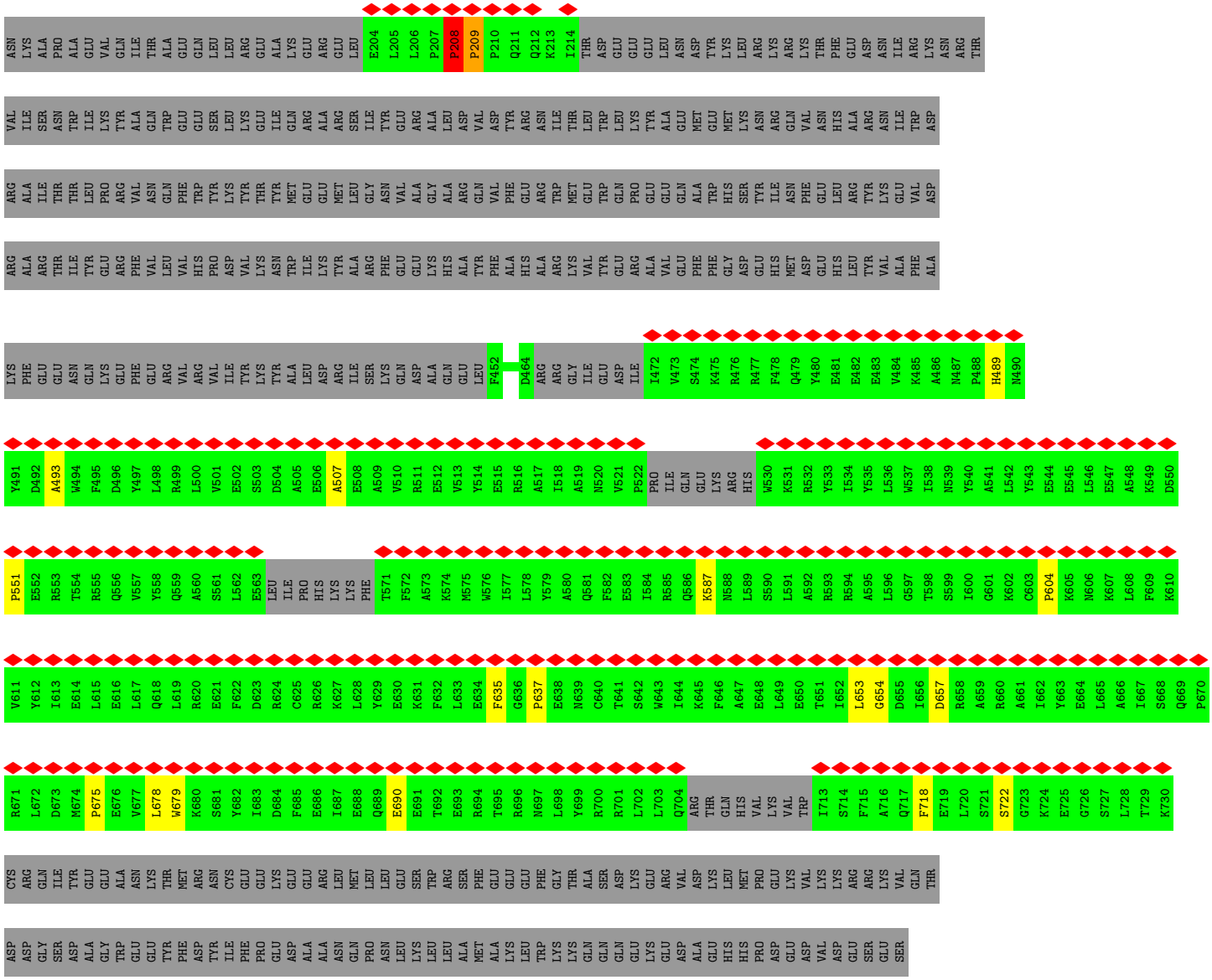
Chain N:



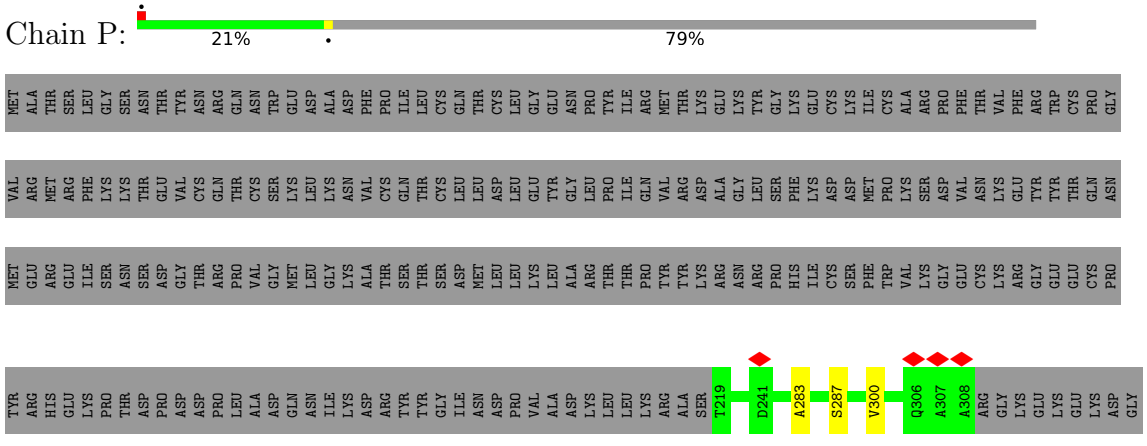
• Molecule 13: Crooked neck-like protein 1

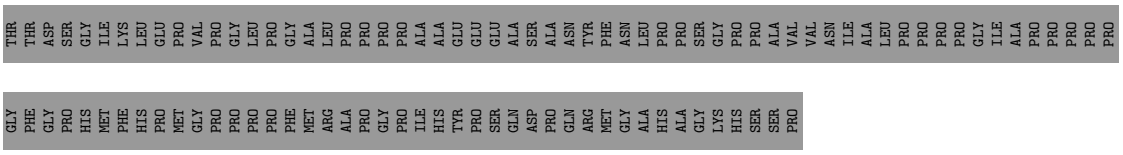
Chain O:





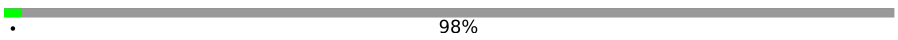
• Molecule 14: Pre-mRNA-splicing factor RBM22

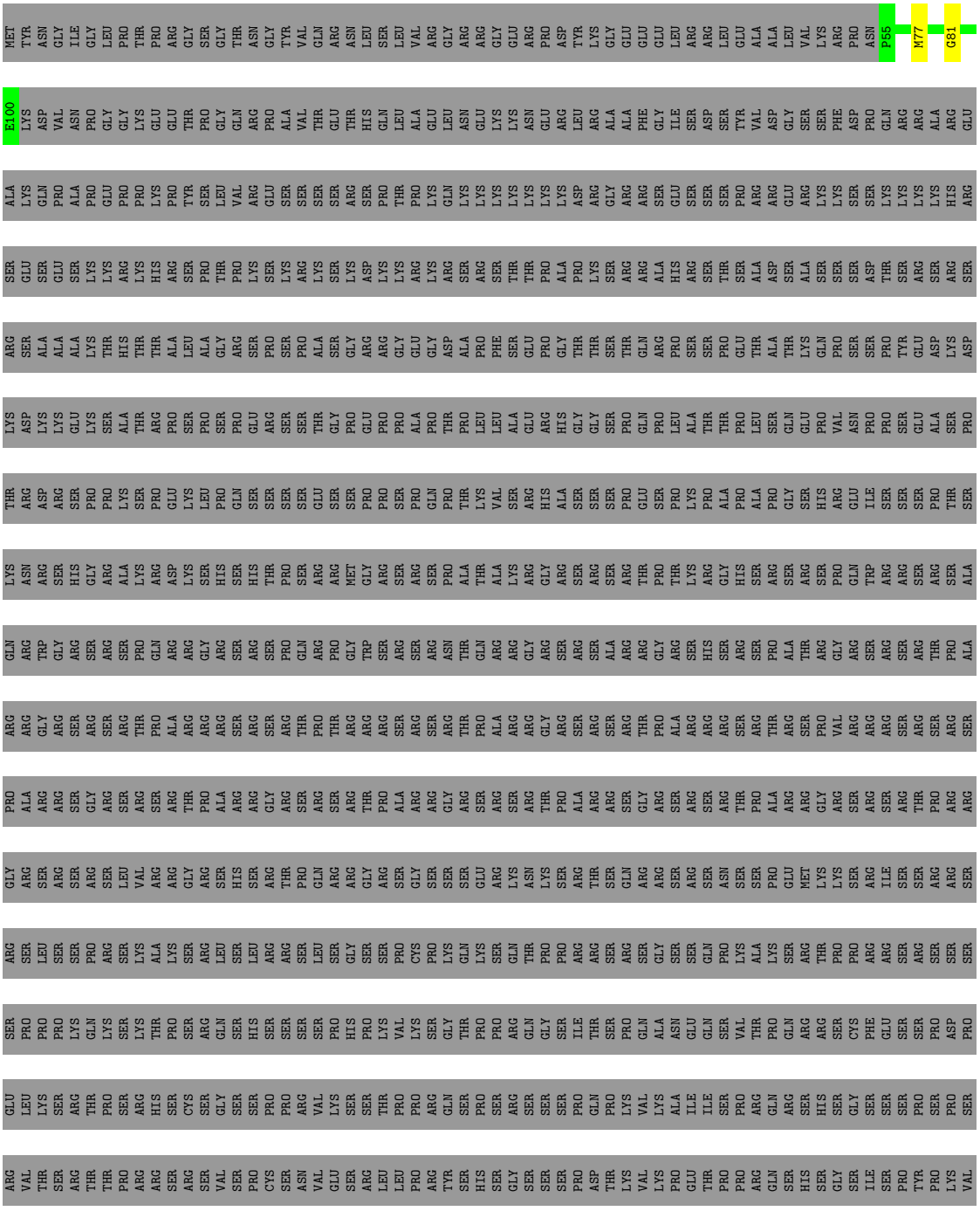


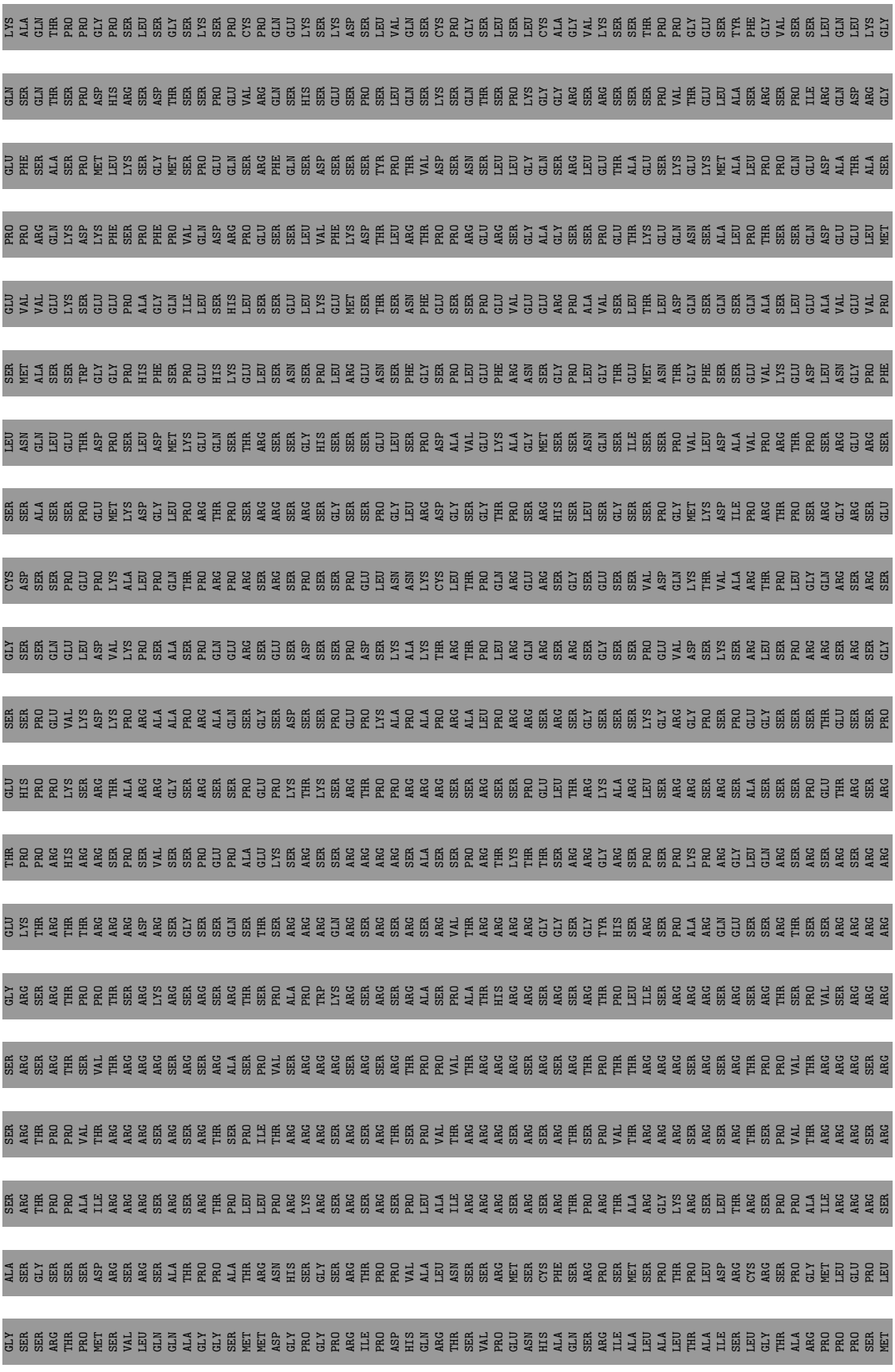


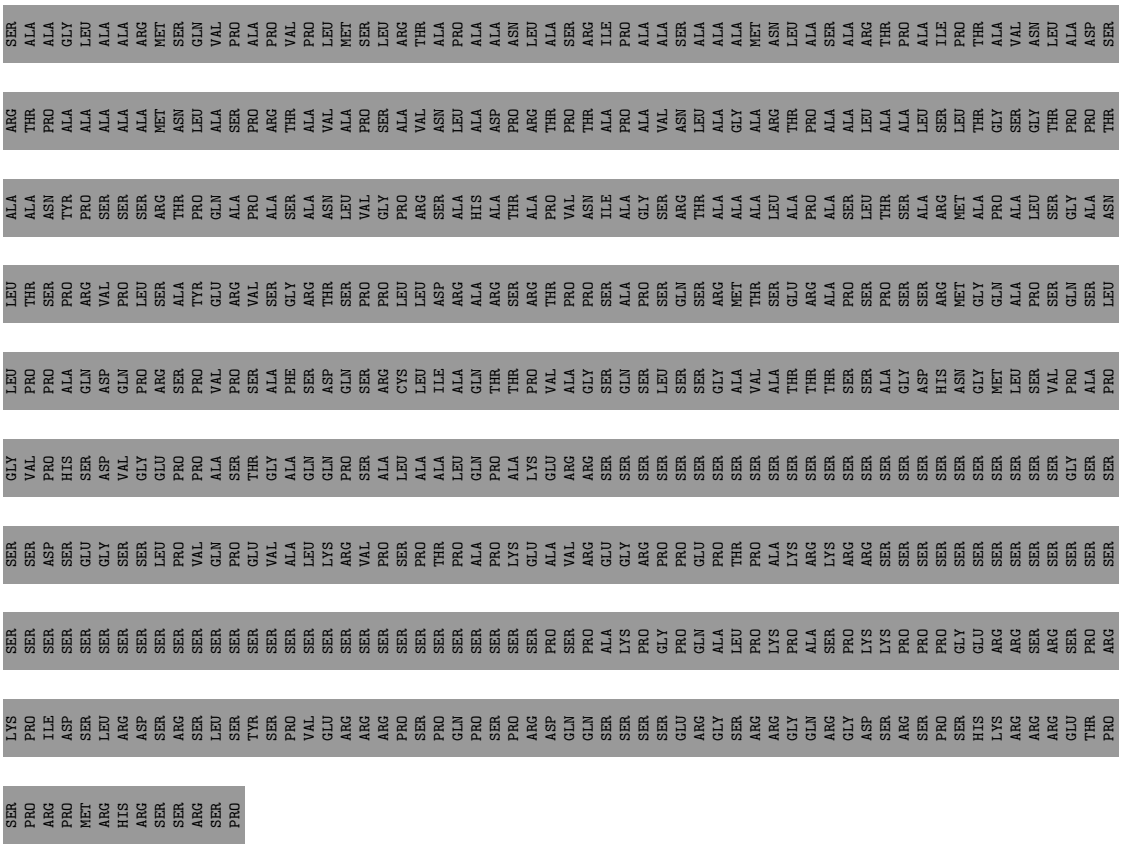
• Molecule 15: Serine/arginine repetitive matrix protein 2

Chain S:



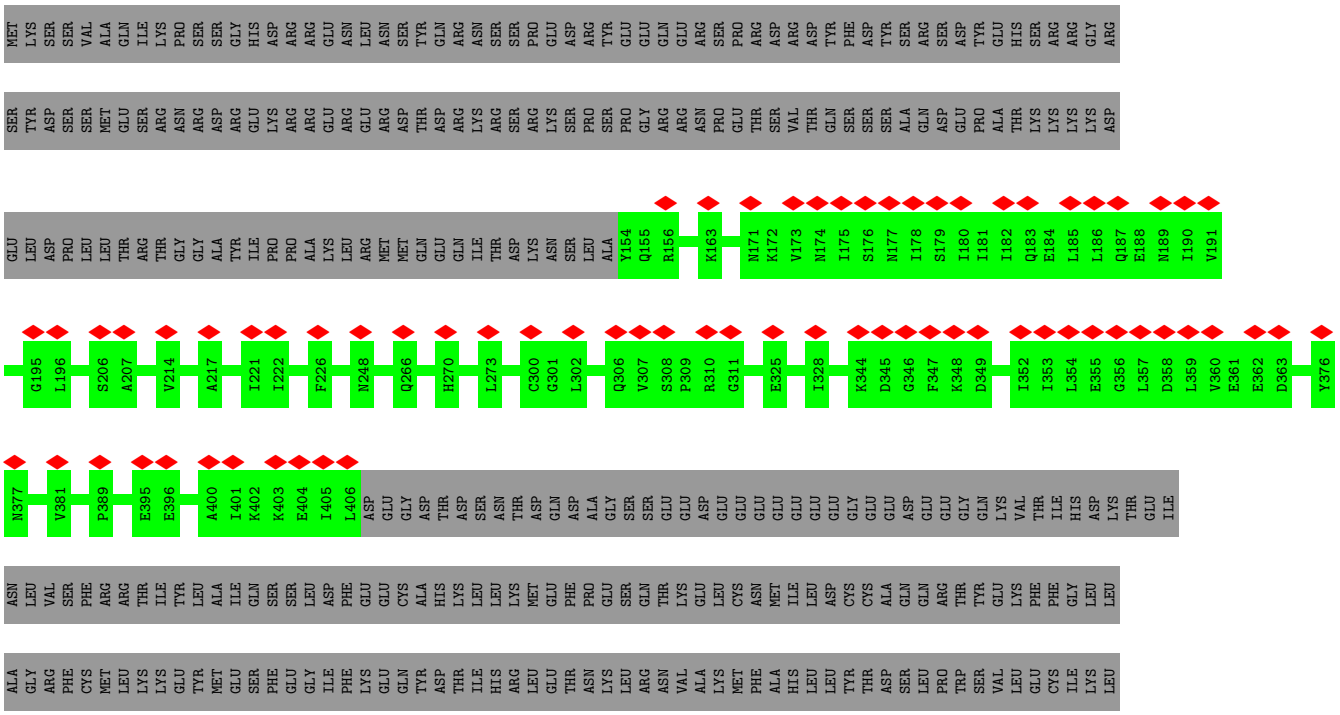


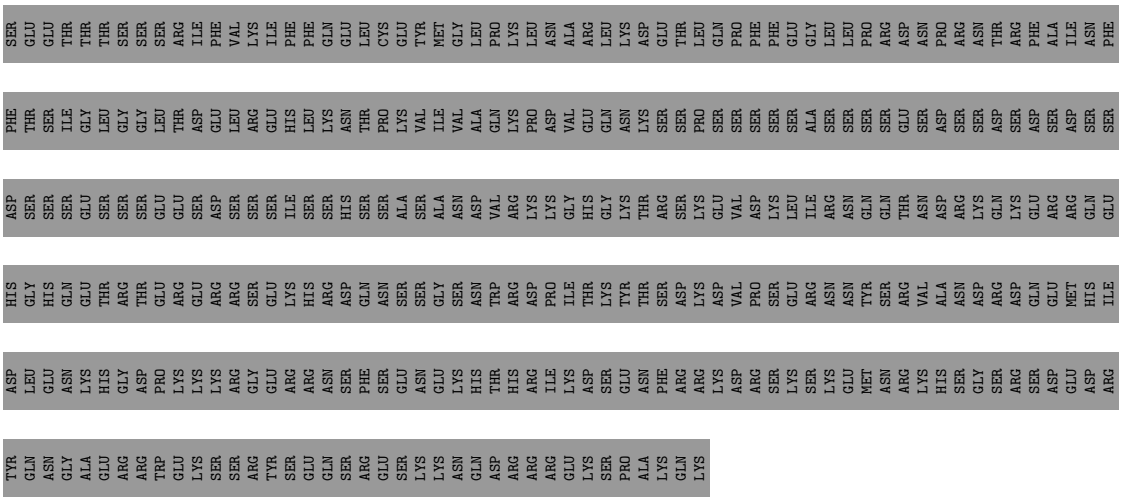




• Molecule 16: Pre-mRNA-splicing factor CWC22 homolog

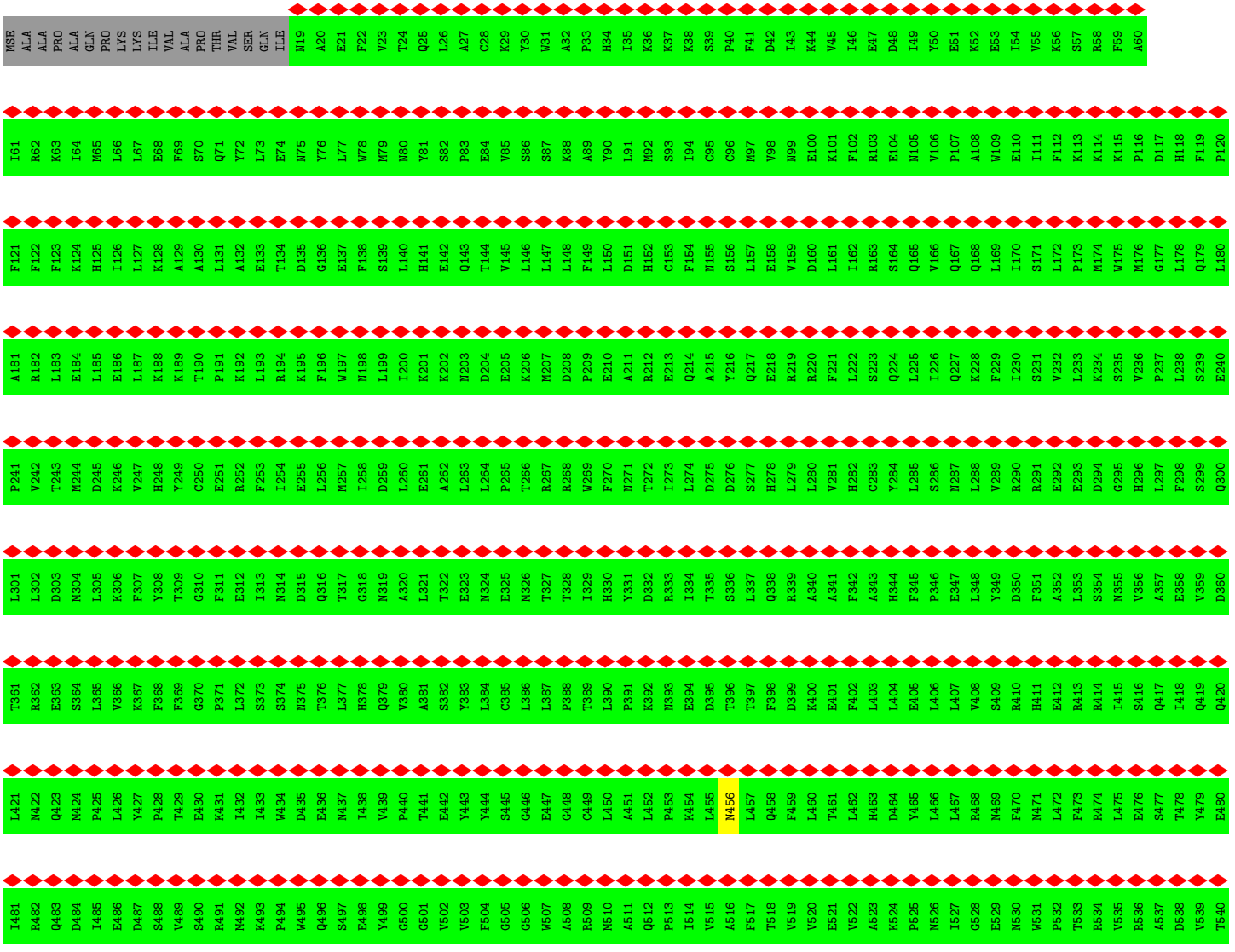
Chain T:

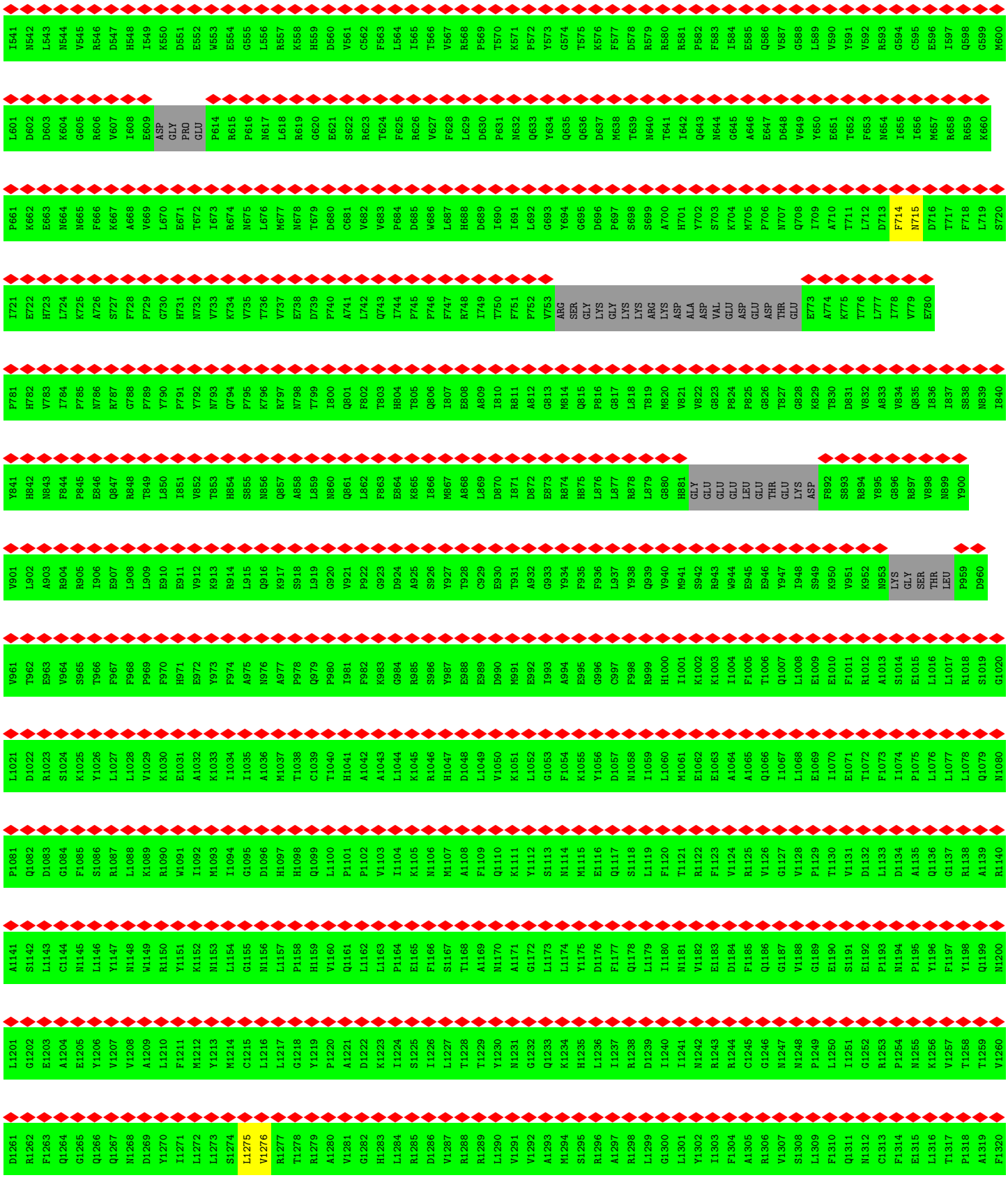




• Molecule 17: Intron-binding protein aquarius

Chain U:

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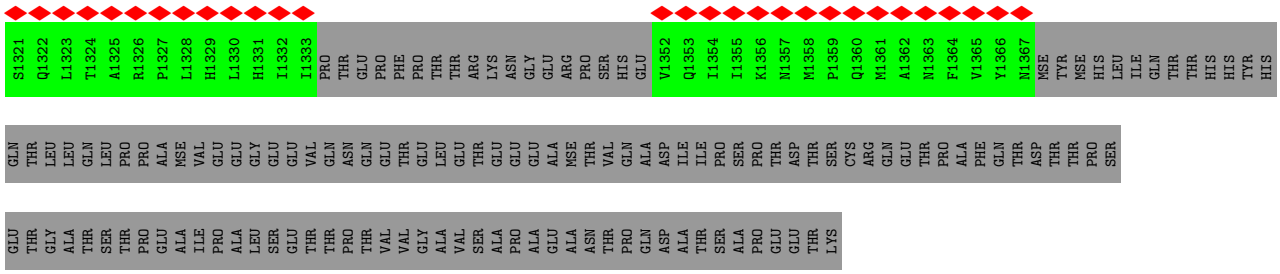
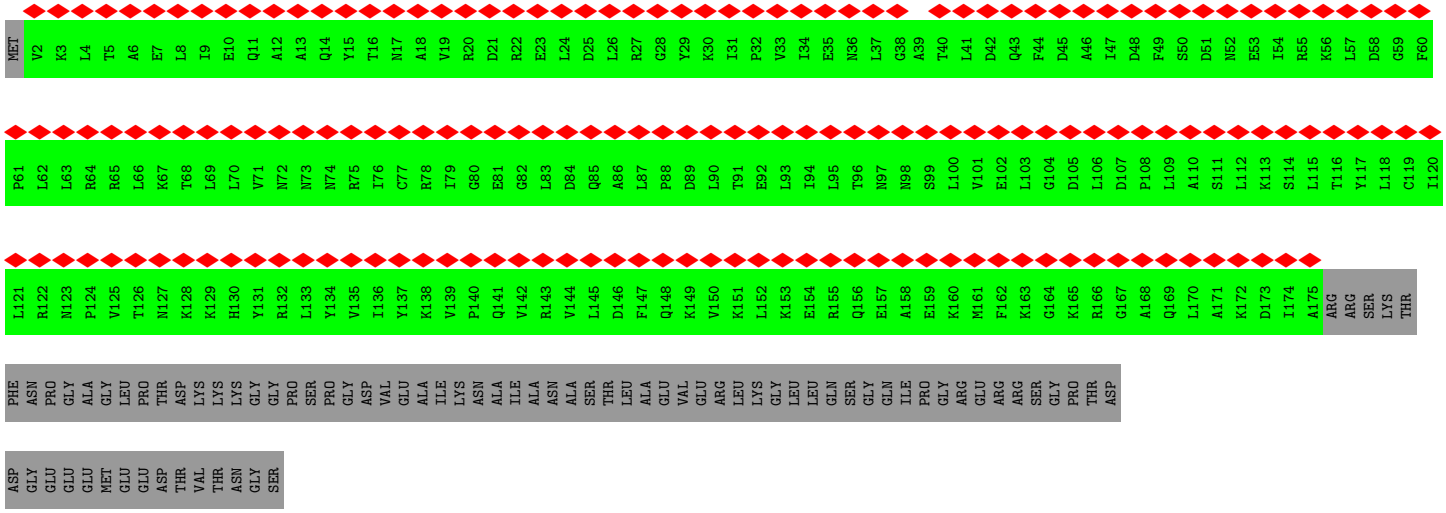
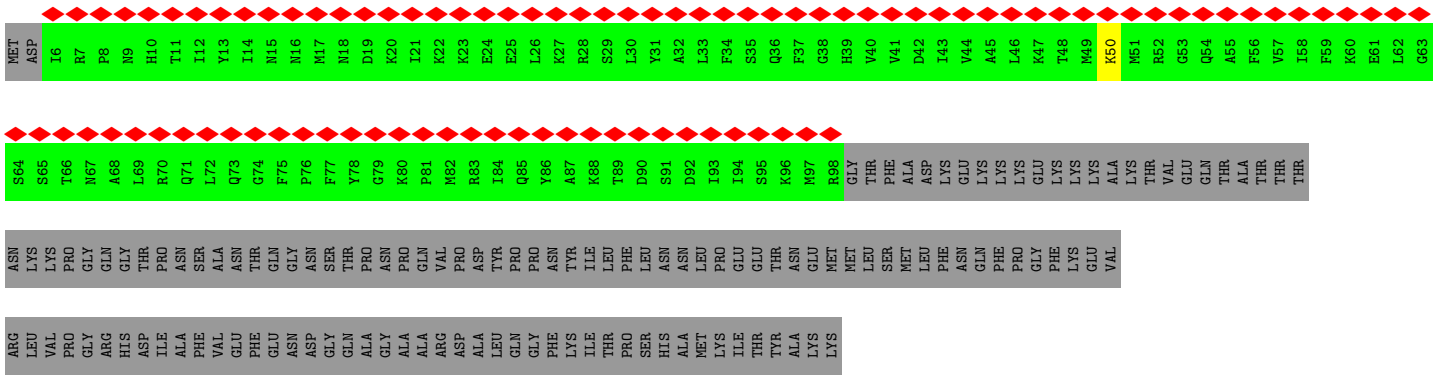


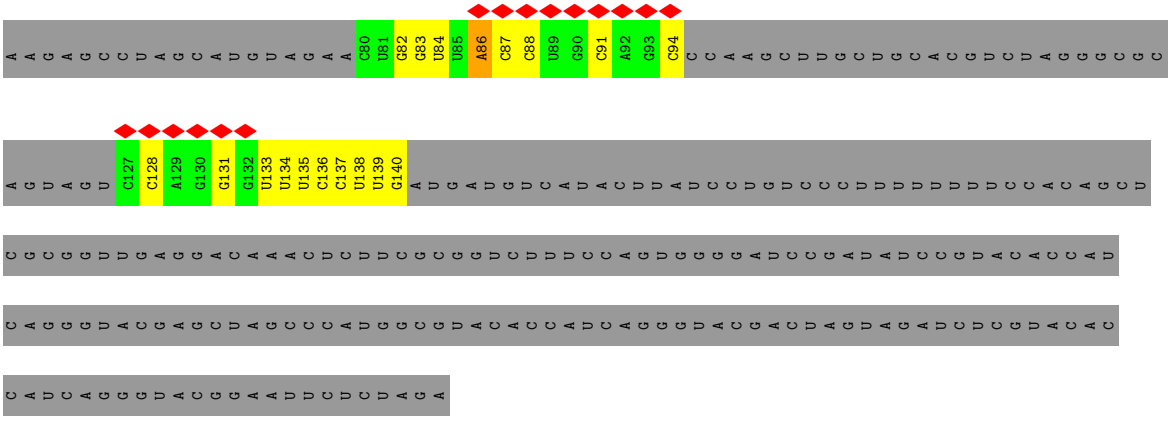
• Molecule 18: U2 small nuclear ribonucleoprotein A'



• Molecule 19: U2 small nuclear ribonucleoprotein B"

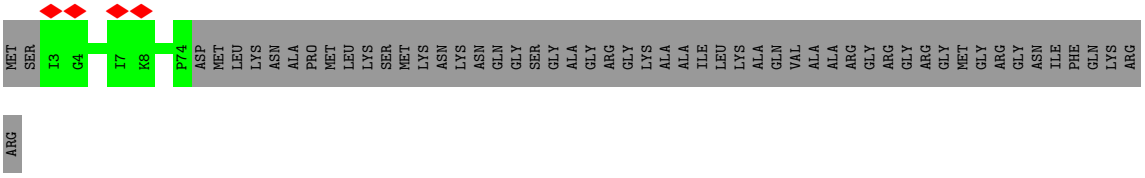


• Molecule 20: pre-mRNA



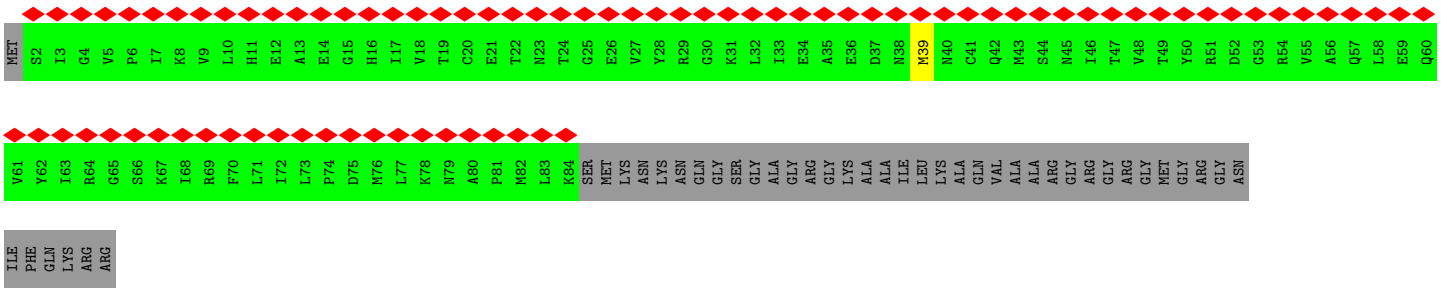
• Molecule 21: Small nuclear ribonucleoprotein Sm D3

Chain a:



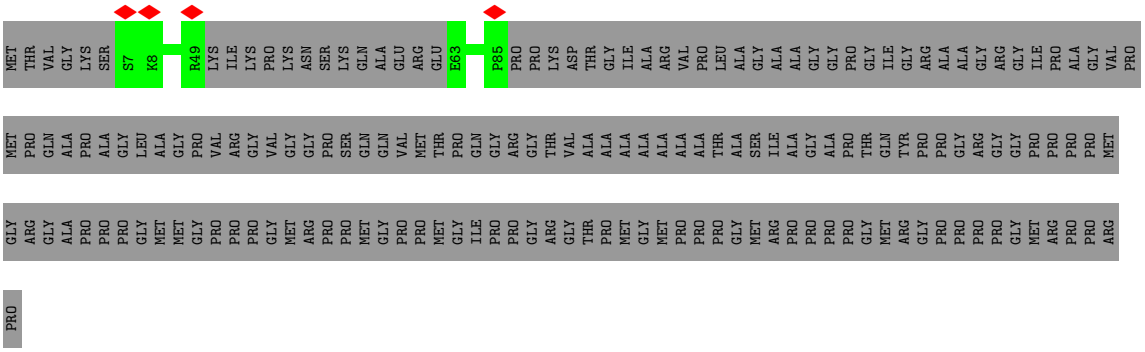
• Molecule 21: Small nuclear ribonucleoprotein Sm D3

Chain l:



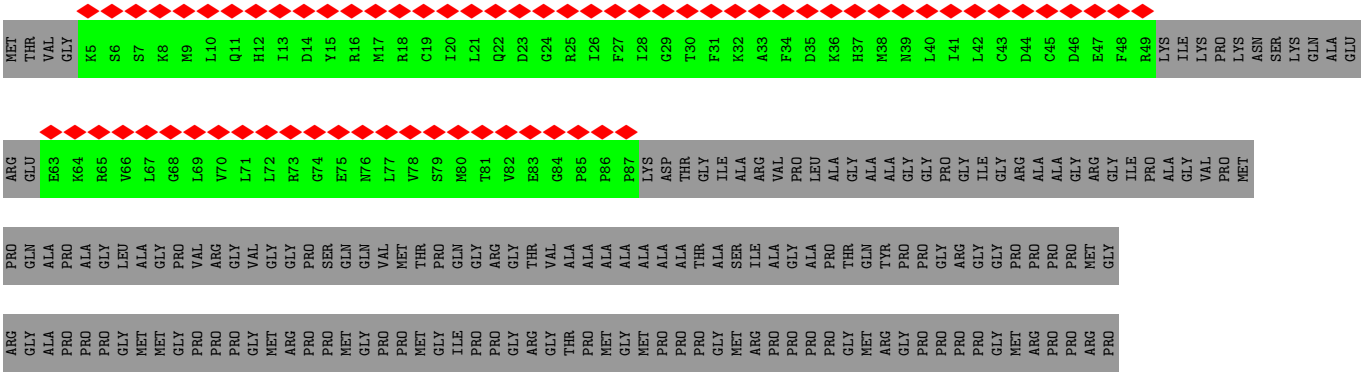
• Molecule 22: Small nuclear ribonucleoprotein-associated proteins B and B'

Chain b:



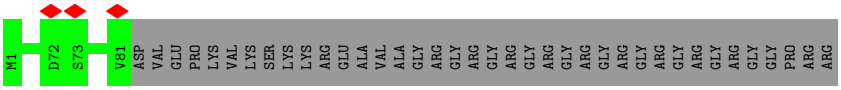
• Molecule 22: Small nuclear ribonucleoprotein-associated proteins B and B'

Chain m:



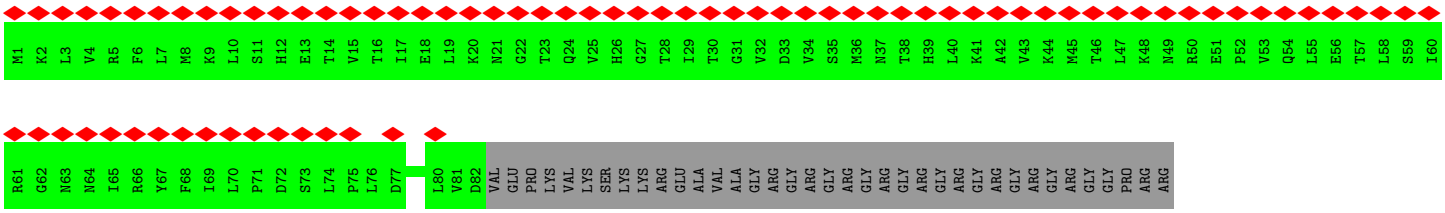
• Molecule 23: Small nuclear ribonucleoprotein Sm D1

Chain c:



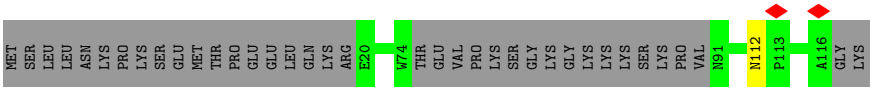
• Molecule 23: Small nuclear ribonucleoprotein Sm D1

Chain n:



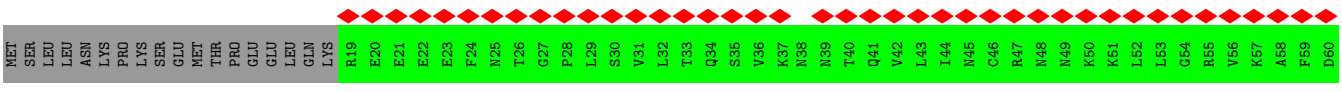
• Molecule 24: Small nuclear ribonucleoprotein Sm D2

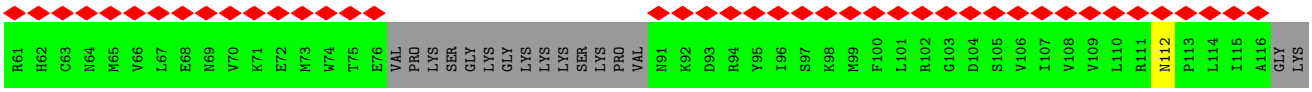
Chain d:



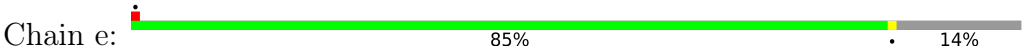
• Molecule 24: Small nuclear ribonucleoprotein Sm D2

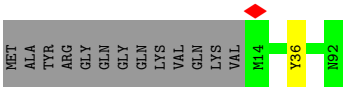
Chain h:



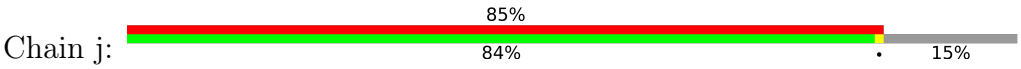


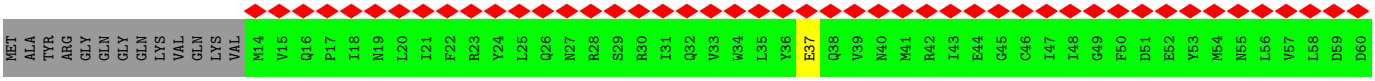
• Molecule 25: Small nuclear ribonucleoprotein E

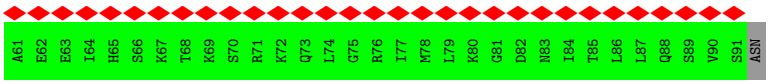




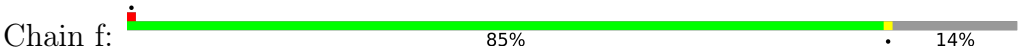
• Molecule 25: Small nuclear ribonucleoprotein E

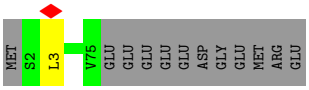




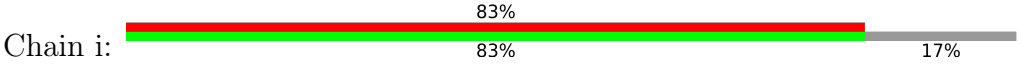


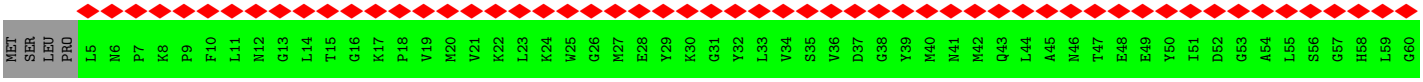
• Molecule 26: Small nuclear ribonucleoprotein F

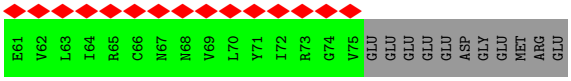




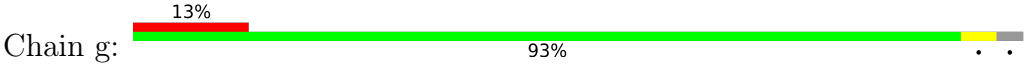
• Molecule 26: Small nuclear ribonucleoprotein F

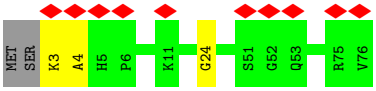






• Molecule 27: Small nuclear ribonucleoprotein G



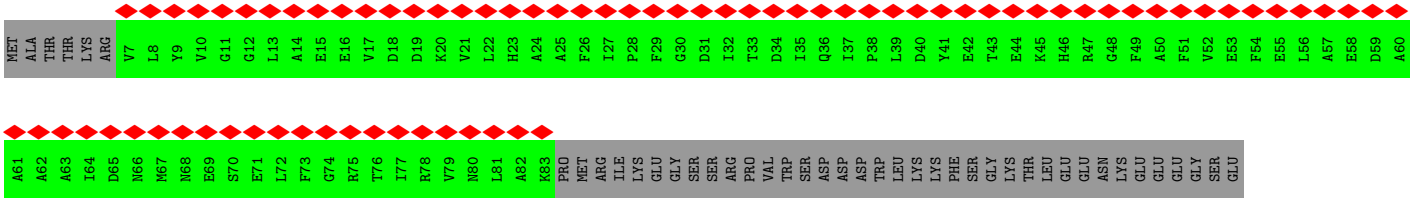


• Molecule 27: Small nuclear ribonucleoprotein G

Chain k:

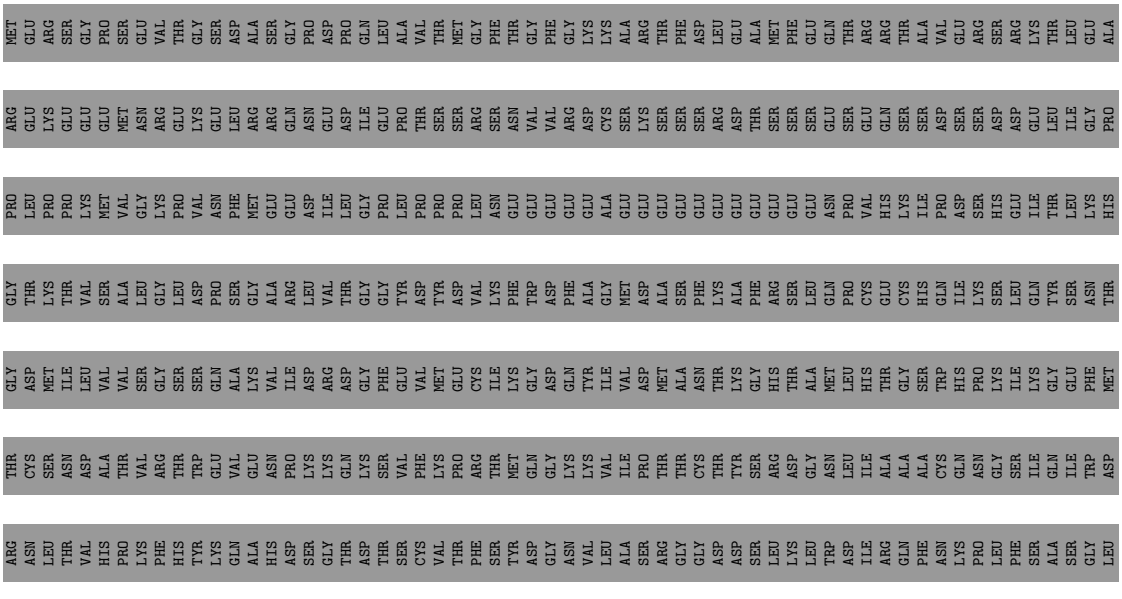
• Molecule 28: Peptidyl-prolyl cis-trans isomerase E

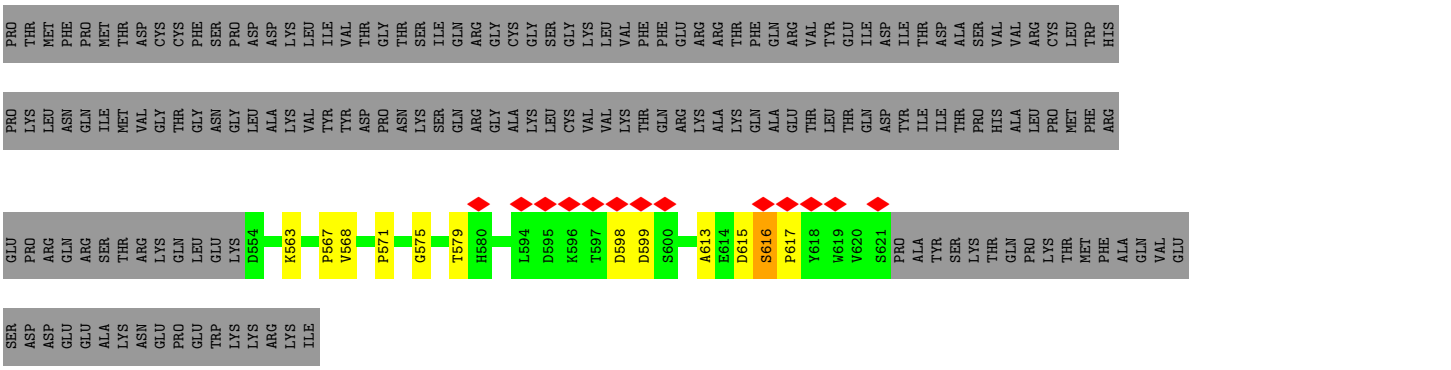
Chain o:



• Molecule 29: WD repeat-containing protein 70

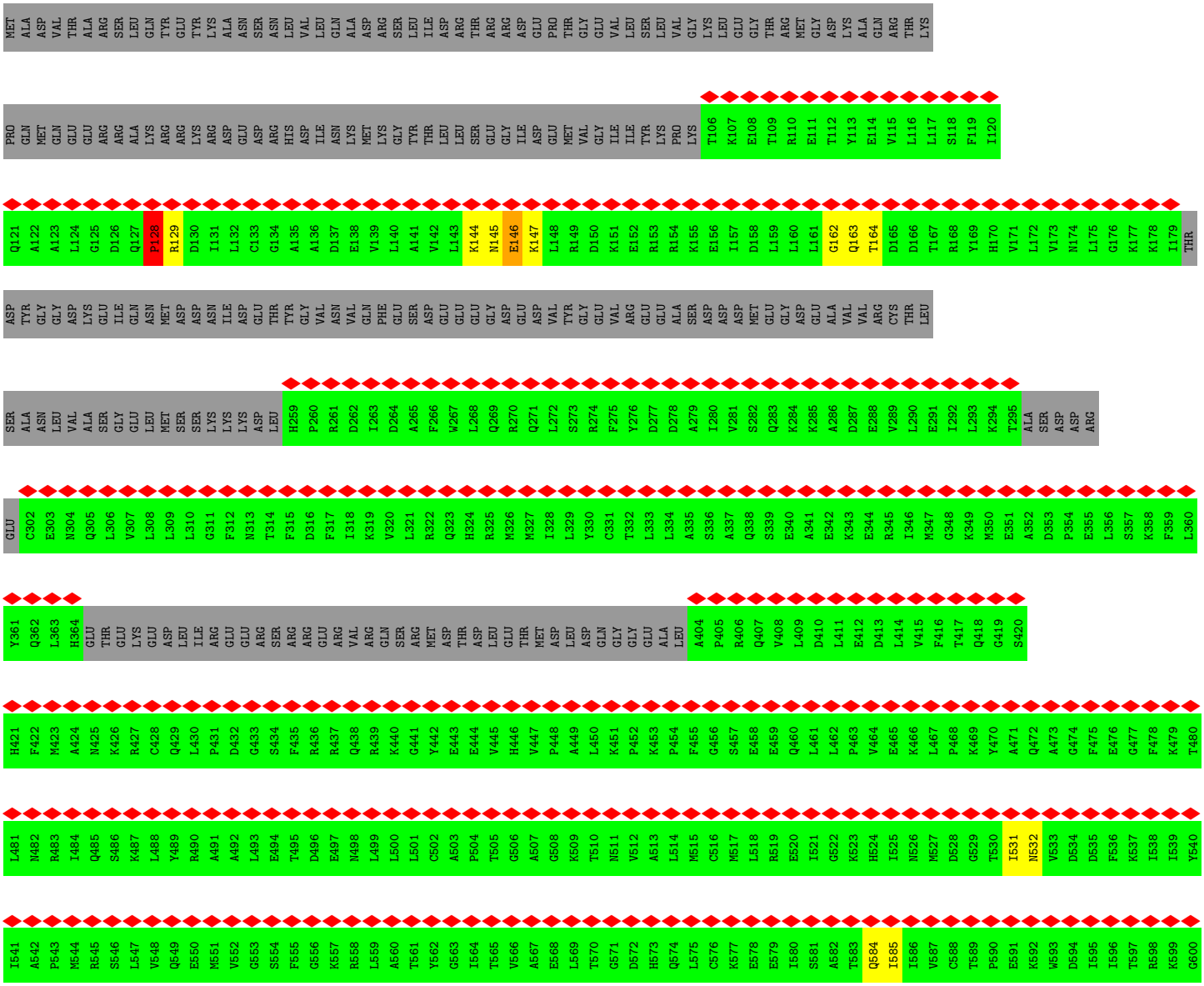
Chain p:

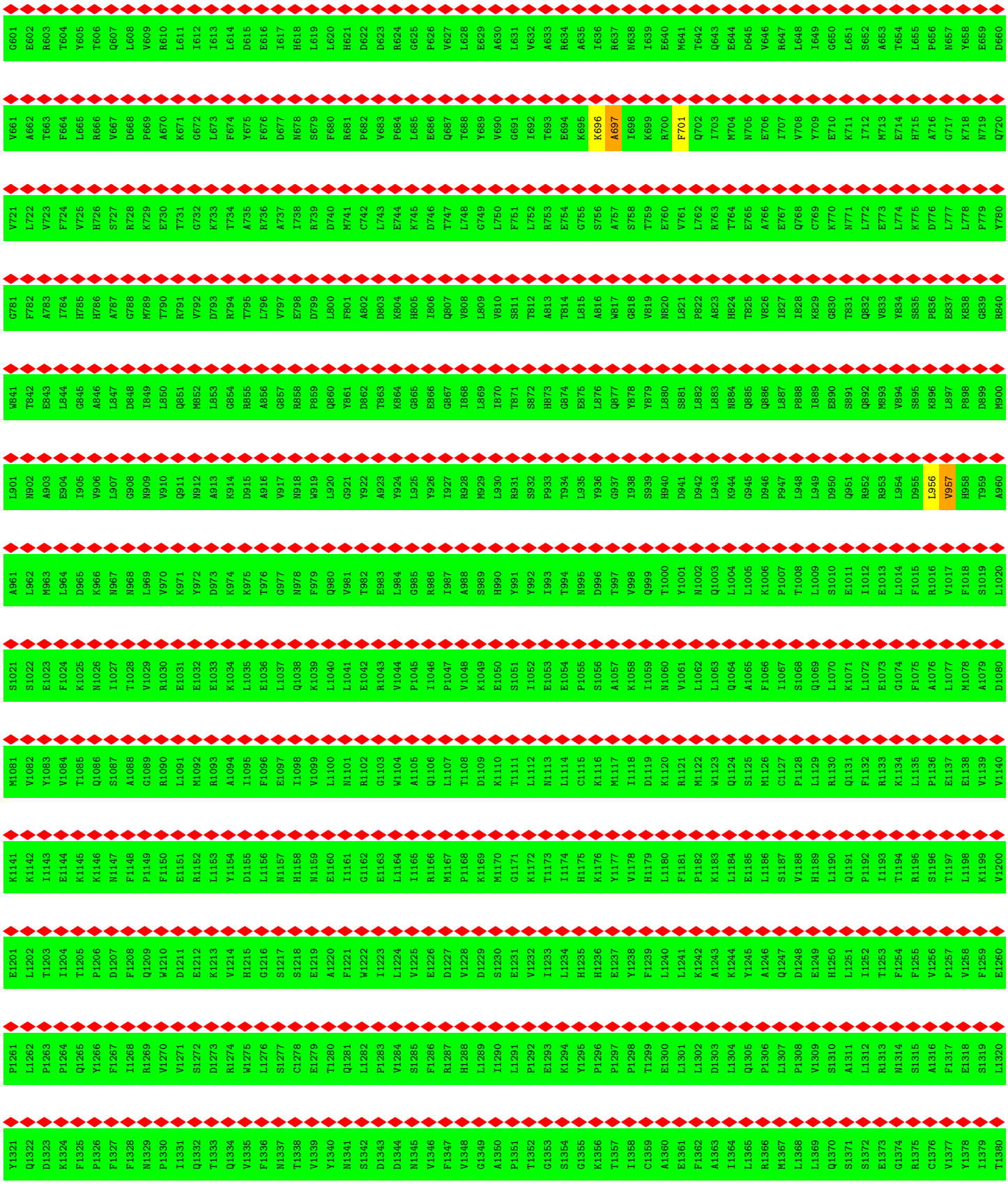




• Molecule 30: U5 small nuclear ribonucleoprotein 200 kDa helicase

Chain q:

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V721 L722 V723 F724 V725 H726 S727 R728 K729 E730 T731 G732 K733 T734 A735 R736 A737 I738 R739 D740 M741 C742 L743 E744 K745 D746 T747 L748 G749 L750 F751 L752 R753 E754 G755 S756 A757 S758 T759 E760 V761 L762 R763 T764 E765 A766 E767 Q768 C769 K770 N771 L772 E773 L774 K775 D776 L777 L778 P779 Y780
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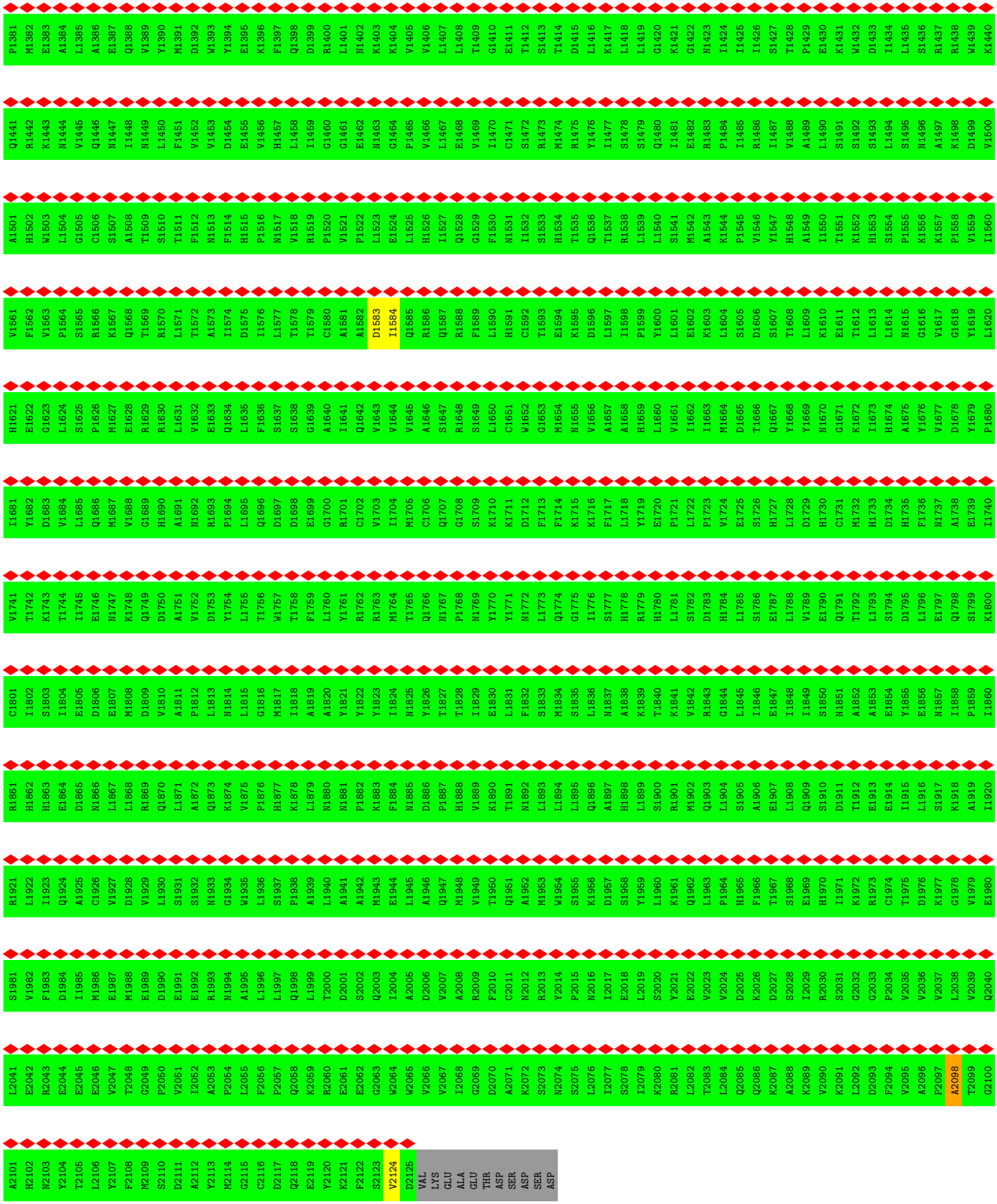
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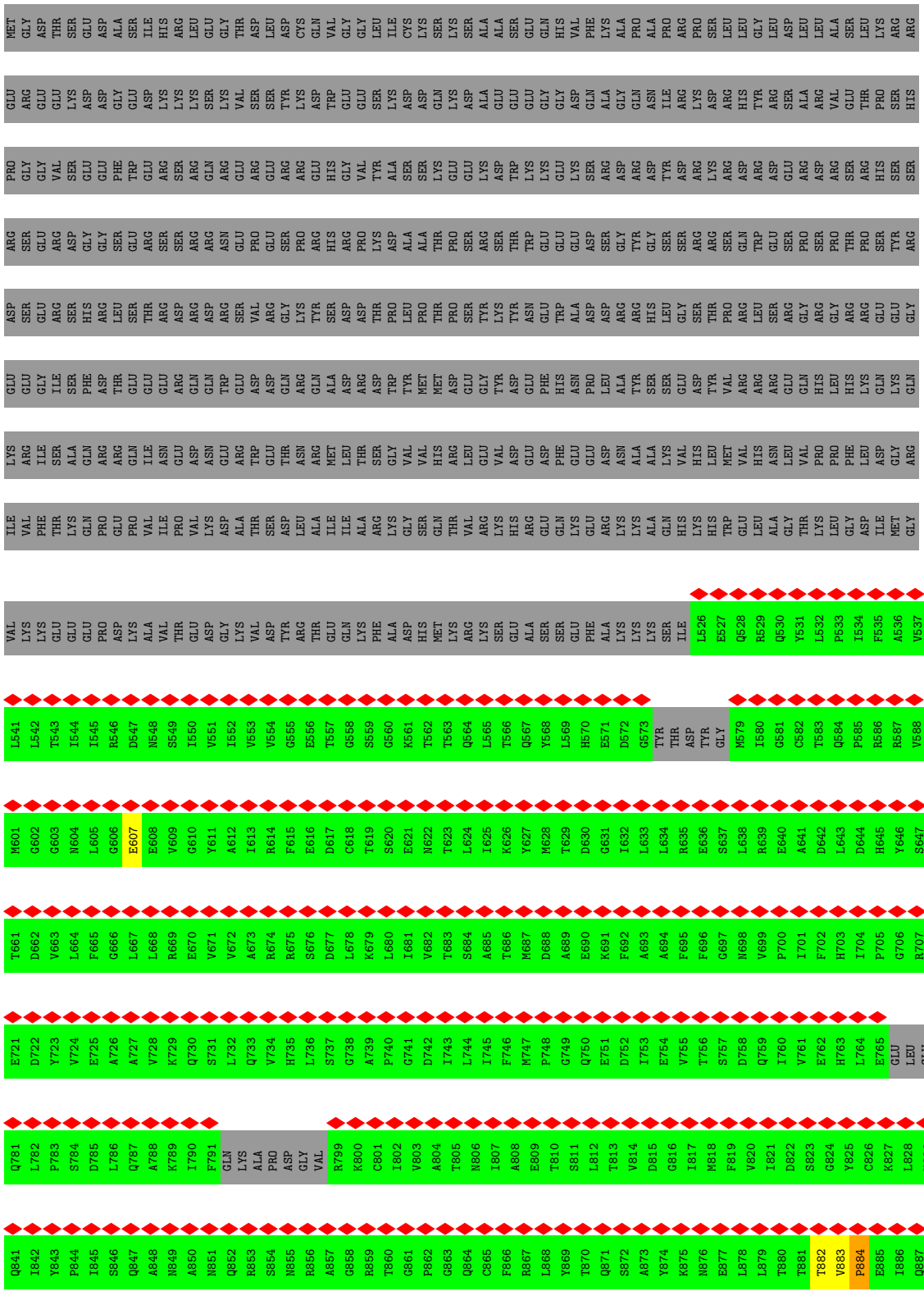
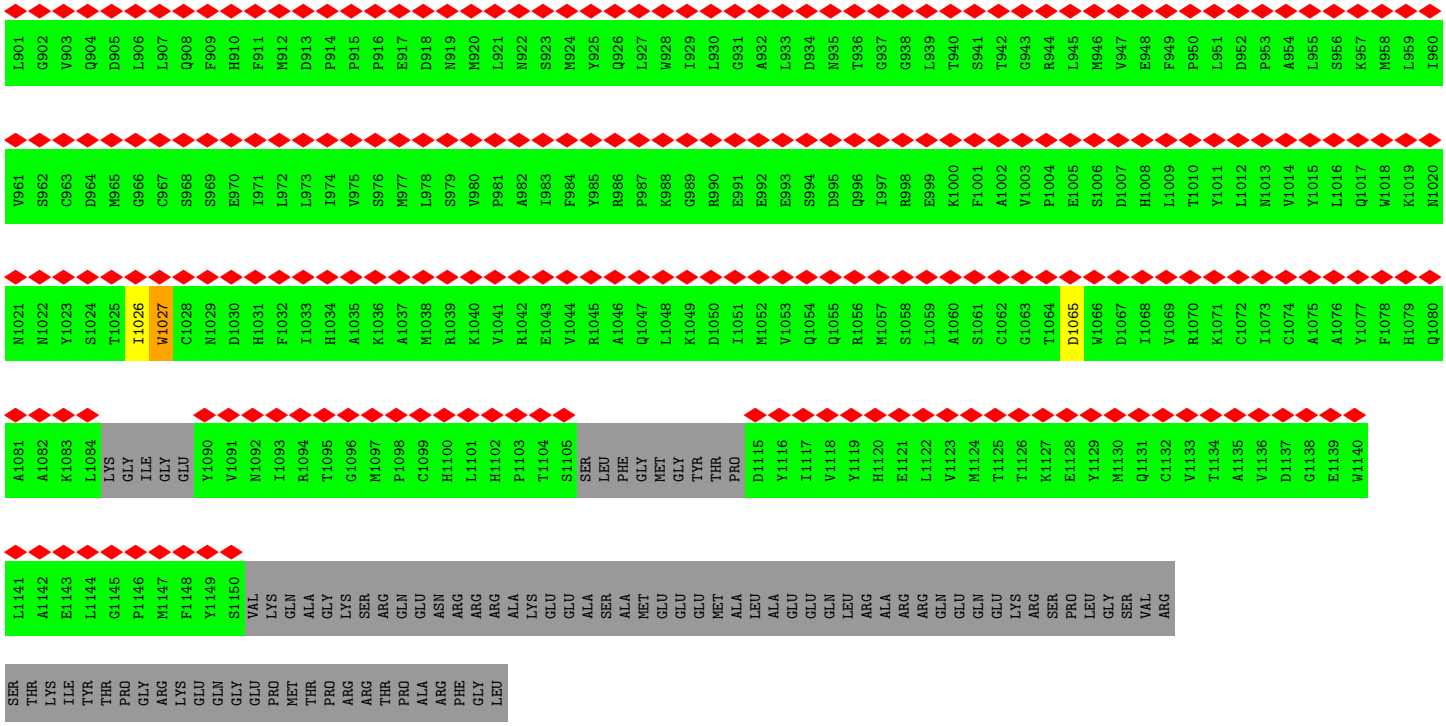
• Molecule 31: Pre-mRNA-splicing factor ATP-dependent RNA helicase PRP16

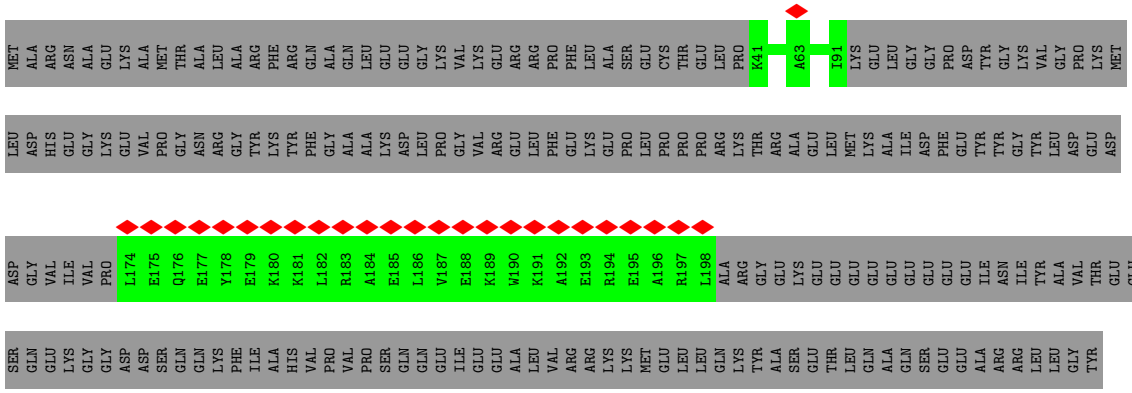
Chain r:





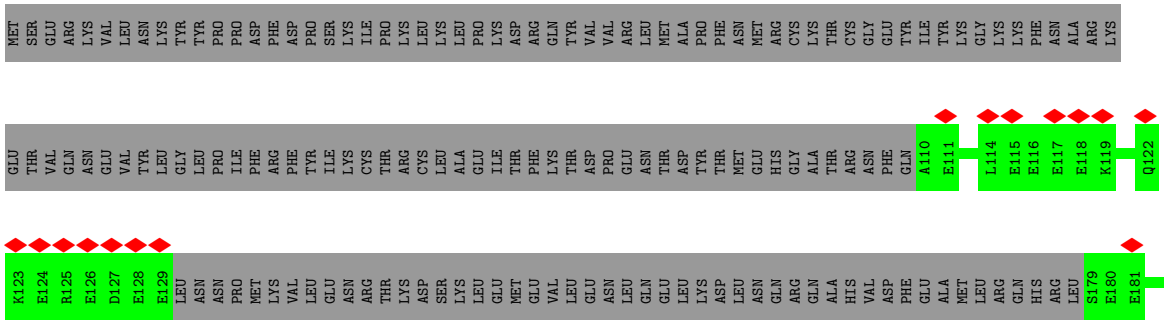
• Molecule 32: Pre-mRNA-splicing factor ISY1 homolog

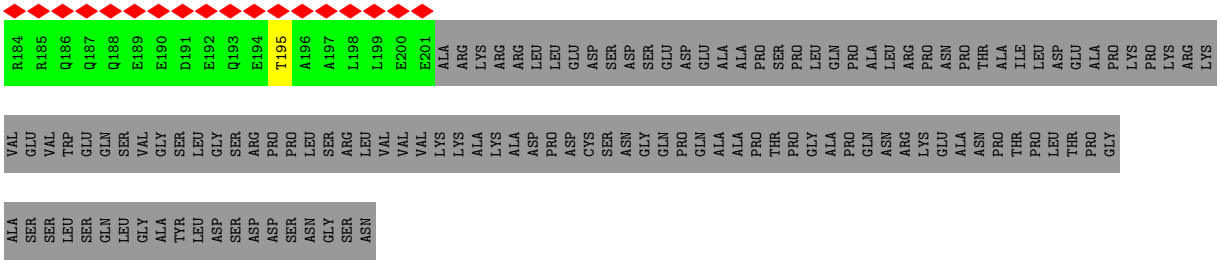
Chain s:



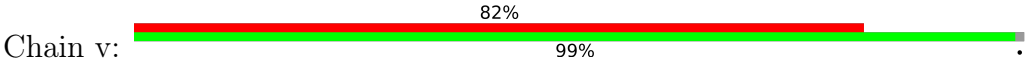
• Molecule 33: Splicing factor YJU2

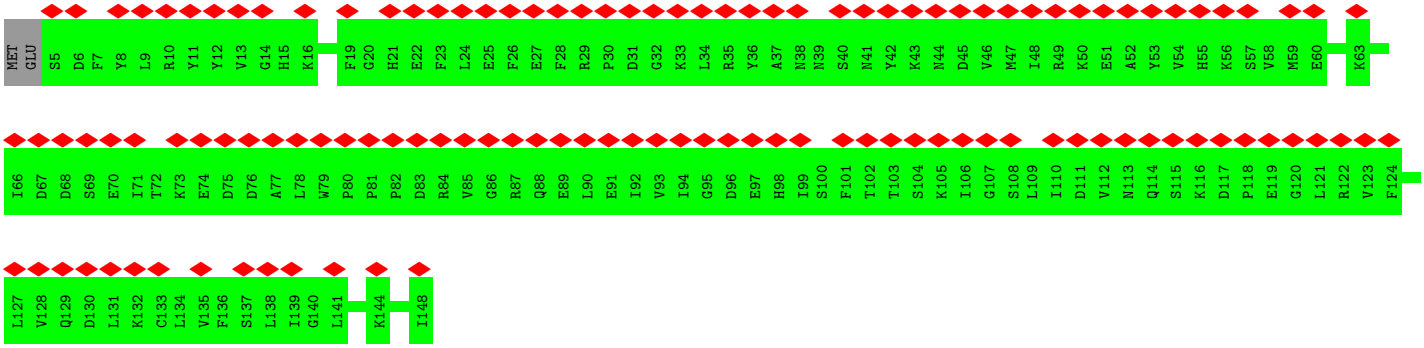
Chain u:



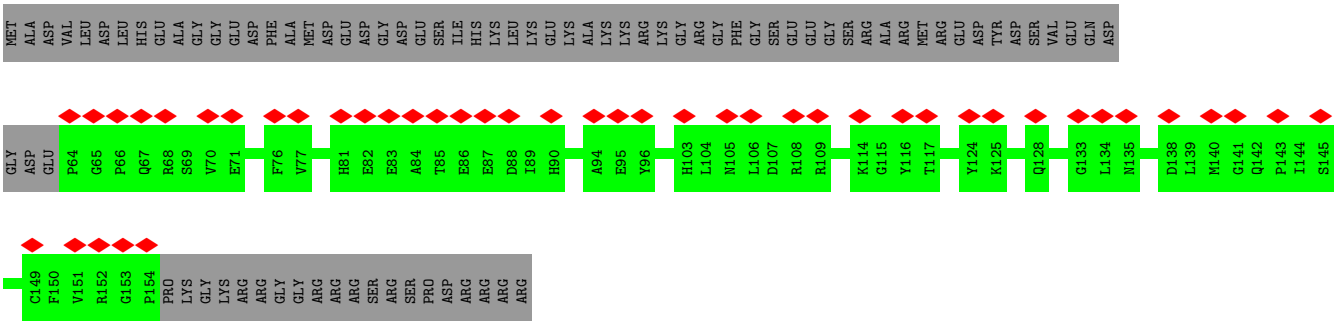


• Molecule 34: Protein mago nashi homolog

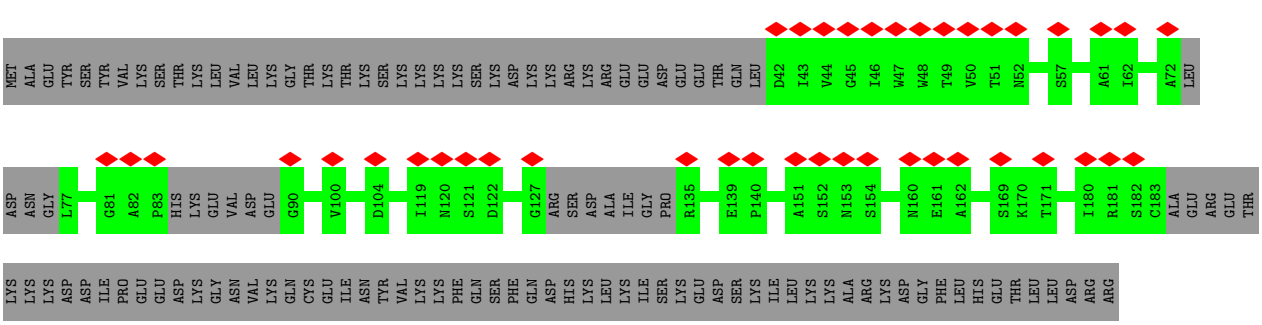




• Molecule 35: RNA-binding protein 8A



• Molecule 36: Protein FRG1

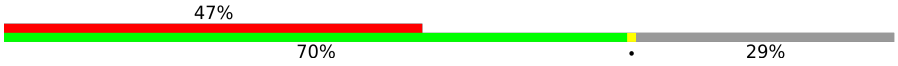


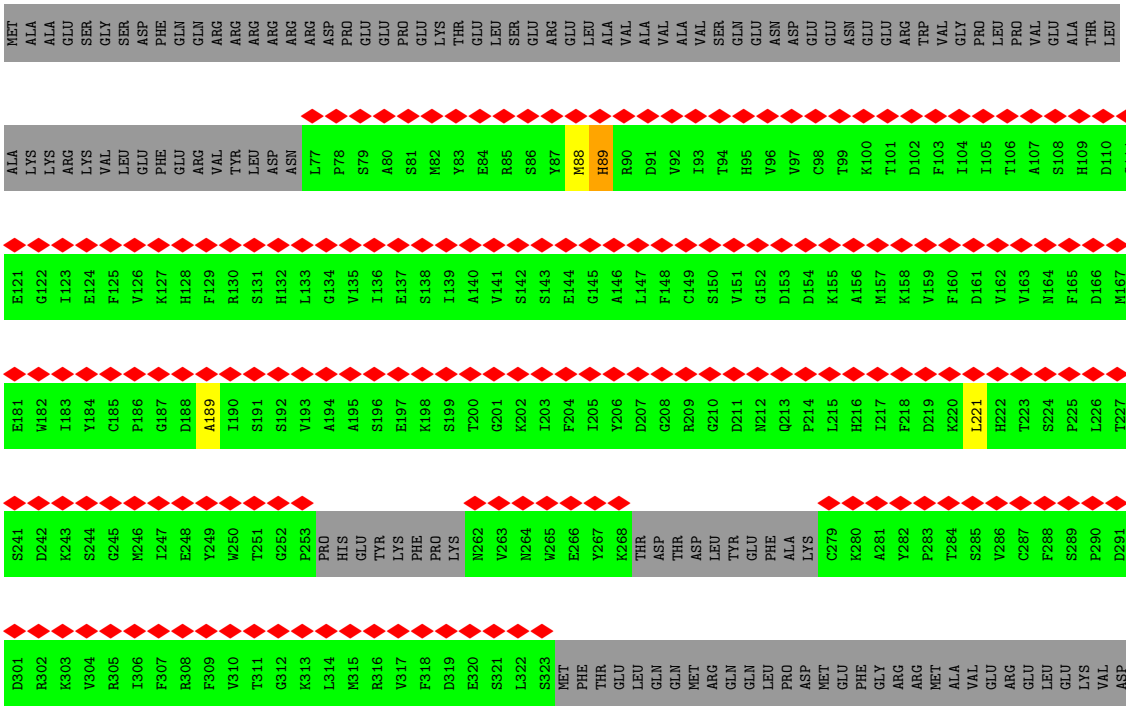
• Molecule 37: Eukaryotic initiation factor 4A-III

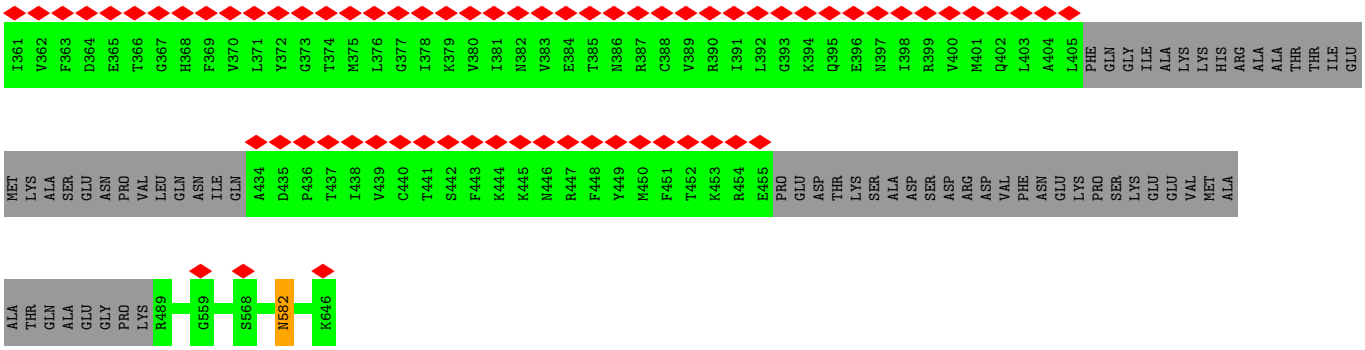
Chain y:

• Molecule 38: Peptidylprolyl isomerase domain and WD repeat-containing protein 1

Chain z:






I361 V362 F363 D364 E365 T366 G367 H368 F369 V370 L371 Y372 G373 T374 M375 L376 G377 I378 K379 V380 I381 N382 V383 E384 T385 N386 R387 C388 V389 R390 I391 L392 G393 K394 Q395 E396 N397 I398 R399 V400 M401 Q402 L403 A404 L405 PHE GLN GLY ILE ALA LYS LYS HIS ARG ALA ALA THR THR ILE GLU
MET LYS ALA SER GLU ASN PRO VAL LEU GLN ASN ILE GLN A434 D435 P436 T437 I438 V439 C440 T441 S442 F443 K444 K445 N446 R447 F448 Y449 M450 F451 T452 K453 R454 E455 PRO GLU ASP THR LYS SER ALA ASP SER ASP ARG ASP VAL PHE ASN GLU LYS PRO SER LYS GLU GLU VAL MET ALA
ALA THR GLN ALA GLU GLY PRO LYS R489 G559 S568 N582 K646

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	69000	Depositor
Resolution determination method	OTHER	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	6	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	FEI FALCON III (4k x 4k)	Depositor
Maximum map value	0.109	Depositor
Minimum map value	-0.033	Depositor
Average map value	-0.001	Depositor
Map value standard deviation	0.004	Depositor
Recommended contour level	0.018	Depositor
Map size (Å)	466.39996, 466.39996, 466.39996	wwPDB
Map dimensions	440, 440, 440	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.06, 1.06, 1.06	Depositor

5 Model quality

5.1 Standard geometry

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	2	0.53	5/3166 (0.2%)	1.38	51/4915 (1.0%)
2	5	1.92	11/794 (1.4%)	2.31	42/1228 (3.4%)
3	6	0.28	0/328	1.10	1/508 (0.2%)
5	A	0.30	0/2500	0.59	0/3491
6	C	0.24	0/74	0.27	0/102
7	E	0.32	0/1534	0.69	1/2142 (0.0%)
8	G	0.47	1/688 (0.1%)	0.76	2/969 (0.2%)
8	H	0.39	0/706	0.76	1/995 (0.1%)
8	I	0.32	0/693	0.69	1/976 (0.1%)
8	J	0.32	0/565	0.74	1/792 (0.1%)
9	K	0.32	0/686	0.59	1/953 (0.1%)
10	L	0.24	0/572	0.46	0/796
11	M	0.30	0/3406	0.50	2/4767 (0.0%)
12	N	0.46	0/371	0.75	0/519
13	O	0.33	0/1325	0.66	2/1850 (0.1%)
14	P	0.29	0/454	0.74	0/633
15	S	0.30	0/228	0.47	0/317
16	T	0.24	0/1278	0.41	0/1788
17	U	0.28	0/6574	0.46	1/9159 (0.0%)
18	W	0.27	0/879	0.55	0/1229
19	X	0.33	0/468	0.56	0/653
20	Y	0.43	0/375	1.29	1/572 (0.2%)
21	a	0.28	0/359	0.55	0/499
21	l	0.44	0/417	0.67	1/581 (0.2%)
22	b	0.26	0/326	0.55	0/451
22	m	0.27	0/352	0.56	0/489
23	c	0.27	0/409	0.55	0/571
23	n	0.28	0/414	0.56	0/578
24	d	0.25	0/406	0.52	0/565
24	h	0.32	0/421	0.70	0/586
25	e	0.29	0/393	0.61	0/547
25	j	0.26	0/388	0.55	0/540
26	f	0.36	0/372	0.57	0/517
26	i	0.40	0/354	0.59	0/491

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
27	g	0.56	0/371	0.81	2/516 (0.4%)
27	k	0.36	0/366	0.64	0/509
28	o	0.27	0/385	0.54	0/536
29	p	0.54	0/332	1.17	3/459 (0.7%)
30	q	0.28	0/9636	0.53	5/13498 (0.0%)
31	r	0.33	1/3001 (0.0%)	0.58	2/4192 (0.0%)
32	s	0.25	0/374	0.38	0/518
33	u	0.36	0/214	0.60	0/296
34	v	0.28	0/728	0.49	0/1017
35	w	0.24	0/456	0.50	0/633
36	x	0.32	0/622	0.55	0/860
37	y	0.27	0/1962	0.49	0/2741
38	z	0.34	0/2313	0.66	1/3222 (0.0%)
All	All	0.40	18/53035 (0.0%)	0.73	121/74766 (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
2	5	1	0
5	A	0	5
7	E	0	3
8	G	0	3
8	H	0	4
8	I	0	1
8	J	0	1
9	K	0	1
11	M	0	2
12	N	0	1
13	O	0	3
17	U	0	2
24	d	0	1
24	h	0	1
25	e	0	1
26	f	0	1
27	g	0	1
29	p	0	3
30	q	0	12
31	r	0	5
33	u	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
37	y	0	1
38	z	0	5
All	All	1	58

All (18) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	5	86	C	P-O5'	37.94	1.97	1.59
2	5	86	C	P-OP1	19.20	1.81	1.49
2	5	86	C	C4'-C3'	-12.92	1.39	1.53
2	5	86	C	C5'-C4'	12.66	1.66	1.51
2	5	86	C	C3'-C2'	11.01	1.65	1.52
2	5	85	C	O3'-P	-7.29	1.52	1.61
1	2	97	G	N3-C4	7.02	1.40	1.35
8	G	65	PRO	C-N	6.76	1.47	1.34
2	5	116	A	N9-C4	-6.69	1.33	1.37
2	5	89	U	C5-C6	-6.33	1.28	1.34
1	2	97	G	N9-C8	-6.31	1.33	1.37
2	5	89	U	N1-C6	-5.79	1.32	1.38
1	2	97	G	N7-C5	-5.75	1.35	1.39
31	r	833	PRO	CA-CB	-5.66	1.42	1.53
2	5	86	C	C2'-C1'	-5.50	1.47	1.53
1	2	100	U	N1-C2	-5.46	1.33	1.38
2	5	86	C	C3'-O3'	-5.37	1.34	1.42
1	2	165	A	N9-C4	5.11	1.41	1.37

All (121) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	5	89	U	C4-C5-C6	24.47	134.38	119.70
2	5	96	A	C8-N9-C4	20.51	114.00	105.80
2	5	92	U	N3-C2-O2	-19.27	108.71	122.20
1	2	165	A	C2-N3-C4	18.01	119.60	110.60
2	5	96	A	N9-C4-C5	-17.39	98.85	105.80
2	5	86	C	O5'-P-OP2	17.19	131.33	110.70
1	2	97	G	N3-C4-C5	-15.54	120.83	128.60
1	2	109	C	C5-C6-N1	14.77	128.39	121.00
2	5	89	U	C5-C6-N1	-14.55	115.42	122.70
1	2	97	G	C2-N3-C4	14.27	119.04	111.90
2	5	86	C	OP1-P-OP2	-14.05	98.53	119.60
2	5	89	U	N3-C4-O4	13.96	129.17	119.40
2	5	92	U	N1-C2-O2	13.63	132.34	122.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	2	109	C	C6-N1-C2	-12.89	115.14	120.30
2	5	86	C	C5'-C4'-C3'	12.71	136.34	116.00
2	5	86	C	OP2-P-O3'	-12.11	78.56	105.20
2	5	85	C	OP1-P-O3'	-12.07	78.64	105.20
1	2	97	G	N3-C4-N9	11.07	132.64	126.00
1	2	101	U	N3-C2-O2	-10.83	114.62	122.20
1	2	52	G	O5'-P-OP2	-10.81	95.97	105.70
2	5	89	U	N3-C4-C5	-10.60	108.24	114.60
1	2	103	U	N3-C4-O4	-10.38	112.14	119.40
1	2	165	A	N3-C4-C5	-10.36	119.55	126.80
2	5	86	C	OP1-P-O3'	10.19	127.61	105.20
2	5	86	C	O4'-C4'-C3'	10.14	114.21	106.10
2	5	96	A	N7-C8-N9	-10.00	108.80	113.80
1	2	165	A	N9-C4-C5	9.99	109.80	105.80
1	2	165	A	C8-N9-C4	-9.70	101.92	105.80
2	5	92	U	C6-N1-C2	-9.58	115.25	121.00
1	2	165	A	N1-C6-N6	-9.20	113.08	118.60
8	J	43	ASN	CB-CA-C	-8.91	92.58	110.40
1	2	101	U	C6-N1-C2	-8.54	115.87	121.00
1	2	77	C	O5'-P-OP2	-8.41	98.13	105.70
1	2	100	U	N1-C2-O2	-8.14	117.10	122.80
2	5	92	U	C5-C4-O4	7.92	130.66	125.90
1	2	97	G	C8-N9-C4	-7.89	103.25	106.40
2	5	96	A	C4-C5-N7	7.76	114.58	110.70
1	2	101	U	N1-C2-N3	7.71	119.53	114.90
1	2	97	G	C4-C5-N7	-7.71	107.72	110.80
1	2	165	A	C5-C6-N1	7.65	121.52	117.70
1	2	103	U	C5-C4-O4	7.64	130.48	125.90
1	2	97	G	N1-C2-N3	-7.62	119.33	123.90
2	5	95	G	N9-C4-C5	-7.58	102.37	105.40
1	2	106	G	C5-C6-O6	-7.47	124.12	128.60
1	2	165	A	N1-C2-N3	-7.42	125.59	129.30
1	2	166	G	C8-N9-C4	-7.36	103.45	106.40
8	I	77	ALA	CB-CA-C	-7.28	99.17	110.10
2	5	86	C	P-O5'-C5'	-7.06	109.61	120.90
1	2	100	U	N1-C2-N3	7.02	119.11	114.90
2	5	86	C	C4'-C3'-O3'	7.00	127.00	113.00
2	5	116	A	N3-C4-N9	-6.99	121.81	127.40
2	5	89	U	N1-C2-N3	6.84	119.00	114.90
30	q	697	ALA	N-CA-CB	-6.75	100.66	110.10
2	5	92	U	N1-C2-N3	6.74	118.94	114.90
2	5	89	U	C2-N3-C4	-6.72	122.97	127.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	5	95	G	C8-N9-C4	6.68	109.07	106.40
1	2	109	C	C4-C5-C6	-6.67	114.06	117.40
27	g	4	ALA	N-CA-CB	-6.54	100.94	110.10
1	2	97	G	N7-C8-N9	6.49	116.34	113.10
1	2	97	G	C6-N1-C2	6.41	128.95	125.10
1	2	101	U	C2-N1-C1'	6.38	125.36	117.70
31	r	884	PRO	CA-N-CD	-6.37	102.58	111.50
11	M	719	THR	N-CA-C	6.32	128.07	111.00
29	p	616	SER	N-CA-CB	-6.32	101.03	110.50
1	2	67	C	P-O3'-C3'	6.28	127.23	119.70
30	q	128	PRO	N-CA-C	6.26	128.37	112.10
2	5	89	U	C2-N1-C1'	6.24	125.19	117.70
29	p	616	SER	N-CA-C	6.20	127.75	111.00
2	5	95	G	C5-C6-N1	6.17	114.59	111.50
2	5	96	A	C5-C6-N6	-6.14	118.78	123.70
2	5	95	G	C5-C6-O6	-6.11	124.93	128.60
2	5	96	A	N1-C6-N6	6.06	122.24	118.60
1	2	165	A	C4-C5-N7	-6.03	107.68	110.70
1	2	76	U	P-O3'-C3'	6.03	126.94	119.70
1	2	106	G	N9-C4-C5	-5.99	103.00	105.40
1	2	100	U	C5-C6-N1	-5.99	119.71	122.70
1	2	100	U	C2-N3-C4	-5.98	123.41	127.00
2	5	85	C	OP2-P-O3'	5.97	118.33	105.20
7	E	298	PRO	C-N-CA	5.96	136.59	121.70
20	Y	86	A	O5'-P-OP1	-5.92	100.37	105.70
1	2	51	A	OP1-P-O3'	5.91	118.20	105.20
3	6	87	C	N1-C2-O2	5.85	122.41	118.90
2	5	116	A	N3-C4-C5	5.77	130.84	126.80
9	K	115	GLU	CB-CA-C	-5.75	98.90	110.40
1	2	100	U	C2-N1-C1'	-5.73	110.82	117.70
2	5	95	G	N3-C4-N9	5.73	129.44	126.00
17	U	456	ASN	C-N-CA	5.69	135.92	121.70
1	2	147	G	C8-N9-C4	-5.64	104.14	106.40
8	G	56	LYS	CB-CA-C	-5.61	99.18	110.40
1	2	106	G	O4'-C1'-N9	-5.61	103.71	108.20
1	2	106	G	C4-C5-N7	5.61	113.04	110.80
13	O	654	GLY	N-CA-C	5.59	127.09	113.10
1	2	106	G	N1-C6-O6	5.58	123.25	119.90
30	q	957	VAL	N-CA-C	5.58	126.06	111.00
2	5	86	C	P-O3'-C3'	5.56	126.37	119.70
2	5	89	U	C5-C4-O4	-5.54	122.58	125.90
1	2	147	G	N7-C8-N9	5.51	115.86	113.10

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	5	95	G	C4-C5-N7	5.50	113.00	110.80
1	2	51	A	OP2-P-O3'	-5.48	93.14	105.20
1	2	166	G	N3-C4-C5	-5.47	125.86	128.60
1	2	97	G	N1-C2-N2	5.47	121.12	116.20
2	5	86	C	O5'-P-OP1	5.45	117.24	110.70
1	2	101	U	C5-C4-O4	5.44	129.16	125.90
2	5	92	U	C2-N1-C1'	5.36	124.13	117.70
30	q	2124	VAL	C-N-CA	5.31	134.99	121.70
21	l	39	MET	N-CA-CB	5.28	120.11	110.60
2	5	85	C	P-O3'-C3'	-5.28	113.37	119.70
2	5	86	C	C3'-C2'-C1'	5.26	105.71	101.50
30	q	128	PRO	N-CA-CB	-5.23	96.85	102.60
31	r	1065	ASP	C-N-CA	5.22	134.75	121.70
8	G	68	ALA	C-N-CA	5.19	134.69	121.70
11	M	722	GLU	N-CA-CB	-5.17	101.30	110.60
1	2	165	A	C6-N1-C2	-5.16	115.51	118.60
27	g	3	LYS	CA-C-N	-5.15	105.86	117.20
1	2	84	C	C6-N1-C2	-5.13	118.25	120.30
1	2	3	C	N1-C2-O2	5.10	121.96	118.90
1	2	164	C	C2-N3-C4	5.08	122.44	119.90
38	z	221	LEU	C-N-CA	5.07	134.38	121.70
29	p	613	ALA	N-CA-CB	5.07	117.20	110.10
8	H	53	ILE	CB-CA-C	-5.05	101.49	111.60
13	O	209	PRO	CA-N-CD	-5.03	104.45	111.50

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
2	5	86	C	C4'

All (58) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
5	A	1757	GLU	Peptide,Mainchain
5	A	1759	THR	Peptide
5	A	1760	GLU	Mainchain
5	A	1773	SER	Peptide
7	E	284	TRP	Peptide
7	E	317	GLU	Peptide
7	E	371	THR	Peptide
8	G	56	LYS	Peptide
8	G	62	ARG	Mainchain

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Mol	Chain	Res	Type	Group
8	G	69	THR	Mainchain
8	H	54	ASP	Peptide
8	H	55	ILE	Mainchain
8	H	57	VAL	Peptide
8	H	87	LEU	Peptide
8	I	56	LYS	Peptide
8	J	43	ASN	Peptide
9	K	77	GLN	Peptide
11	M	386	ASP	Peptide
11	M	85	ARG	Peptide
12	N	194	ASP	Peptide
13	O	653	LEU	Peptide
13	O	678	LEU	Peptide
13	O	690	GLU	Peptide
17	U	1275	LEU	Peptide
17	U	714	PHE	Peptide
24	d	112	ASN	Peptide
25	e	36	TYR	Peptide
26	f	3	LEU	Peptide
27	g	24	GLY	Peptide
24	h	112	ASN	Peptide
29	p	567	PRO	Peptide
29	p	598	ASP	Peptide
29	p	615	ASP	Peptide
30	q	128	PRO	Peptide
30	q	144	LYS	Peptide
30	q	146	GLU	Peptide
30	q	147	LYS	Peptide
30	q	1583	ASP	Peptide
30	q	162	GLY	Peptide
30	q	2098	ALA	Mainchain
30	q	532	ASN	Peptide
30	q	584	GLN	Peptide
30	q	696	LYS	Peptide
30	q	701	PHE	Peptide
30	q	956	LEU	Peptide
31	r	1026	ILE	Peptide
31	r	1027	TRP	Peptide,Mainchain
31	r	607	GLU	Mainchain
31	r	882	THR	Peptide
33	u	195	THR	Peptide
37	y	382	LYS	Peptide

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Mol	Chain	Res	Type	Group
38	z	355	ALA	Peptide
38	z	582	ASN	Mainchain
38	z	88	MET	Peptide,Mainchain
38	z	89	HIS	Peptide

5.2 Too-close contacts (i)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	2	2854	0	1442	14	0
2	5	718	0	363	6	0
3	6	296	0	149	1	0
4	8	376	0	82	0	0
5	A	2485	0	1164	8	0
6	C	75	0	35	0	0
7	E	1525	0	724	5	0
8	G	679	0	356	2	0
8	H	696	0	367	3	0
8	I	684	0	358	3	0
8	J	561	0	285	0	0
9	K	689	0	315	5	0
10	L	573	0	264	0	0
11	M	3387	0	1651	3	0
12	N	369	0	171	0	0
13	O	1320	0	635	4	0
14	P	452	0	229	2	0
15	S	229	0	95	1	0
16	T	1271	0	594	0	0
17	U	6546	0	3178	0	0
18	W	874	0	421	0	0
19	X	466	0	220	1	0
20	Y	348	0	176	1	0
21	a	358	0	168	0	0
21	l	415	0	198	0	0
22	b	327	0	143	0	0
22	m	351	0	161	0	0
23	c	407	0	186	0	0
23	n	412	0	188	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
24	d	406	0	179	0	0
24	h	421	0	185	0	0
25	e	393	0	169	0	0
25	j	388	0	167	0	0
26	f	369	0	182	0	0
26	i	352	0	171	0	0
27	g	369	0	177	0	0
27	k	364	0	176	0	0
28	o	384	0	198	0	0
29	p	333	0	153	0	0
30	q	9558	0	4623	0	0
31	r	2982	0	1461	0	0
32	s	376	0	172	0	0
33	u	216	0	96	0	0
34	v	723	0	335	0	0
35	w	453	0	227	0	0
36	x	621	0	315	0	0
37	y	1951	0	928	0	0
38	z	2301	0	1090	0	0
All	All	52703	0	25322	52	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 1.

All (52) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:5:86:C:P	2:5:86:C:O5'	1.97	1.22
2:5:86:C:P	2:5:86:C:C5'	2.82	0.66
1:2:101:U:H5"	1:2:102:U:H5'	1.77	0.66
8:G:66:PRO:HG3	8:I:63:PRO:HD2	1.81	0.63
8:H:87:LEU:HA	8:H:90:PHE:H	1.67	0.59
5:A:1928:SER:HA	5:A:1932:ALA:HB3	1.85	0.59
14:P:283:ALA:O	14:P:287:SER:N	2.36	0.58
1:2:48:A:H4'	1:2:49:U:H3'	1.85	0.58
1:2:150:U:H3	1:2:181:G:H1	1.54	0.55
15:S:77:MET:O	15:S:81:GLY:N	2.40	0.55
5:A:1787:ARG:HB3	5:A:1787:ARG:HH21	1.71	0.54
1:2:161:U:O2	1:2:163:G:N2	2.40	0.53
13:O:718:PHE:O	13:O:722:SER:N	2.32	0.53
5:A:2229:LYS:O	5:A:2257:GLU:N	2.42	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:M:564:PHE:O	11:M:569:GLY:N	2.43	0.51
13:O:208:PRO:HB2	13:O:209:PRO:HD2	1.91	0.51
1:2:77:C:H4'	1:2:78:C:H4'	1.93	0.50
9:K:116:HIS:O	9:K:120:ARG:N	2.42	0.50
8:H:84:ALA:C	9:K:112:ALA:HA	2.33	0.49
2:5:96:A:H2'	2:5:97:G:C8	2.48	0.48
8:G:69:THR:HA	8:I:65:PRO:HD2	1.96	0.48
5:A:1963:GLU:O	5:A:1966:HIS:N	2.47	0.48
1:2:76:U:H4'	1:2:77:C:H5'	1.96	0.47
5:A:1958:LYS:C	5:A:1960:THR:H	2.20	0.45
2:5:96:A:H2'	2:5:97:G:H8	1.82	0.45
9:K:108:ASN:O	9:K:112:ALA:N	2.49	0.45
13:O:604:PRO:HB2	13:O:635:PHE:CB	2.47	0.45
9:K:109:ASN:O	9:K:112:ALA:HB3	2.17	0.45
5:A:1787:ARG:O	5:A:1803:ILE:N	2.41	0.44
1:2:12:G:H1	3:6:86:U:H3	1.64	0.44
5:A:1928:SER:O	5:A:1930:TYR:N	2.44	0.44
11:M:720:ILE:C	11:M:722:GLU:H	2.21	0.44
5:A:1963:GLU:O	5:A:1965:HIS:N	2.51	0.43
1:2:3:C:H2'	1:2:4:G:H8	1.82	0.43
13:O:489:HIS:H	13:O:493:ALA:HB2	1.82	0.43
1:2:89:U:H2'	1:2:90:A:H8	1.84	0.43
1:2:163:G:O2'	19:X:50:LYS:O	2.25	0.43
11:M:386:ASP:O	11:M:388:PHE:N	2.52	0.42
1:2:86:A:O2'	1:2:87:U:O4'	2.32	0.42
1:2:159:U:H2'	1:2:160:A:H8	1.84	0.42
2:5:78:U:O2'	2:5:80:U:OP1	2.38	0.42
1:2:3:C:H2'	1:2:4:G:C8	2.55	0.42
7:E:426:PHE:HA	7:E:433:PHE:HA	2.01	0.42
1:2:177:A:H2	1:2:178:A:H62	1.67	0.42
8:H:85:VAL:HA	9:K:112:ALA:HA	2.00	0.42
7:E:290:GLY:HA3	7:E:571:TRP:HA	2.02	0.41
14:P:300:VAL:H	20:Y:82:G:HO2'	1.68	0.41
7:E:276:LEU:HA	7:E:277:PRO:HD3	1.79	0.41
7:E:399:LYS:HA	7:E:415:ASP:HA	2.01	0.41
7:E:465:PRO:HD2	7:E:479:GLN:O	2.21	0.41
8:I:40:ASP:N	8:I:45:GLN:O	2.45	0.41
2:5:101:U:H2'	2:5:102:G:C8	2.56	0.40

There are no symmetry-related clashes.

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
5	A	483/2335 (21%)	418 (86%)	58 (12%)	7 (1%)	11 46
6	C	13/536 (2%)	13 (100%)	0	0	100 100
7	E	303/579 (52%)	275 (91%)	26 (9%)	2 (1%)	22 62
8	G	130/504 (26%)	115 (88%)	10 (8%)	5 (4%)	3 26
8	H	133/504 (26%)	115 (86%)	15 (11%)	3 (2%)	6 36
8	I	131/504 (26%)	122 (93%)	8 (6%)	1 (1%)	19 60
8	J	106/504 (21%)	102 (96%)	4 (4%)	0	100 100
9	K	130/225 (58%)	119 (92%)	7 (5%)	4 (3%)	4 30
10	L	111/802 (14%)	110 (99%)	1 (1%)	0	100 100
11	M	662/855 (77%)	590 (89%)	71 (11%)	1 (0%)	47 81
12	N	71/243 (29%)	58 (82%)	10 (14%)	3 (4%)	3 25
13	O	249/848 (29%)	214 (86%)	27 (11%)	8 (3%)	4 30
14	P	88/420 (21%)	70 (80%)	18 (20%)	0	100 100
15	S	44/2752 (2%)	41 (93%)	3 (7%)	0	100 100
16	T	251/908 (28%)	245 (98%)	6 (2%)	0	100 100
17	U	1281/1485 (86%)	1258 (98%)	21 (2%)	2 (0%)	47 81
18	W	172/255 (68%)	162 (94%)	10 (6%)	0	100 100
19	X	91/225 (40%)	87 (96%)	4 (4%)	0	100 100
21	a	70/126 (56%)	68 (97%)	2 (3%)	0	100 100
21	l	81/126 (64%)	80 (99%)	1 (1%)	0	100 100
22	b	62/240 (26%)	61 (98%)	1 (2%)	0	100 100
22	m	66/240 (28%)	65 (98%)	1 (2%)	0	100 100
23	c	79/119 (66%)	78 (99%)	1 (1%)	0	100 100
23	n	80/119 (67%)	79 (99%)	1 (1%)	0	100 100
24	d	77/118 (65%)	75 (97%)	2 (3%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
24	h	80/118 (68%)	77 (96%)	3 (4%)	0	100	100
25	e	77/92 (84%)	75 (97%)	2 (3%)	0	100	100
25	j	76/92 (83%)	75 (99%)	0	1 (1%)	12	48
26	f	72/86 (84%)	70 (97%)	2 (3%)	0	100	100
26	i	69/86 (80%)	68 (99%)	1 (1%)	0	100	100
27	g	72/76 (95%)	72 (100%)	0	0	100	100
27	k	71/76 (93%)	71 (100%)	0	0	100	100
28	o	75/301 (25%)	74 (99%)	1 (1%)	0	100	100
29	p	66/654 (10%)	38 (58%)	20 (30%)	8 (12%)	0	6
30	q	1888/2136 (88%)	1796 (95%)	80 (4%)	12 (1%)	25	65
31	r	581/1227 (47%)	544 (94%)	33 (6%)	4 (1%)	22	62
32	s	72/285 (25%)	68 (94%)	4 (6%)	0	100	100
33	u	39/323 (12%)	36 (92%)	3 (8%)	0	100	100
34	v	142/146 (97%)	141 (99%)	1 (1%)	0	100	100
35	w	89/174 (51%)	88 (99%)	1 (1%)	0	100	100
36	x	117/258 (45%)	109 (93%)	8 (7%)	0	100	100
37	y	388/411 (94%)	382 (98%)	6 (2%)	0	100	100
38	z	448/646 (69%)	411 (92%)	34 (8%)	3 (1%)	22	62
All	All	9386/22759 (41%)	8815 (94%)	507 (5%)	64 (1%)	26	62

All (64) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
5	A	1758	PRO
5	A	1760	GLU
5	A	1762	TYR
7	E	318	VAL
8	G	57	VAL
8	H	55	ILE
12	N	195	LYS
13	O	551	PRO
17	U	1276	VAL
29	p	563	LYS
29	p	568	VAL
29	p	571	PRO
29	p	616	SER

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Mol	Chain	Res	Type
29	p	617	PRO
30	q	128	PRO
30	q	129	ARG
30	q	163	GLN
30	q	164	THR
30	q	531	ILE
30	q	957	VAL
30	q	1584	ILE
30	q	2098	ALA
31	r	1027	TRP
38	z	89	HIS
5	A	1773	SER
5	A	1774	ASN
7	E	285	SER
8	G	69	THR
8	H	58	ALA
8	I	57	VAL
12	N	162	PRO
13	O	657	ASP
25	j	37	GLU
29	p	599	ASP
30	q	146	GLU
30	q	585	ILE
8	G	65	PRO
9	K	66	MET
31	r	884	PRO
5	A	1761	PRO
5	A	1802	PRO
8	H	70	SER
9	K	78	PRO
13	O	587	LYS
13	O	637	PRO
13	O	675	PRO
29	p	579	THR
30	q	145	ASN
30	q	697	ALA
8	G	62	ARG
12	N	144	PRO
13	O	208	PRO
13	O	679	TRP
17	U	715	ASN
38	z	189	ALA

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Mol	Chain	Res	Type
38	z	582	ASN
11	M	51	PRO
13	O	507	ALA
29	p	575	GLY
31	r	883	VAL
9	K	65	ILE
31	r	833	PRO
8	G	63	PRO
9	K	77	GLN

5.3.2 Protein sidechains

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
5	A	20/2108 (1%)	19 (95%)	1 (5%)	24 50
7	E	10/502 (2%)	10 (100%)	0	100 100
8	G	10/435 (2%)	8 (80%)	2 (20%)	1 8
8	H	11/435 (2%)	11 (100%)	0	100 100
8	I	10/435 (2%)	10 (100%)	0	100 100
8	J	6/435 (1%)	6 (100%)	0	100 100
9	K	1/196 (0%)	1 (100%)	0	100 100
10	L	1/709 (0%)	1 (100%)	0	100 100
11	M	24/749 (3%)	24 (100%)	0	100 100
12	N	3/209 (1%)	2 (67%)	1 (33%)	0 2
13	O	11/751 (2%)	10 (91%)	1 (9%)	9 31
14	P	4/361 (1%)	4 (100%)	0	100 100
16	T	8/838 (1%)	8 (100%)	0	100 100
17	U	68/1297 (5%)	68 (100%)	0	100 100
18	W	6/218 (3%)	6 (100%)	0	100 100
19	X	3/195 (2%)	3 (100%)	0	100 100
21	a	2/101 (2%)	2 (100%)	0	100 100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
21	l	3/101 (3%)	3 (100%)	0	100	100
22	b	1/177 (1%)	1 (100%)	0	100	100
22	m	3/177 (2%)	3 (100%)	0	100	100
23	c	3/101 (3%)	3 (100%)	0	100	100
23	n	3/101 (3%)	3 (100%)	0	100	100
24	d	2/110 (2%)	2 (100%)	0	100	100
24	h	2/110 (2%)	2 (100%)	0	100	100
25	e	1/84 (1%)	1 (100%)	0	100	100
25	j	1/84 (1%)	1 (100%)	0	100	100
26	f	4/74 (5%)	4 (100%)	0	100	100
26	i	3/74 (4%)	3 (100%)	0	100	100
27	g	3/66 (4%)	3 (100%)	0	100	100
27	k	3/66 (4%)	3 (100%)	0	100	100
28	o	2/252 (1%)	2 (100%)	0	100	100
30	q	82/1908 (4%)	81 (99%)	1 (1%)	71	84
31	r	25/1075 (2%)	25 (100%)	0	100	100
33	u	1/289 (0%)	1 (100%)	0	100	100
34	v	6/134 (4%)	6 (100%)	0	100	100
35	w	4/143 (3%)	4 (100%)	0	100	100
36	x	5/223 (2%)	5 (100%)	0	100	100
37	y	12/361 (3%)	12 (100%)	0	100	100
38	z	18/572 (3%)	18 (100%)	0	100	100
All	All	385/16256 (2%)	379 (98%)	6 (2%)	64	79

All (6) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
5	A	1787	ARG
8	G	63	PRO
8	G	65	PRO
12	N	162	PRO
13	O	208	PRO
30	q	128	PRO

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	2	153/975 (15%)	53 (34%)	0
2	5	38/116 (32%)	18 (47%)	0
20	Y	27/324 (8%)	17 (62%)	0
3	6	15/106 (14%)	5 (33%)	0
All	All	233/1521 (15%)	93 (39%)	0

All (93) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	2	16	U
1	2	17	U
1	2	46	U
1	2	47	U
1	2	48	A
1	2	49	U
1	2	50	C
1	2	51	A
1	2	52	G
1	2	53	U
1	2	64	A
1	2	65	U
1	2	66	A
1	2	67	C
1	2	68	G
1	2	69	U
1	2	70	C
1	2	71	C
1	2	72	U
1	2	73	C
1	2	74	U
1	2	75	A
1	2	76	U
1	2	77	C
1	2	78	C
1	2	79	G
1	2	80	A
1	2	81	G

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Mol	Chain	Res	Type
1	2	82	G
1	2	83	A
1	2	84	C
1	2	85	A
1	2	86	A
1	2	87	U
1	2	95	A
1	2	96	U
1	2	97	G
1	2	98	G
1	2	101	U
1	2	111	G
1	2	112	G
1	2	116	A
1	2	117	U
1	2	121	A
1	2	122	U
1	2	123	A
1	2	124	G
1	2	128	C
1	2	129	U
1	2	130	U
1	2	146	C
1	2	157	G
1	2	177	A
2	5	79	C
2	5	80	U
2	5	81	U
2	5	82	A
2	5	83	A
2	5	85	C
2	5	86	C
2	5	87	A
2	5	88	A
2	5	90	U
2	5	91	U
2	5	93	U
2	5	94	U
2	5	95	G
2	5	96	A
2	5	97	G
2	5	115	U

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Mol	Chain	Res	Type
2	5	116	A
3	6	81	C
3	6	82	A
3	6	83	A
3	6	84	A
3	6	85	U
20	Y	83	G
20	Y	84	U
20	Y	86	A
20	Y	87	C
20	Y	88	C
20	Y	91	C
20	Y	94	C
20	Y	128	C
20	Y	131	G
20	Y	133	U
20	Y	134	U
20	Y	135	U
20	Y	136	C
20	Y	137	C
20	Y	138	U
20	Y	139	U
20	Y	140	G

There are no RNA pucker outliers to report.

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)

There are no ligands in this entry.

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
4	8	3

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	8	70:UNK	C	92:UNK	N	23.10
1	8	34:UNK	C	42:UNK	N	21.26
1	8	51:UNK	C	55:UNK	N	10.71

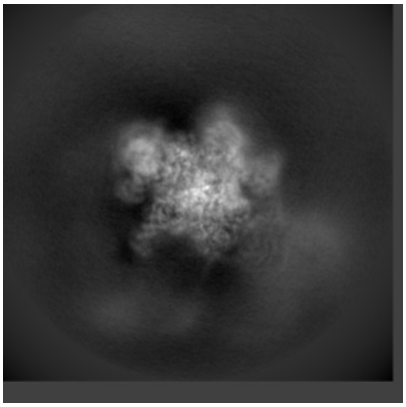
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-11570. These allow visual inspection of the internal detail of the map and identification of artifacts.

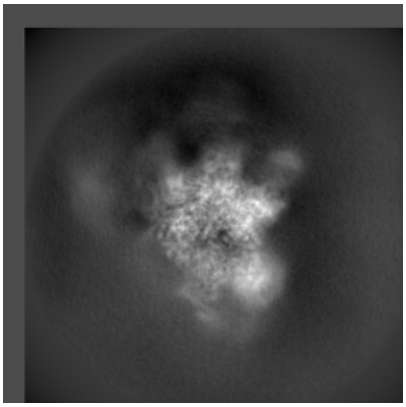
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

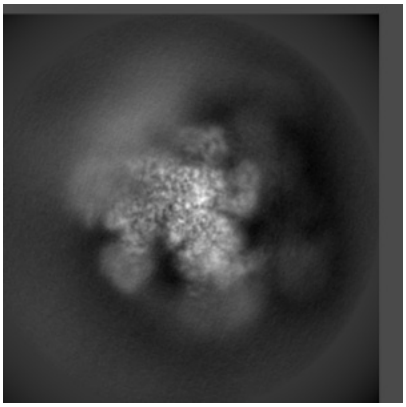
6.1.1 Primary map



X



Y

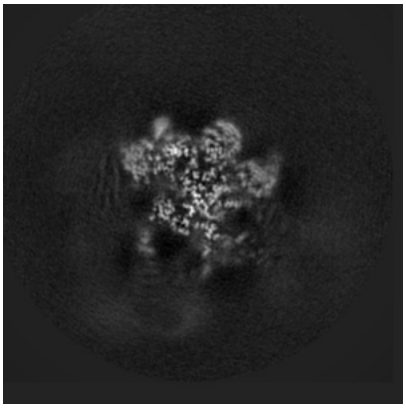


Z

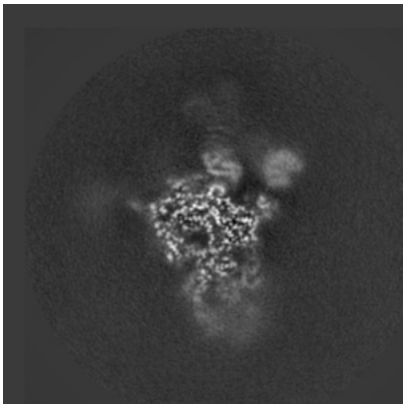
The images above show the map projected in three orthogonal directions.

6.2 Central slices

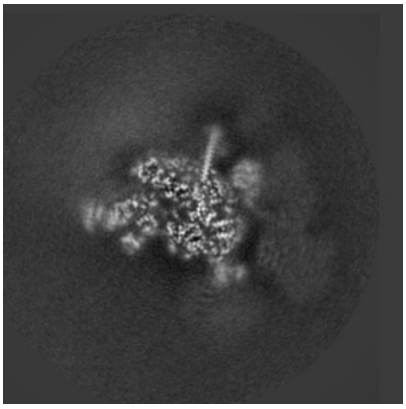
6.2.1 Primary map



X Index: 220



Y Index: 220

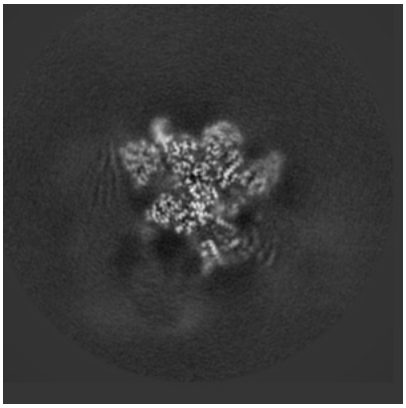


Z Index: 220

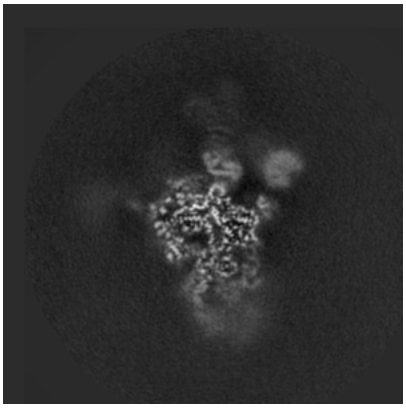
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

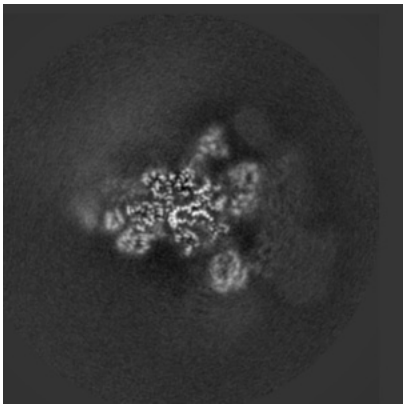
6.3.1 Primary map



X Index: 215



Y Index: 219



Z Index: 231

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

6.4 Orthogonal surface views (i)

6.4.1 Primary map

X

Y

Z

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

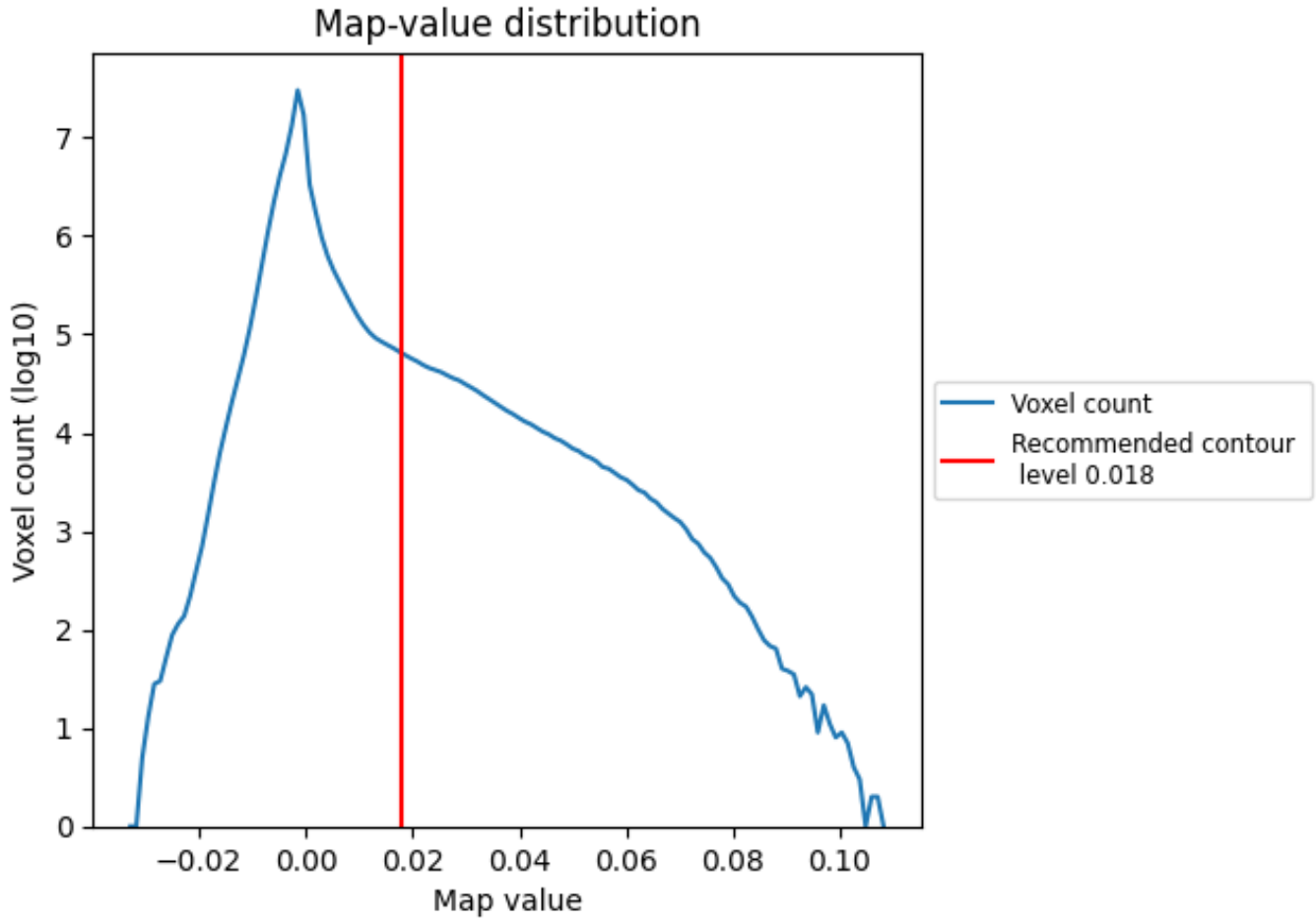
6.5 Mask visualisation (i)

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

7 Map analysis

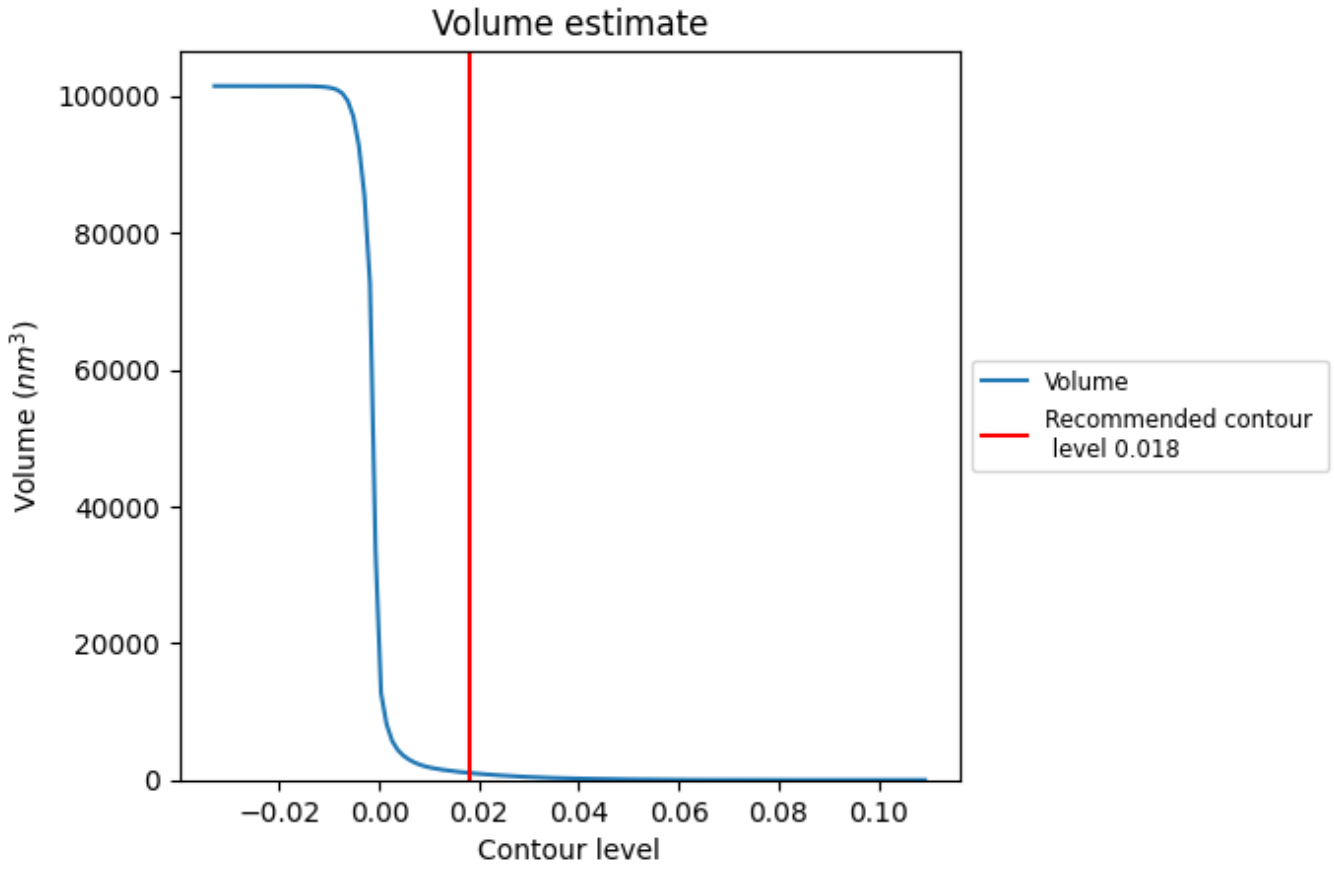
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

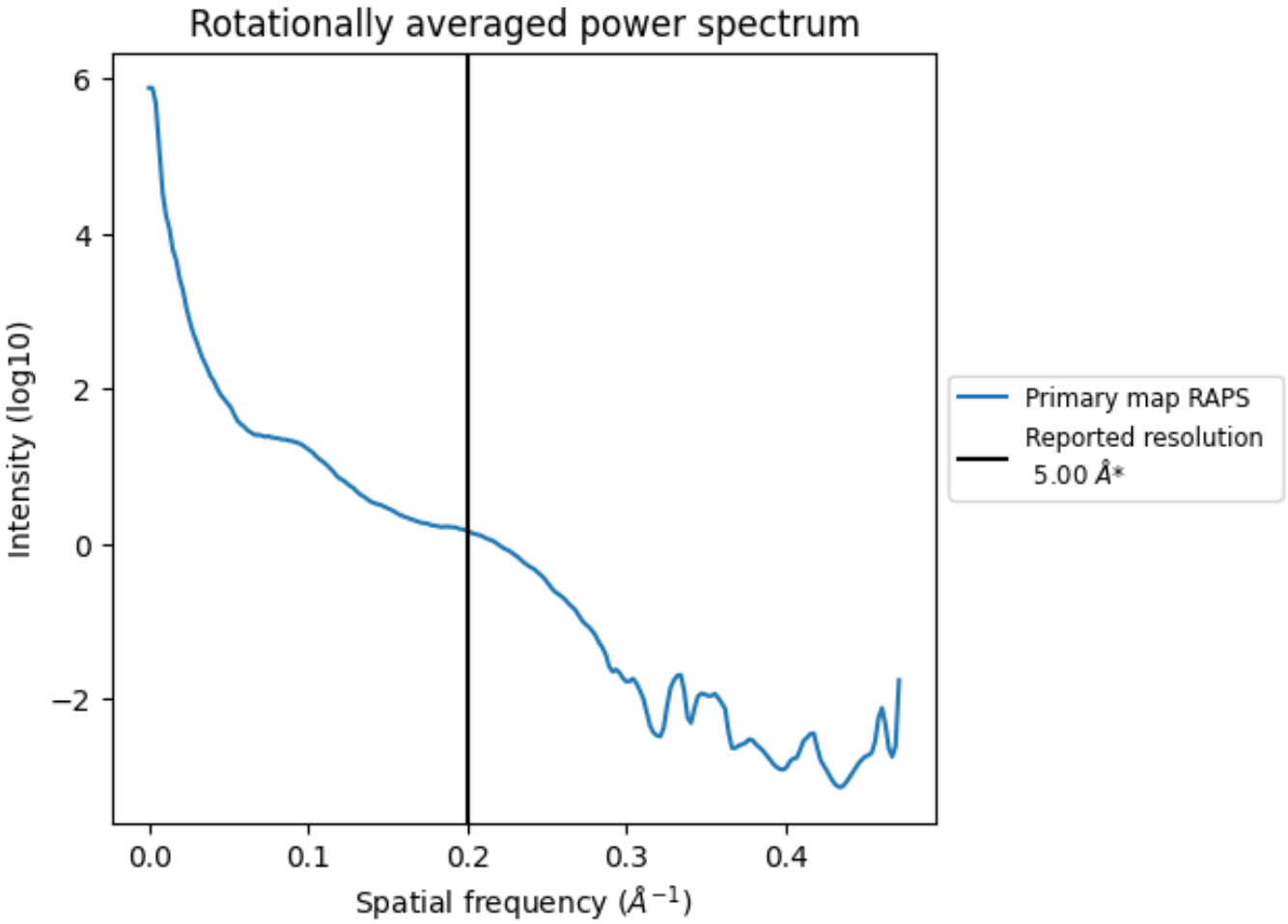
7.2 Volume estimate



The volume at the recommended contour level is 1034 nm^3; this corresponds to an approximate mass of 934 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 0.200 $Å^{-1}$

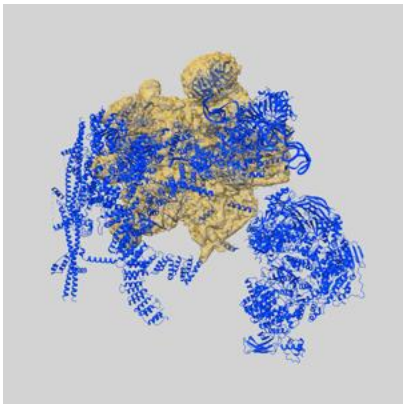
8 Fourier-Shell correlation

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

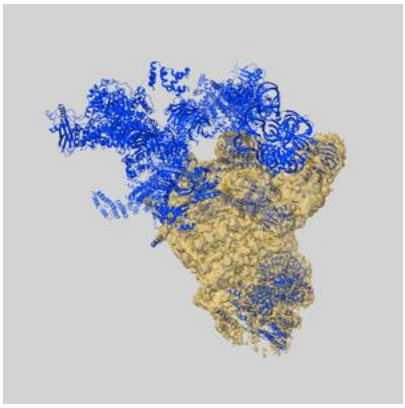
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-11570 and PDB model 7A5P. Per-residue inclusion information can be found in section 3 on page 12.

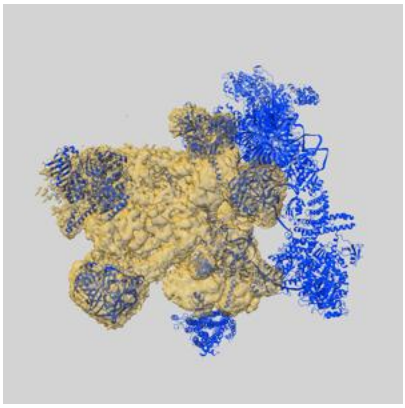
9.1 Map-model overlay



X



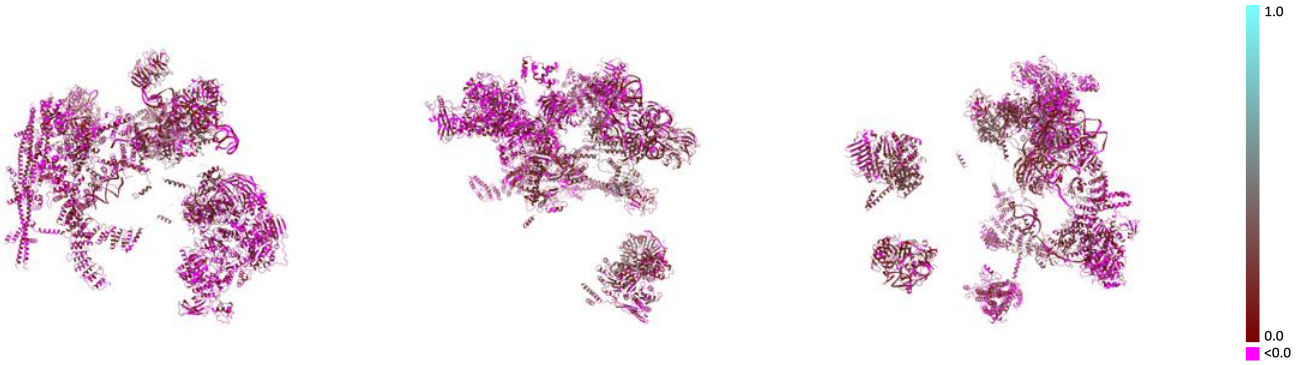
Y



Z

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

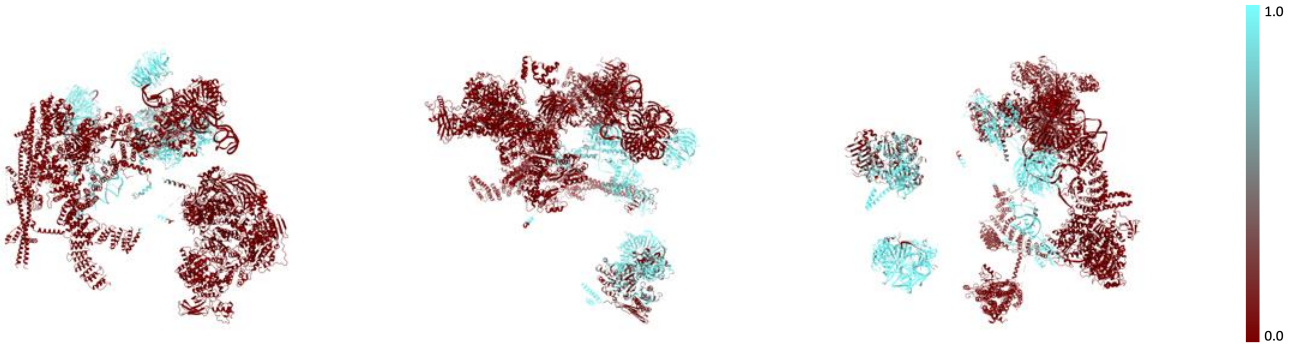
9.2 Q-score mapped to coordinate model (i)



X Y Z

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

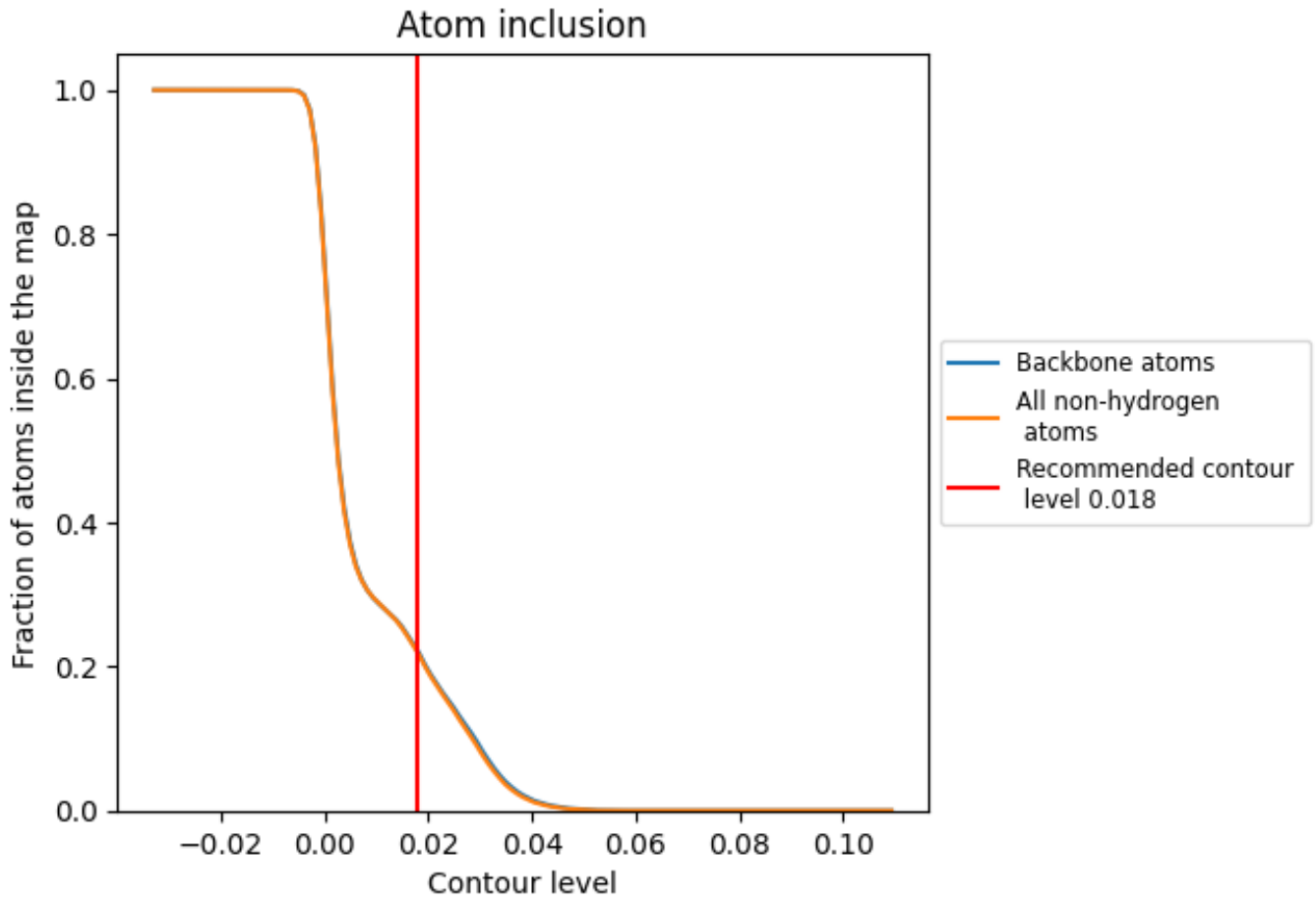
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.018).

9.4 Atom inclusion (i)



At the recommended contour level, 22% of all backbone atoms, 22% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

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

Chain	Atom inclusion	Q-score
All	0.2185	0.0900
2	0.1118	0.0670
5	0.9248	0.1000
6	0.8446	0.1020
8	0.0000	0.0250
A	0.4879	0.1660
C	0.6000	0.1890
E	0.9659	0.1410
G	0.0000	0.0170
H	0.0000	-0.0120
I	0.0000	0.0270
J	0.0000	0.0530
K	0.0015	0.0950
L	0.0873	0.1010
M	0.0006	0.0910
N	0.8103	0.2420
O	0.0530	0.0600
P	0.9226	0.2320
S	1.0000	0.2050
T	0.6452	0.1840
U	0.0003	0.0620
W	0.0069	0.0270
X	0.0000	0.1030
Y	0.4454	0.1130
a	0.9413	0.1320
b	0.9450	0.1530
c	0.9558	0.2580
d	0.9458	0.1890
e	0.9873	0.1260
f	0.9810	0.0910
g	0.8808	0.0980
h	0.0071	0.1890
i	0.0000	0.1530
j	0.0000	0.1070
k	0.0000	0.0930

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Chain	Atom inclusion	Q-score
l	0.0000	0.1030
m	0.0000	0.1420
n	0.0607	0.1550
o	0.0000	0.1650
p	0.6877	0.2740
q	0.0000	0.0070
r	0.0013	0.1540
s	0.6569	0.2240
u	0.2639	0.1360
v	0.1770	0.0500
w	0.4547	0.0820
x	0.6232	0.1030
y	0.4941	0.1930
z	0.3286	0.0870