



wwPDB EM Validation Summary Report ⓘ

Jun 18, 2026 – 08:47 am BST

PDB ID : 6YDW / pdb_00006ydw
EMDB ID : EMD-10779
Title : 55S mammalian mitochondrial ribosome with mtEFG1 and two tRNAMet (TI-POST)
Authors : Kummer, E.; Ban, N.
Deposited on : 2020-03-21
Resolution : 4.20 Å(reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

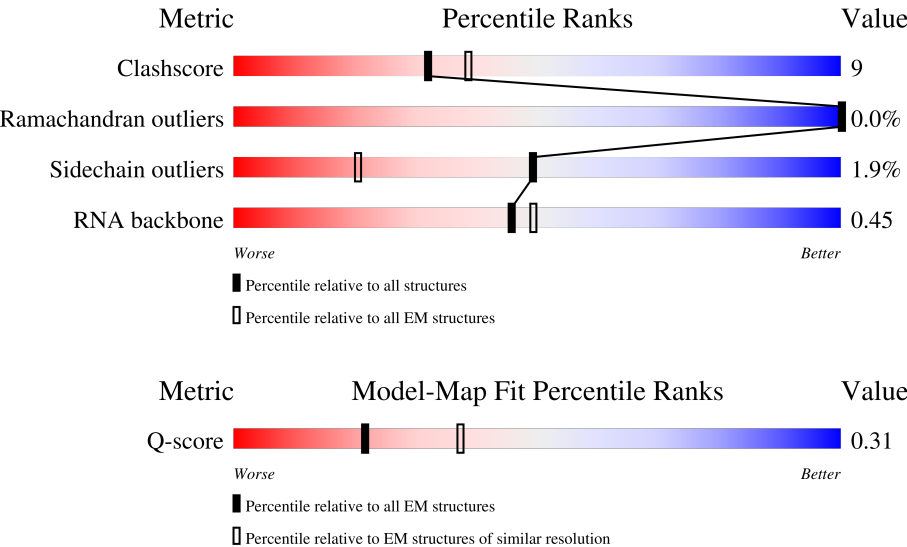
EMDB validation analysis : 0.0.1.dev132
Mogul : 1.8.4, CSD as541be (2020)
MolProbity : 4-5-2 with Phenix2.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDb archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

1 Overall quality at a glance

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

The reported resolution of this entry is 4.20 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.



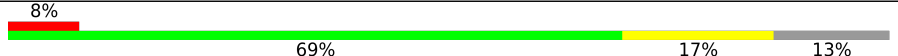
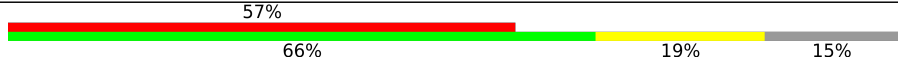
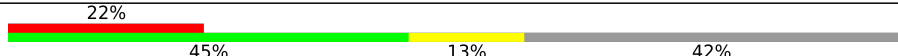
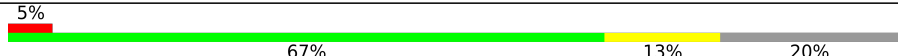
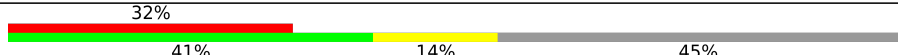
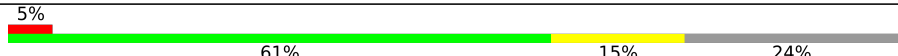
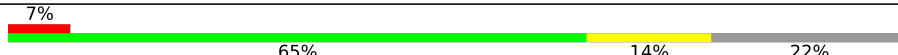
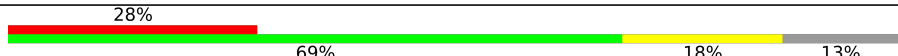
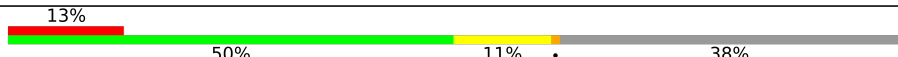
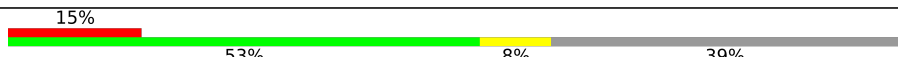
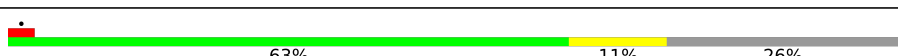
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
RNA backbone	8273	3508	-
Q-score	-	25397	5410 (3.70 - 4.70)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion $< 40\%$). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	AI	397	
2	BT	292	
3	BU	149	

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Mol	Chain	Length	Quality of chain
4	BV	209	
5	BW	210	
6	BX	150	
7	BY	216	
8	Ba	423	
9	Bb	380	
10	Bc	334	
11	Bd	206	
12	Be	135	
13	Bf	142	
14	Bg	159	
15	Bh	332	
16	Bi	306	
17	Bj	279	
18	Bk	269	
19	Bl	166	
20	Bm	198	
21	Bn	128	
22	Bo	124	
23	Bp	112	
24	Bq	138	
25	Bt	102	
26	Bu	205	
27	Bv	222	
28	B0	148	

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Mol	Chain	Length	Quality of chain
29	Bw	433	
30	Bx	196	
31	AA	16770	
31	BA	16770	
32	AB	289	
33	AC	167	
34	AE	430	
35	AF	276	
36	AG	242	
37	AJ	200	
38	AK	196	
39	AL	139	
40	AN	128	
41	AO	239	
42	AP	135	
43	AQ	130	
44	AR	143	
45	AU	87	
46	AV	71	
46	AY	71	
47	AX	6	
48	AZ	18	
49	Aa	382	
50	Ab	190	
51	Ac	173	

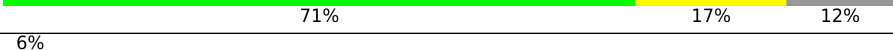
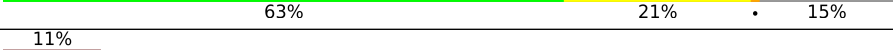
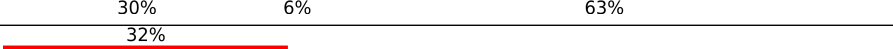
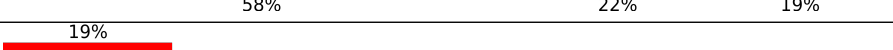
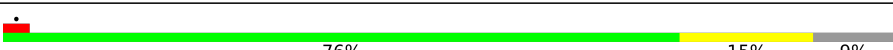
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Mol	Chain	Length	Quality of chain
52	Ad	205	
53	Ae	455	
54	B1	256	
55	Af	188	
56	Ag	410	
57	Ah	387	
58	Ai	106	
59	Aj	218	
60	Ak	325	
61	Am	118	
62	An	199	
63	Ao	692	
64	Ap	258	
65	CL	198	
65	DL	198	
65	EL	198	
65	FL	198	
65	GL	198	
65	HL	198	
65	LL	198	
66	B2	252	
67	B3	161	
68	B4	126	
69	B5	188	
70	B6	65	

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Mol	Chain	Length	Quality of chain
71	B7	95	
72	B8	188	
73	B9	100	
74	BB	73	
75	BC	721	
76	BD	306	
77	BE	348	
78	BF	294	
79	BI	268	
80	BJ	262	
81	BK	192	
82	BN	178	
83	BO	145	
84	BP	296	
85	BQ	251	
86	BR	169	
87	BS	180	

2 Entry composition

There are 95 unique types of molecules in this entry. The entry contains 180836 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 Uncharacterized protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	AI	328	Total	C	N	O	S	0	0
			2650	1678	478	481	13		

- Molecule 2 is a protein called Mitochondrial ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	BT	222	Total	C	N	O	S	0	0
			1840	1178	318	335	9		

- Molecule 3 is a protein called Mitochondrial ribosomal protein L20.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	BU	140	Total	C	N	O	S	0	0
			1159	732	239	185	3		

- Molecule 4 is a protein called Mitochondrial ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	BV	155	Total	C	N	O	S	0	0
			1231	789	219	219	4		

- Molecule 5 is a protein called Uncharacterized protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	BW	166	Total	C	N	O	S	0	0
			1374	876	258	234	6		

- Molecule 6 is a protein called Uncharacterized protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	BX	149	Total	C	N	O	S	0	0
			1181	752	227	200	2		

- Molecule 7 is a protein called Uncharacterized protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	BY	206	Total	C	N	O	S	0	0
			1678	1056	308	309	5		

- Molecule 8 is a protein called Mitochondrial ribosomal protein L37.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	Ba	393	Total	C	N	O	S	0	0
			3173	2040	556	565	12		

- Molecule 9 is a protein called Mitochondrial ribosomal protein L38.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	Bb	354	Total	C	N	O	S	0	0
			2952	1876	542	525	9		

- Molecule 10 is a protein called Mitochondrial ribosomal protein L39.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	Bc	295	Total	C	N	O	S	0	0
			2408	1541	410	441	16		

- Molecule 11 is a protein called Uncharacterized protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	Bd	140	Total	C	N	O	S	0	0
			1177	742	213	221	1		

- Molecule 12 is a protein called Mitochondrial ribosomal protein L41.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	Be	122	Total	C	N	O	S	0	0
			972	628	168	173	3		

- Molecule 13 is a protein called Uncharacterized protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	Bf	108	Total	C	N	O	S	0	0
			827	519	154	150	4		

- Molecule 14 is a protein called Mitochondrial ribosomal protein L43.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	Bg	148	Total	C	N	O	S	0	0
			1167	727	225	212	3		

- Molecule 15 is a protein called Uncharacterized protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	Bh	289	Total	C	N	O	S	0	0
			2319	1486	399	426	8		

- Molecule 16 is a protein called Mitochondrial ribosomal protein L45.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	Bi	260	Total	C	N	O	S	0	0
			2138	1370	379	379	10		

- Molecule 17 is a protein called Mitochondrial ribosomal protein L46.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	Bj	217	Total	C	N	O	S	0	0
			1775	1137	311	321	6		

- Molecule 18 is a protein called 39S ribosomal protein L48, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	Bk	155	Total	C	N	O	S	0	0
			1246	796	214	231	5		

- Molecule 19 is a protein called Mrpl34.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	Bl	133	Total	C	N	O	S	0	0
			1097	709	192	194	2		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
Bl	59	ARG	LYS	conflict	UNP A0A0R4J8D6

- Molecule 20 is a protein called Mitochondrial ribosomal protein L50.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	Bm	109	Total	C	N	O	S	0	0
			893	568	160	162	3		

- Molecule 21 is a protein called Mitochondrial ribosomal protein L51.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	Bn	97	Total	C	N	O	S	0	0
			837	539	166	128	4		

- Molecule 22 is a protein called Uncharacterized protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	Bo	97	Total	C	N	O	S	0	0
			772	481	148	141	2		

- Molecule 23 is a protein called mL53.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	Bp	97	Total	C	N	O	S	0	0
			742	459	143	134	6		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
Bp	12	ALA	SER	conflict	UNP A0A341D604
Bp	107	SER	GLY	conflict	UNP A0A341D604

- Molecule 24 is a protein called Uncharacterized protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	Bq	85	Total	C	N	O	S	0	0
			697	446	128	121	2		

- Molecule 25 is a protein called Mitochondrial ribosomal protein L57.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	Bt	94	Total	C	N	O	S	0	0
			780	485	168	126	1		

- Molecule 26 is a protein called Uncharacterized protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	Bu	151	Total	C	N	O	S	0	0
			1198	738	233	222	5		

- Molecule 27 is a protein called Uncharacterized protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	Bv	135	Total	C	N	O	S	0	0
			1131	692	223	211	5		

- Molecule 28 is a protein called Mitochondrial ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	B0	110	Total	C	N	O	S	0	0
			857	553	156	145	3		

- Molecule 29 is a protein called 39S ribosomal protein S30, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	Bw	387	Total	C	N	O	S	0	0
			3126	2011	548	555	12		

- Molecule 30 is a protein called Mitochondrial ribosomal protein S18A.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	Bx	162	Total	C	N	O	S	0	0
			1325	845	249	224	7		

- Molecule 31 is a RNA chain called 12S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	AA	960	Total	C	N	O	P	0	0
			20411	9162	3708	6581	960		
31	BA	1544	Total	C	N	O	P	0	0
			32844	14750	5972	10578	1544		

There are 20 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
AA	2316	G	A	conflict	GB 347448639
AA	2973	C	U	conflict	GB 347448639
AA	11929	C	U	conflict	GB 347448639
AA	12670	C	U	conflict	GB 347448639

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Chain	Residue	Modelled	Actual	Comment	Reference
AA	13439	A	G	conflict	GB 347448639
AA	14686	A	C	conflict	GB 347448639
AA	15015	G	A	conflict	GB 347448639
AA	15689	U	C	conflict	GB 347448639
AA	15828	G	C	conflict	GB 347448639
AA	16058	G	A	conflict	GB 347448639
BA	1287	G	A	conflict	GB 347448639
BA	1944	C	U	conflict	GB 347448639
BA	10900	C	U	conflict	GB 347448639
BA	11641	C	U	conflict	GB 347448639
BA	12410	A	G	conflict	GB 347448639
BA	13657	A	C	conflict	GB 347448639
BA	13986	G	A	conflict	GB 347448639
BA	14660	U	C	conflict	GB 347448639
BA	14799	G	C	conflict	GB 347448639
BA	15029	G	A	conflict	GB 347448639

- Molecule 32 is a protein called Mitochondrial ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	AB	220	Total	C	N	O	S	0	0
			1762	1126	326	304	6		

- Molecule 33 is a protein called Mitochondrial ribosomal protein S24.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	AC	132	Total	C	N	O	S	0	0
			1075	695	195	181	4		

- Molecule 34 is a protein called Mitochondrial ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	AE	343	Total	C	N	O	S	0	0
			2732	1707	527	487	11		

- Molecule 35 is a protein called Uncharacterized protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	AF	122	Total	C	N	O	S	0	0
			981	620	178	177	6		

- Molecule 36 is a protein called Mitochondrial ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	AG	208	Total	C	N	O	S	0	0
			1721	1097	314	299	11		

- Molecule 37 is a protein called Mitochondrial ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	AJ	140	Total	C	N	O	S	0	0
			1155	746	197	208	4		

- Molecule 38 is a protein called uS11m.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	AK	137	Total	C	N	O	S	0	0
			1007	631	193	180	3		

- Molecule 39 is a protein called Mitochondrial ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	AL	109	Total	C	N	O	S	0	0
			840	524	172	138	6		

- Molecule 40 is a protein called Mitochondrial ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	AN	101	Total	C	N	O	S	0	0
			858	534	174	144	6		

- Molecule 41 is a protein called uS15m.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	AO	175	Total	C	N	O	S	0	0
			1448	919	272	248	9		

- Molecule 42 is a protein called 28S ribosomal protein S16, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	AP	117	Total	C	N	O	S	0	0
			932	588	184	155	5		

- Molecule 43 is a protein called uS17m.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	AQ	112	Total	C	N	O	S	0	0
			875	568	153	151	3		

- Molecule 44 is a protein called Mitochondrial ribosomal protein S18C.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	AR	97	Total	C	N	O	S	0	0
			784	507	132	138	7		

- Molecule 45 is a protein called bS21m.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	AU	86	Total	C	N	O	S	0	0
			734	453	148	125	8		

- Molecule 46 is a RNA chain called tRNAMet.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	AV	71	Total	C	N	O	P	0	0
			1498	673	264	491	70		
46	AY	71	Total	C	N	O	P	0	0
			1498	673	264	491	70		

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
AV	69	C	-	insertion	GB 1208989970
AV	70	C	-	insertion	GB 1208989970
AV	71	A	-	insertion	GB 1208989970
AY	69	C	-	insertion	GB 1208989970
AY	70	C	-	insertion	GB 1208989970
AY	71	A	-	insertion	GB 1208989970

- Molecule 47 is a RNA chain called mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	AX	6	Total	C	N	O	P	0	0
			128	57	22	43	6		

- Molecule 48 is a protein called unknown peptide.

Mol	Chain	Residues	Atoms				AltConf	Trace
48	AZ	18	Total	C	N	O	0	0
			90	54	18	18		

- Molecule 49 is a protein called Mitochondrial ribosomal protein S22.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	Aa	292	Total	C	N	O	S	0	0
			2378	1518	409	442	9		

- Molecule 50 is a protein called mS23.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	Ab	135	Total	C	N	O	S	0	0
			1101	709	199	192	1		

- Molecule 51 is a protein called Mitochondrial ribosomal protein S25.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	Ac	169	Total	C	N	O	S	0	0
			1367	876	236	245	10		

- Molecule 52 is a protein called Mitochondrial ribosomal protein S26.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	Ad	177	Total	C	N	O	S	0	0
			1467	904	288	273	2		

- Molecule 53 is a protein called Mitochondrial ribosomal protein S27.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	Ae	388	Total	C	N	O	S	0	0
			3109	1971	535	589	14		

- Molecule 54 is a protein called Mitochondrial ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	B1	244	Total	C	N	O	S	0	0
			2036	1315	363	353	5		

- Molecule 55 is a protein called Mitoribosomal protein ms28, mrps28.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	Af	99	Total	C	N	O	S	0	0
			778	494	134	146	4		

- Molecule 56 is a protein called Death associated protein 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	Ag	353	Total	C	N	O	S	0	0
			2875	1837	515	513	10		

- Molecule 57 is a protein called Mitochondrial ribosomal protein S31.

Mol	Chain	Residues	Atoms					AltConf	Trace
57	Ah	120	Total	C	N	O	S	0	0
			1015	659	168	185	3		

There are 10 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
Ah	180	UNK	-	insertion	UNP F1RME2
Ah	181	GLN	-	insertion	UNP F1RME2
Ah	182	LYS	-	insertion	UNP F1RME2
Ah	184	GLY	-	insertion	UNP F1RME2
Ah	185	GLU	LYS	conflict	UNP F1RME2
Ah	187	PRO	LYS	conflict	UNP F1RME2
Ah	189	ILE	LEU	conflict	UNP F1RME2
Ah	190	SER	ILE	conflict	UNP F1RME2
Ah	237	SER	-	insertion	UNP F1RME2
Ah	238	PHE	-	insertion	UNP F1RME2

- Molecule 58 is a protein called mS33.

Mol	Chain	Residues	Atoms					AltConf	Trace
58	Ai	99	Total	C	N	O	S	0	0
			824	522	156	143	3		

- Molecule 59 is a protein called mS34.

Mol	Chain	Residues	Atoms					AltConf	Trace
59	Aj	213	Total	C	N	O	S	0	0
			1788	1131	338	311	8		

- Molecule 60 is a protein called Mitochondrial ribosomal protein S35.

Mol	Chain	Residues	Atoms					AltConf	Trace
60	Ak	275	Total	C	N	O	S	0	0
			2222	1414	380	419	9		

- Molecule 61 is a protein called mS37.

Mol	Chain	Residues	Atoms					AltConf	Trace
61	Am	116	Total	C	N	O	S	0	0
			930	577	185	160	8		

- Molecule 62 is a protein called Aurora kinase A interacting protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
62	An	72	Total	C	N	O	S	0	0
			639	407	139	92	1		

- Molecule 63 is a protein called mS39.

Mol	Chain	Residues	Atoms					AltConf	Trace
63	Ao	572	Total	C	N	O	S	0	0
			4525	2897	770	834	24		

- Molecule 64 is a protein called 28S ribosomal protein S18b, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
64	Ap	190	Total	C	N	O	S	0	0
			1564	991	292	273	8		

- Molecule 65 is a protein called Mitochondrial ribosomal protein L12.

Mol	Chain	Residues	Atoms				AltConf	Trace
65	CL	45	Total	C	N	O	0	0
			317	203	52	62		
65	DL	27	Total	C	N	O	0	0
			213	137	33	43		
65	EL	28	Total	C	N	O	0	0
			222	143	35	44		
65	FL	27	Total	C	N	O	0	0
			213	137	33	43		
65	GL	27	Total	C	N	O	0	0
			213	137	33	43		
65	HL	26	Total	C	N	O	0	0
			205	131	32	42		

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Mol	Chain	Residues	Atoms				AltConf	Trace
65	LL	70	Total	C	N	O	0	0
			537	346	93	98		

- Molecule 66 is a protein called Mitochondrial ribosomal protein L47.

Mol	Chain	Residues	Atoms					AltConf	Trace
66	B2	179	Total	C	N	O	S	0	0
			1548	992	290	260	6		

- Molecule 67 is a protein called Uncharacterized protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
67	B3	118	Total	C	N	O	S	0	0
			968	622	178	165	3		

- Molecule 68 is a protein called Uncharacterized protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
68	B4	62	Total	C	N	O	S	0	0
			474	296	94	81	3		

- Molecule 69 is a protein called Uncharacterized protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
69	B5	110	Total	C	N	O	S	0	0
			902	553	181	162	6		

- Molecule 70 is a protein called Uncharacterized protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
70	B6	52	Total	C	N	O	S	0	0
			425	274	78	71	2		

- Molecule 71 is a protein called Mitochondrial ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
71	B7	46	Total	C	N	O	S	0	0
			387	239	89	58	1		

- Molecule 72 is a protein called Mitochondrial ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
72	B8	95	Total	C	N	O	S	0	0
			833	539	163	129	2		

- Molecule 73 is a protein called Ribosomal protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
73	B9	38	Total	C	N	O	S	0	0
			335	214	70	47	4		

- Molecule 74 is a RNA chain called CP tRNA-Phe.

Mol	Chain	Residues	Atoms					AltConf	Trace
74	BB	67	Total	C	N	O	P	0	0
			1427	640	261	459	67		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
BB	72	C	-	insertion	GB 76262549
BB	73	A	-	insertion	GB 76262549

- Molecule 75 is a protein called Elongation factor G, mitochondrial.

Mol	Chain	Residues	Atoms					AltConf	Trace
75	BC	694	Total	C	N	O	S	0	0
			5425	3422	935	1035	33		

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
BC	31	GLY	-	expression tag	UNP Q96RP9
BC	32	GLY	-	expression tag	UNP Q96RP9
BC	33	SER	-	expression tag	UNP Q96RP9
BC	34	GLY	-	expression tag	UNP Q96RP9
BC	35	SER	-	expression tag	UNP Q96RP9
BC	36	GLY	-	expression tag	UNP Q96RP9

- Molecule 76 is a protein called Uncharacterized protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
76	BD	240	Total	C	N	O	S	0	0
			1860	1160	371	319	10		

- Molecule 77 is a protein called ICT1.

Mol	Chain	Residues	Atoms					AltConf	Trace
77	BE	307	Total	C	N	O	S	0	0
			2420	1554	426	430	10		

- Molecule 78 is a protein called Mitochondrial ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
78	BF	250	Total	C	N	O	S	0	0
			2011	1294	367	344	6		

- Molecule 79 is a protein called Mitochondrial ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
79	BI	98	Total	C	N	O	S	0	0
			805	509	155	141			

- Molecule 80 is a protein called Mitochondrial ribosomal protein L10.

Mol	Chain	Residues	Atoms					AltConf	Trace
80	BJ	212	Total	C	N	O	S	0	0
			1705	1100	306	290	9		

- Molecule 81 is a protein called Mitochondrial ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
81	BK	176	Total	C	N	O	S	0	0
			1339	851	243	243	2		

- Molecule 82 is a protein called Uncharacterized protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
82	BN	177	Total	C	N	O	S	0	0
			1444	926	258	253	7		

- Molecule 83 is a protein called Uncharacterized protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
83	BO	115	Total	C	N	O	S	0	0
			896	562	176	154	4		

- Molecule 84 is a protein called Uncharacterized protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
84	BP	288	Total	C	N	O	S	0	0
			2312	1473	430	403	6		

- Molecule 85 is a protein called Uncharacterized protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
85	BQ	222	Total	C	N	O	S	0	0
			1803	1156	331	306	10		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
BQ	237	HIS	TYR	conflict	UNP F1RI89

- Molecule 86 is a protein called Uncharacterized protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
86	BR	153	Total	C	N	O	S	0	0
			1240	777	236	222	5		

- Molecule 87 is a protein called Mitochondrial ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
87	BS	143	Total	C	N	O	S	0	0
			1168	733	227	204	4		

- Molecule 88 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
88	BW	1	Total	Mg	0
			1	1	
88	Be	1	Total	Mg	0
			1	1	
88	Bl	1	Total	Mg	0
			1	1	
88	Bq	1	Total	Mg	0
			1	1	
88	Bt	1	Total	Mg	0
			1	1	
88	B0	1	Total	Mg	0
			1	1	
88	AA	102	Total	Mg	0
			102	102	

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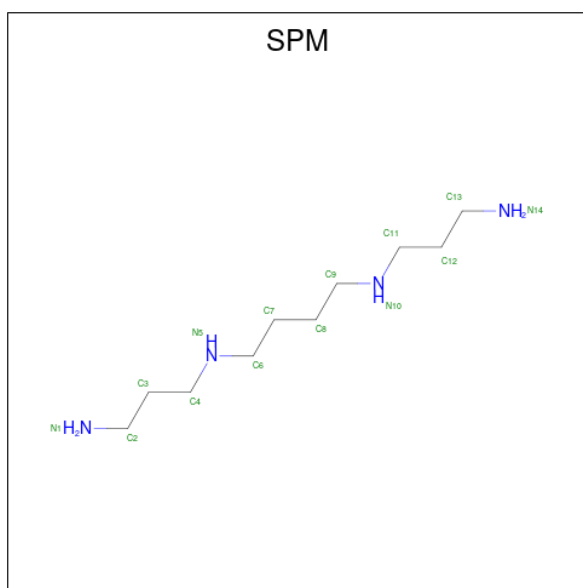
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Mol	Chain	Residues	Atoms		AltConf
88	AB	1	Total 1	Mg 1	0
88	AX	1	Total 1	Mg 1	0
88	Ag	1	Total 1	Mg 1	0
88	Am	1	Total 1	Mg 1	0
88	An	1	Total 1	Mg 1	0
88	BA	200	Total 200	Mg 200	0
88	BB	1	Total 1	Mg 1	0
88	BC	2	Total 2	Mg 2	0
88	BD	3	Total 3	Mg 3	0
88	BF	1	Total 1	Mg 1	0
88	BJ	1	Total 1	Mg 1	0
88	BP	3	Total 3	Mg 3	0
88	BQ	1	Total 1	Mg 1	0

- Molecule 89 is ZINC ION (CCD ID: ZN) (formula: Zn).

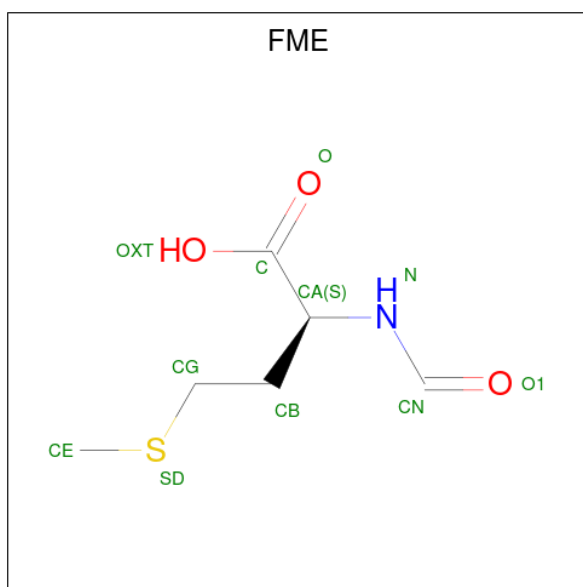
Mol	Chain	Residues	Atoms		AltConf
89	Bx	1	Total 1	Zn 1	0
89	AR	1	Total 1	Zn 1	0
89	Ac	1	Total 1	Zn 1	0
89	Ap	1	Total 1	Zn 1	0
89	B5	1	Total 1	Zn 1	0
89	B9	1	Total 1	Zn 1	0

- Molecule 90 is SPERMINE (CCD ID: SPM) (formula: $C_{10}H_{26}N_4$).



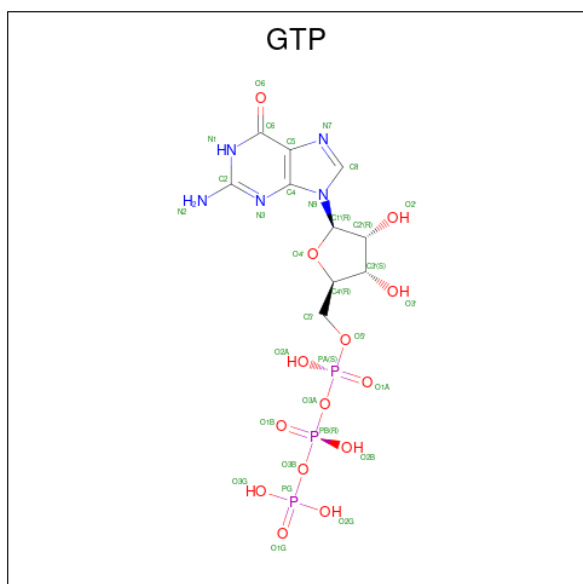
Mol	Chain	Residues	Atoms			AltConf
90	AA	1	Total	C	N	0
			14	10	4	
90	BA	1	Total	C	N	0
			14	10	4	
90	BA	1	Total	C	N	0
			14	10	4	

- Molecule 91 is N-FORMYLMETHIONINE (CCD ID: FME) (formula: $C_6H_{11}NO_3S$) (labeled as "Ligand of Interest" by depositor).



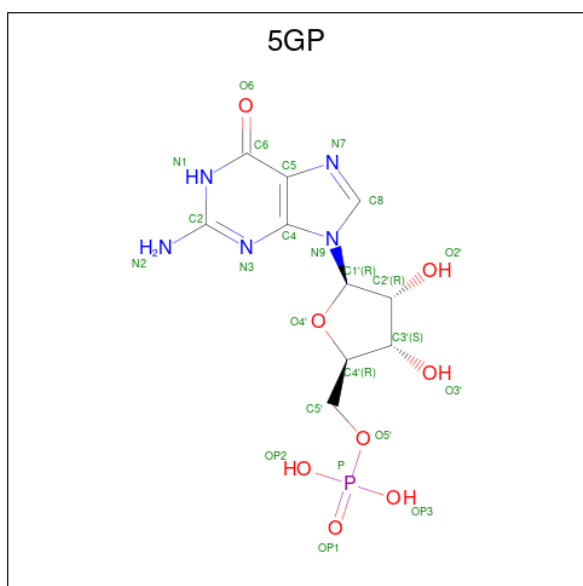
Mol	Chain	Residues	Atoms					AltConf
91	AV	1	Total	C	N	O	S	0
			10	6	1	2	1	

- Molecule 92 is GUANOSINE-5'-TRIPHOSPHATE (CCD ID: GTP) (formula: $C_{10}H_{16}N_5O_{14}P_3$).



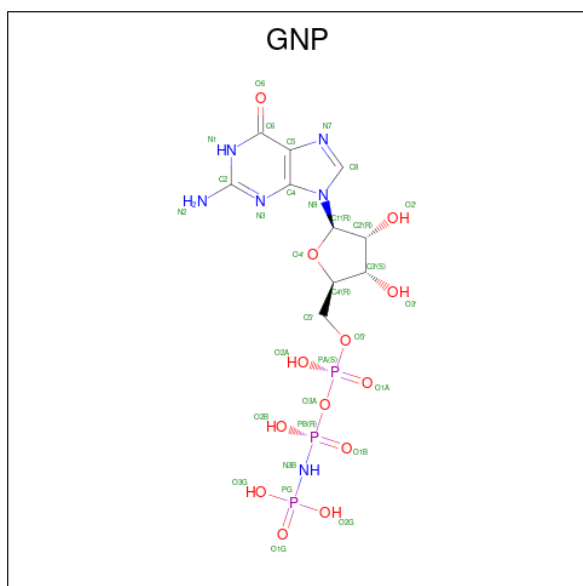
Mol	Chain	Residues	Atoms					AltConf
92	Ag	1	Total	C	N	O	P	0
			32	10	5	14	3	

- Molecule 93 is GUANOSINE-5'-MONOPHOSPHATE (CCD ID: 5GP) (formula: $C_{10}H_{14}N_5O_8P$).



Mol	Chain	Residues	Atoms					AltConf
93	BA	1	Total	C	N	O	P	0
			24	10	5	8	1	

- Molecule 94 is PHOSPHOAMINOPHOSPHONIC ACID-GUANYLATE ESTER (CCD ID: GNP) (formula: $\text{C}_{10}\text{H}_{17}\text{N}_6\text{O}_{13}\text{P}_3$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
94	BC	1	Total 32	C 10	N 6	O 13	P 3	0

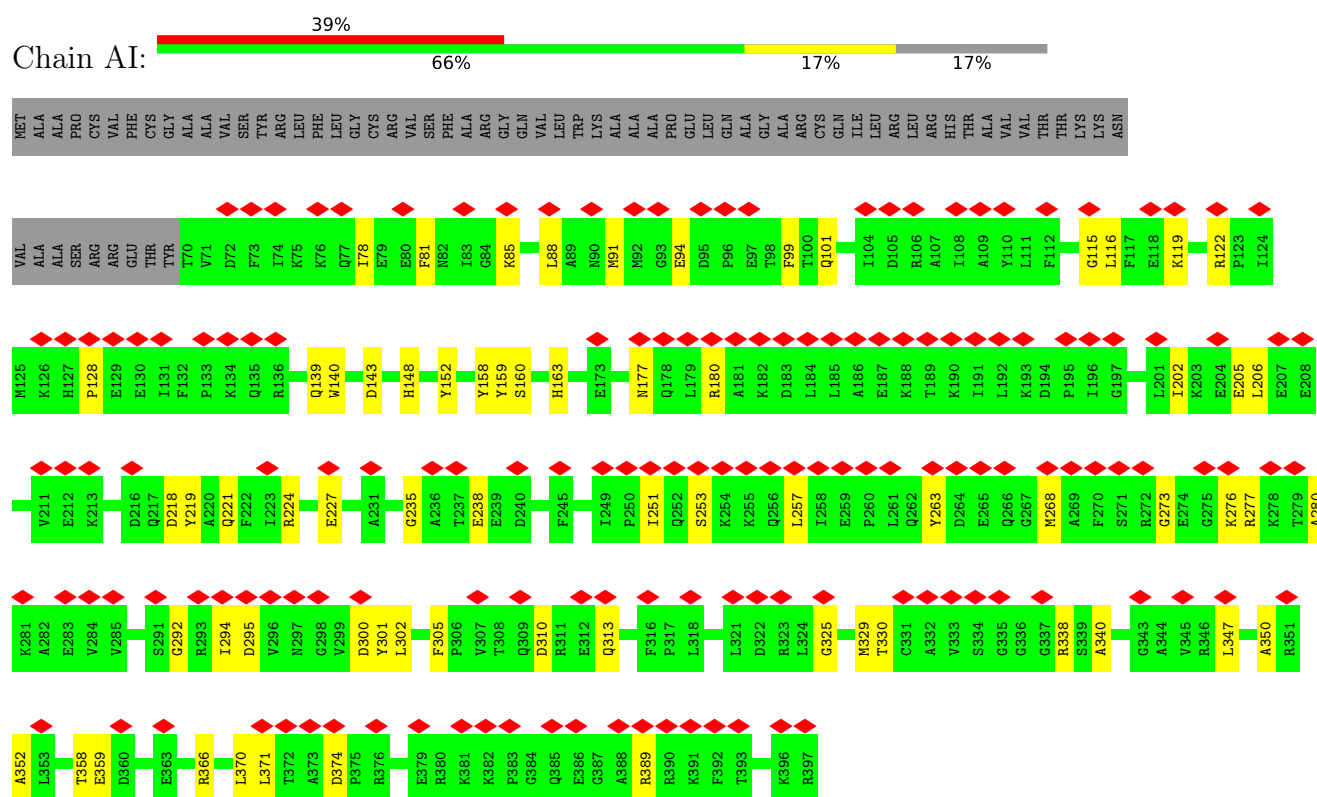
- Molecule 95 is water.

Mol	Chain	Residues	Atoms	AltConf
95	Ag	3	Total O 3 3	0
95	BC	2	Total O 2 2	0

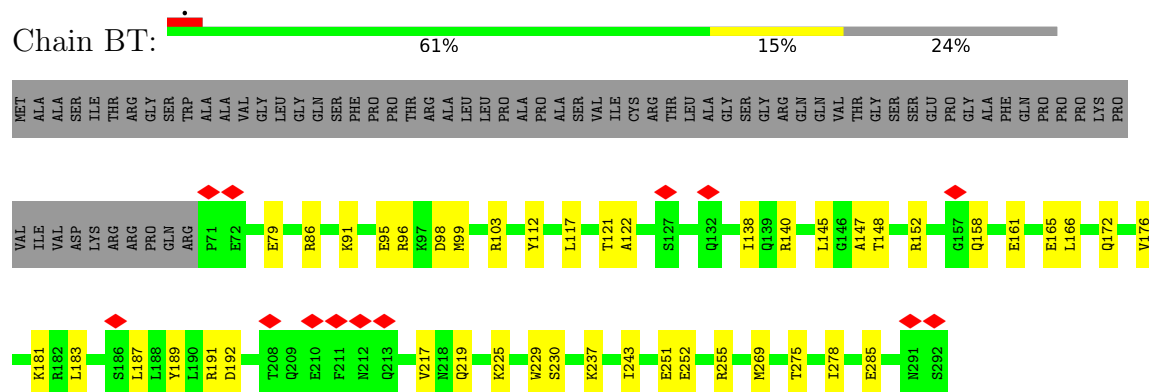
3 Residue-property plots

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.

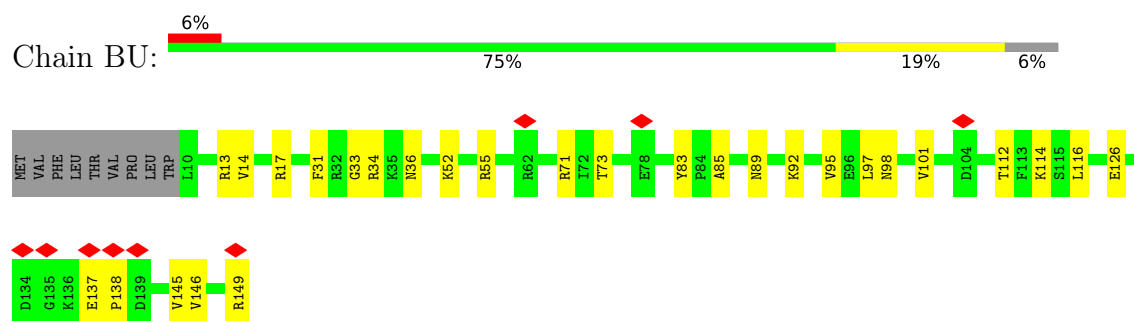
• Molecule 1: Uncharacterized protein



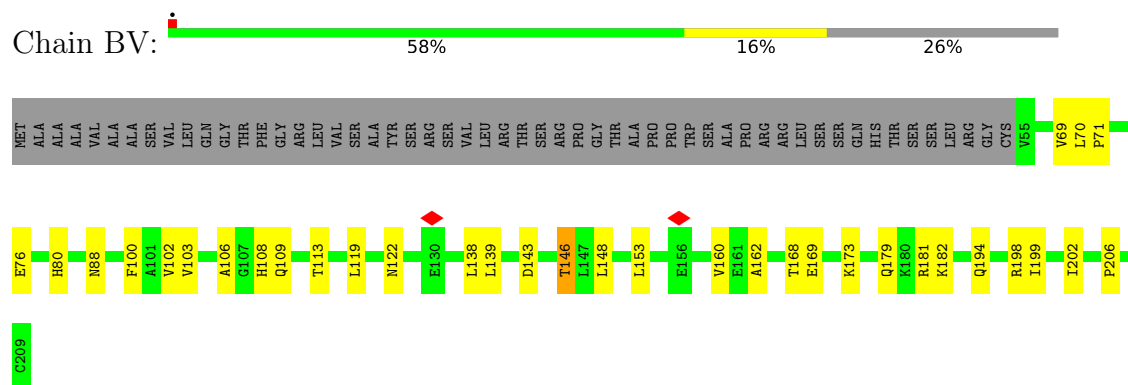
• Molecule 2: Mitochondrial ribosomal protein L19



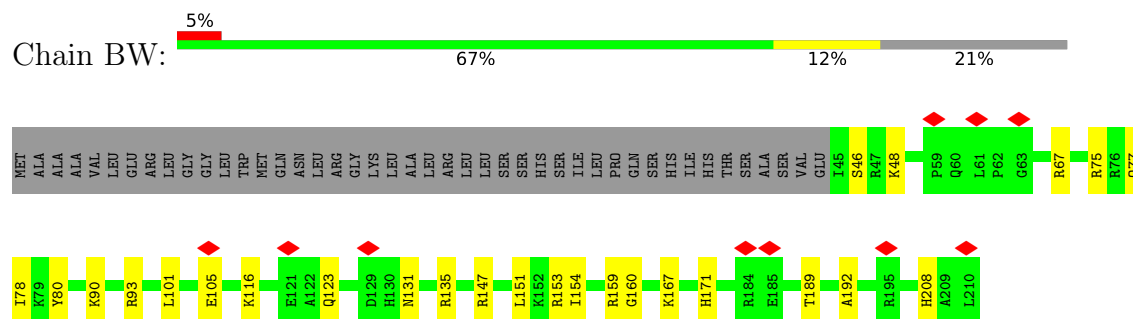
- Molecule 3: Mitochondrial ribosomal protein L20



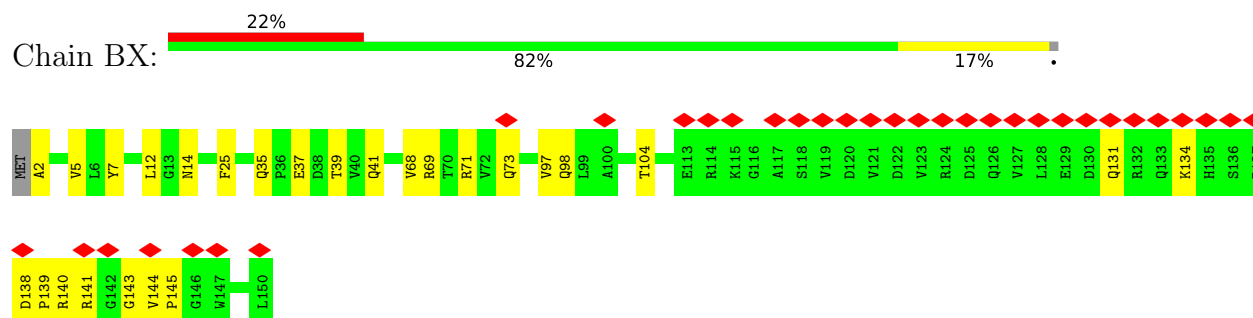
- Molecule 4: Mitochondrial ribosomal protein L21



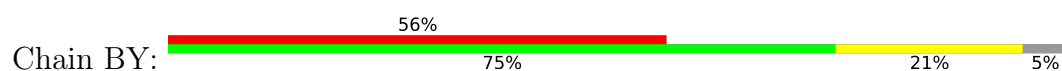
- Molecule 5: Uncharacterized protein

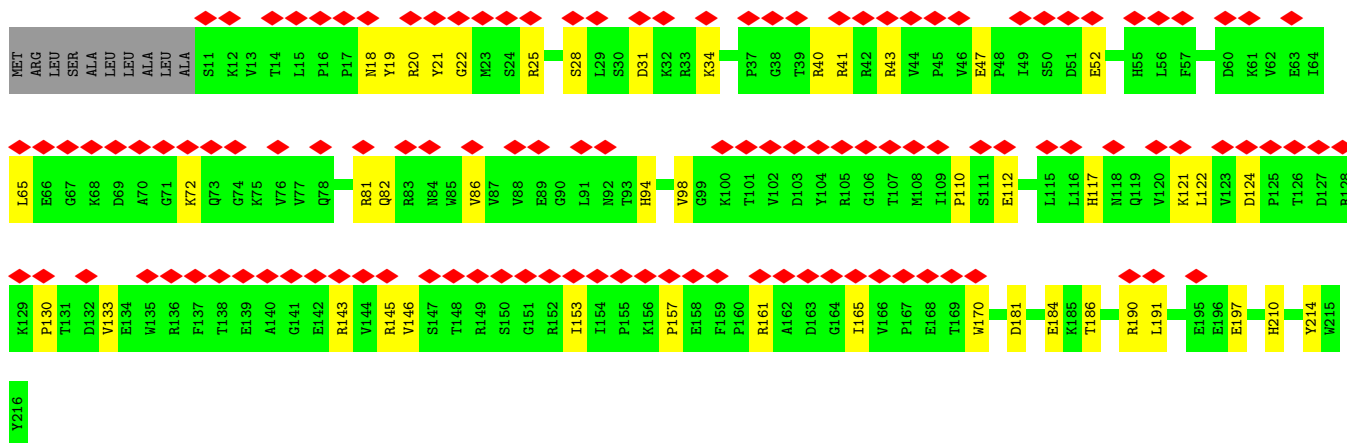


- Molecule 6: Uncharacterized protein

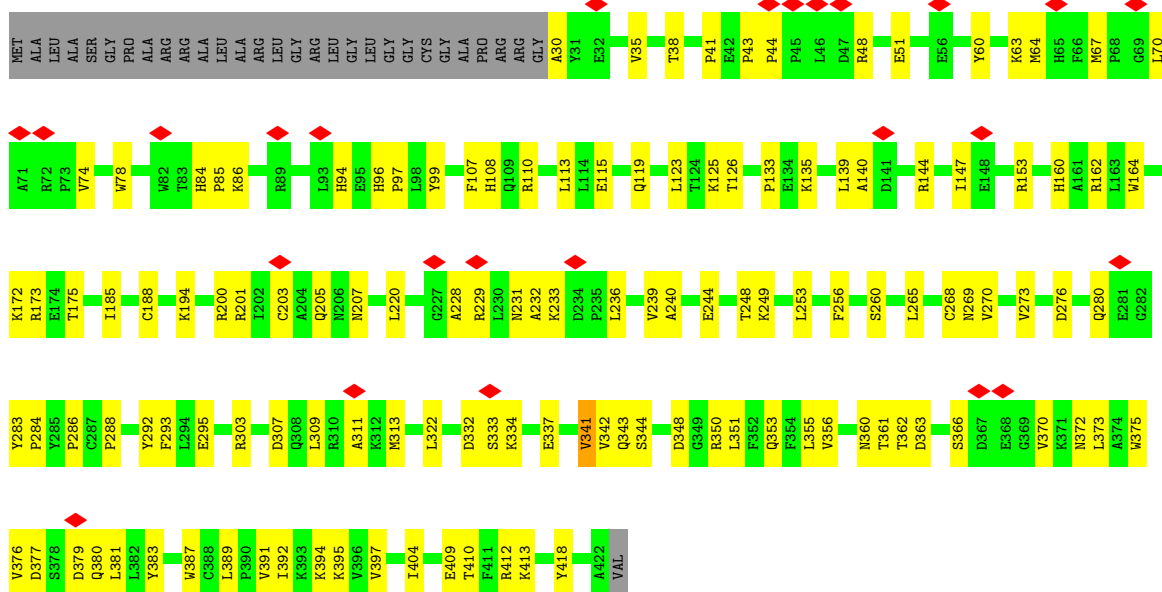


- Molecule 7: Uncharacterized protein

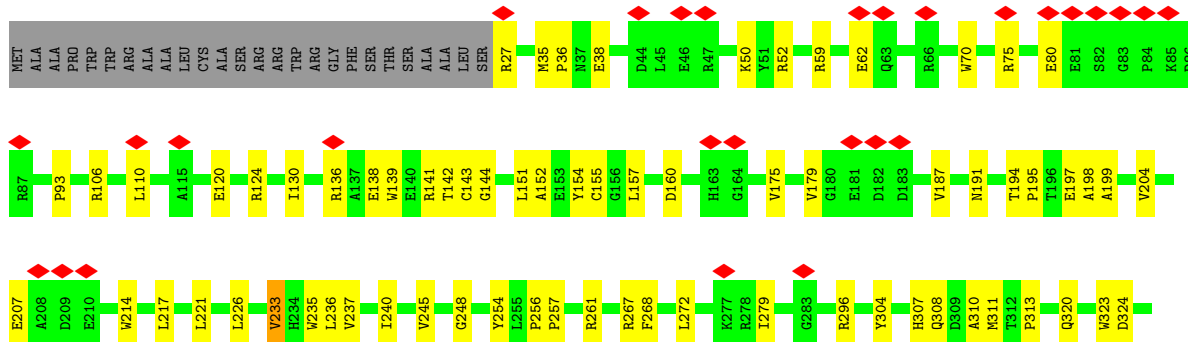
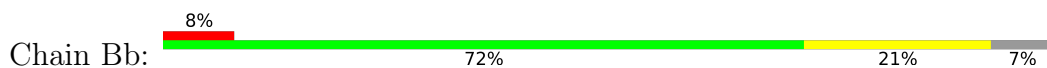




• Molecule 8: Mitochondrial ribosomal protein L37



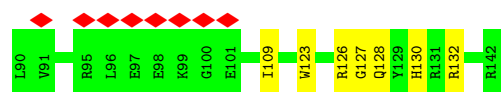
• Molecule 9: Mitochondrial ribosomal protein L38



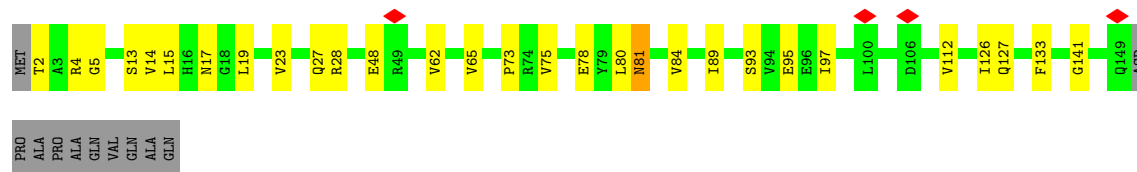
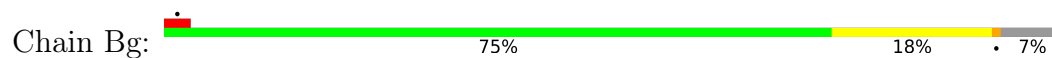
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ALA	ALA	ALA	ALA	LEU	GLY	ALA	ALA	SER	ARG	THR	ARG	LEU	ARG	PRO	ALA	SER	ARG	LEU	VAL	GLY	ALA	TRP	PRO	THR	GLN	THR	THR	ARG	ASP	HIS	HIS	GLU	ARG	GLY	SER	LEU	PHE	SER	PHE	TRP	GLY	LEU	VAL	PRO	PRO	ARG	ALA	GLU	PRO	LEU	ARG	LYS	LYS	LYS	VAL	ASP	PRO	LYS	LYS
D17	Q18	A19	A20	K21	D22	R23	L24	K25	K26	R27	L28	R29	R30	L31	E32	K33	A34	S35	Q36	E37	L38	I39	P40	I41	E42	D43	T46	P47	V48	K49	P50	L51	M52	K53	E54	R55	O56	R57	P58	P59	L62	E66	R69	L72	K75	E84	H85	E86	M87	E88	R89								

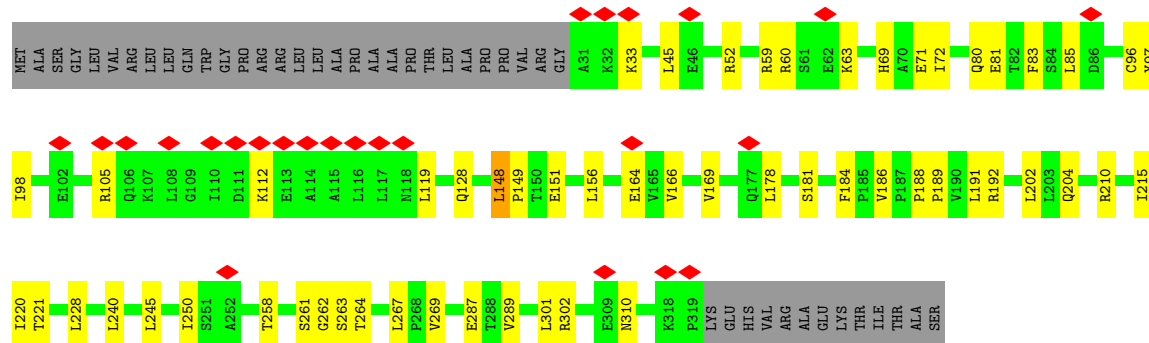
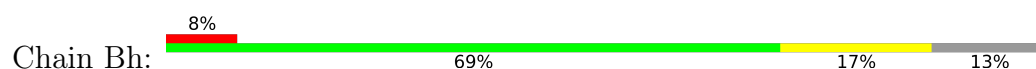
MET LEU ALA ALA VAL LYS TRP VAL ILE SER SER ARG THR LEU LYS HIS LEU PHE PRO ILE GLN ASN SER ALA SER TYR CYS VAL CYS HIS LYS SER T35 N44 C45 K46 R56 P63 I67 H71 I75 T76 R77 P78 D79 P80 V81 H82 I84 T85



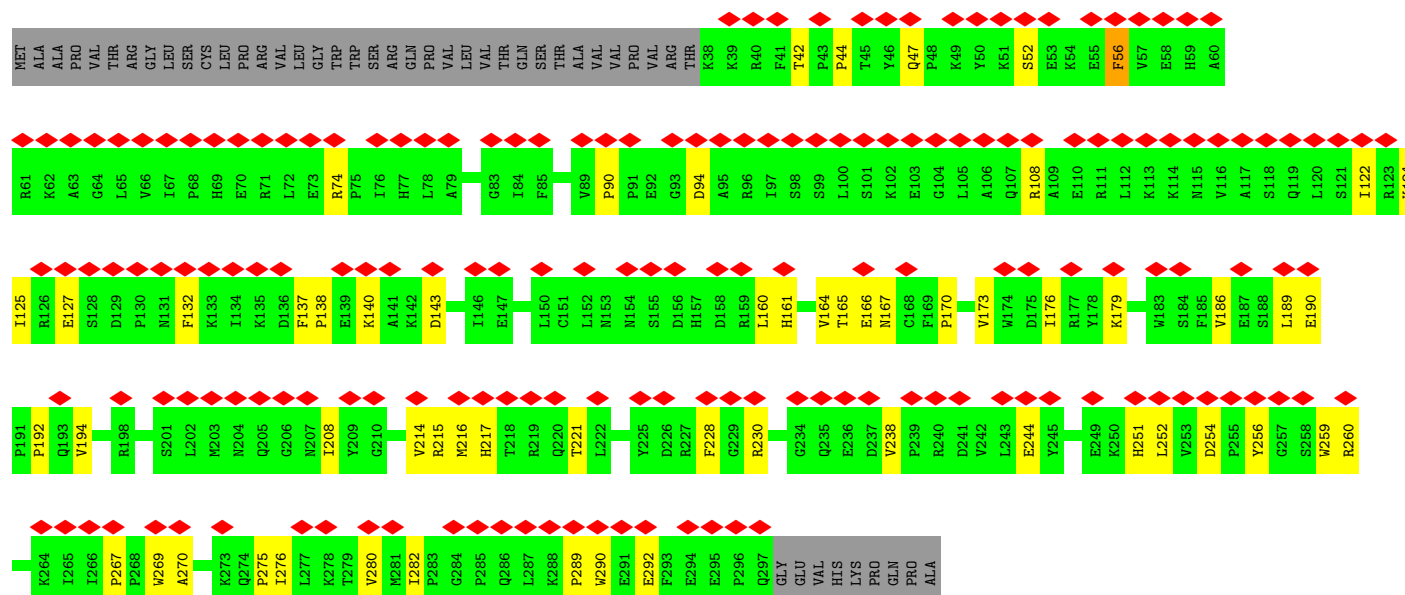
• Molecule 14: Mitochondrial ribosomal protein L43



• Molecule 15: Uncharacterized protein

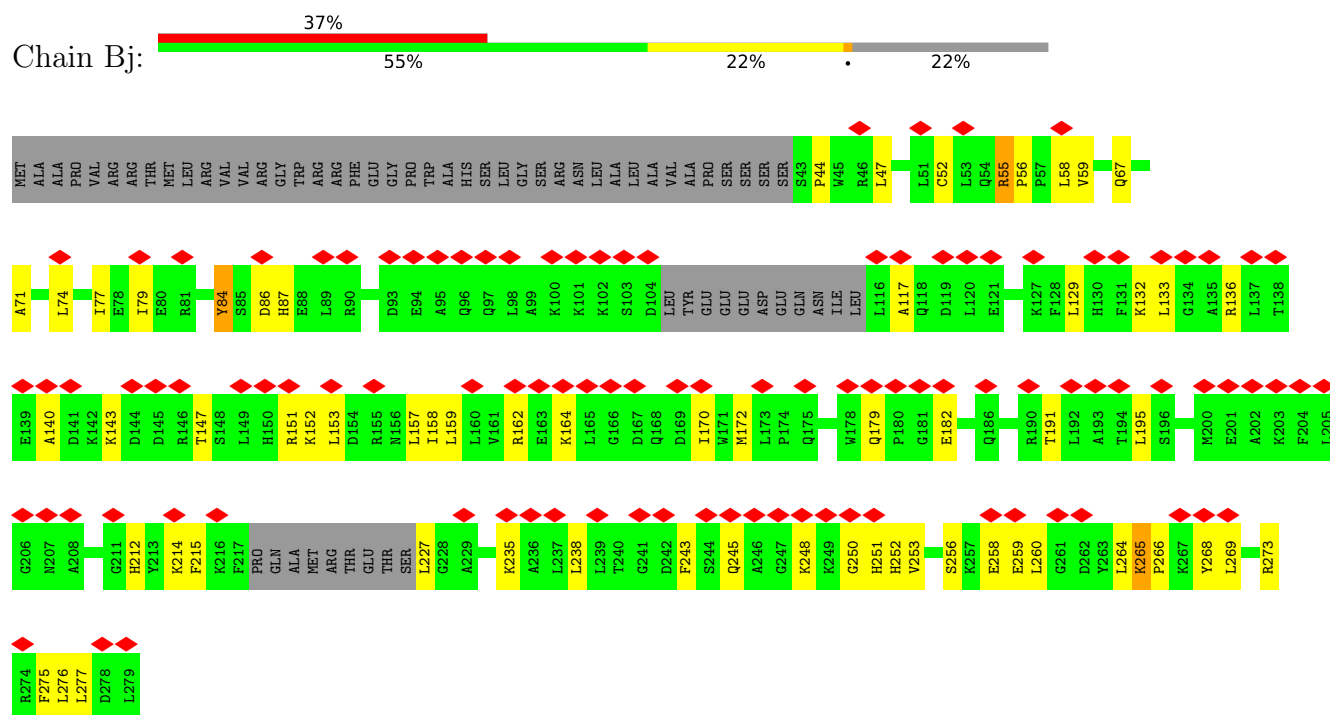


• Molecule 16: Mitochondrial ribosomal protein L45



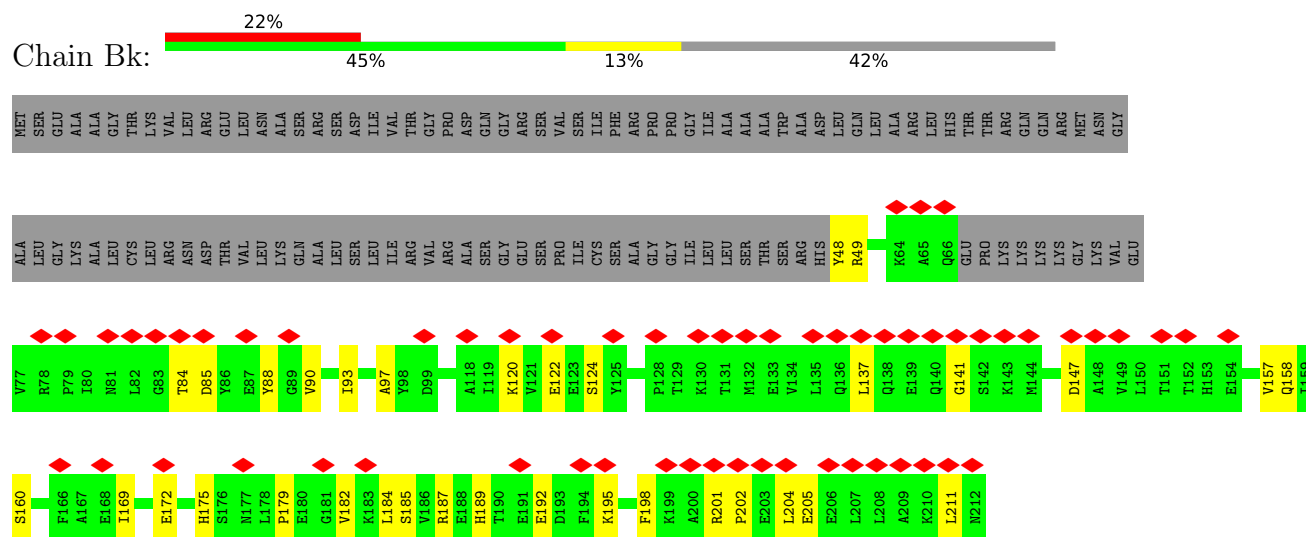
• Molecule 17: Mitochondrial ribosomal protein L46

Chain Bj:



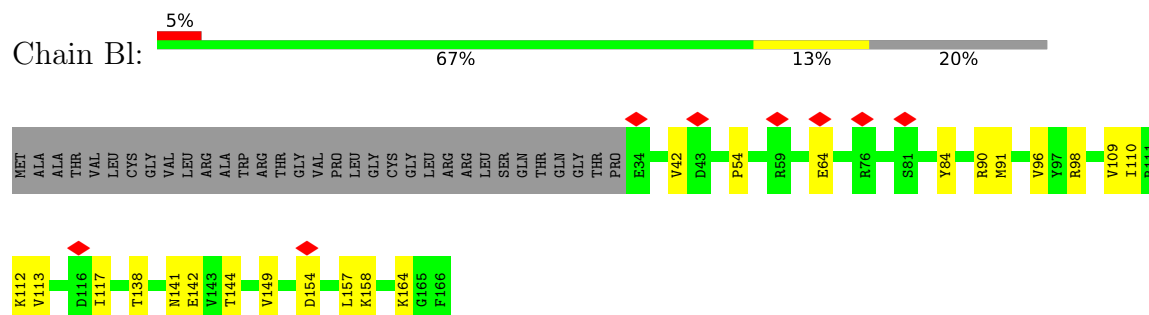
• Molecule 18: 39S ribosomal protein L48, mitochondrial

Chain Bk:

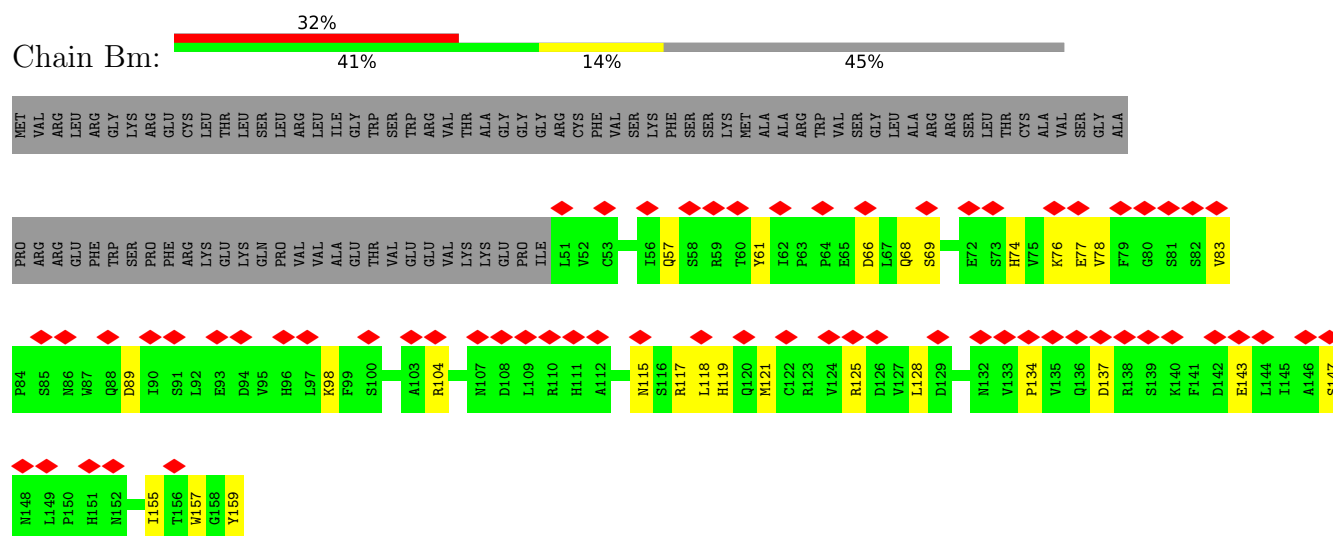


• Molecule 19: Mrpl34

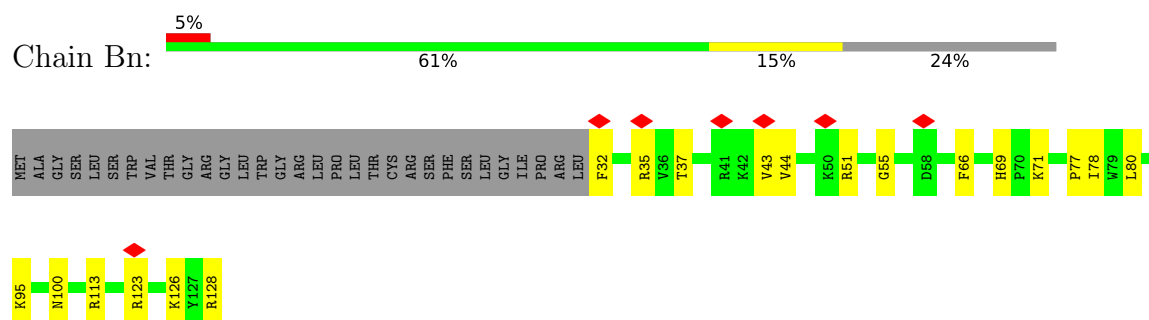
Chain Bl:



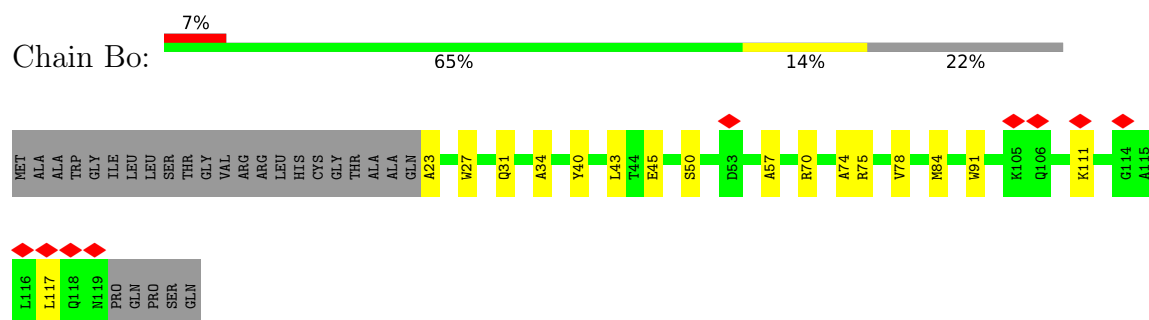
- Molecule 20: Mitochondrial ribosomal protein L50



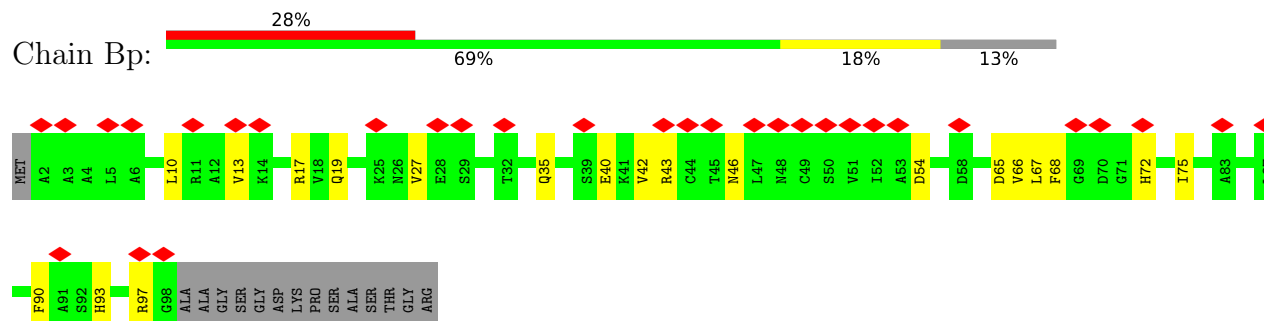
- Molecule 21: Mitochondrial ribosomal protein L51



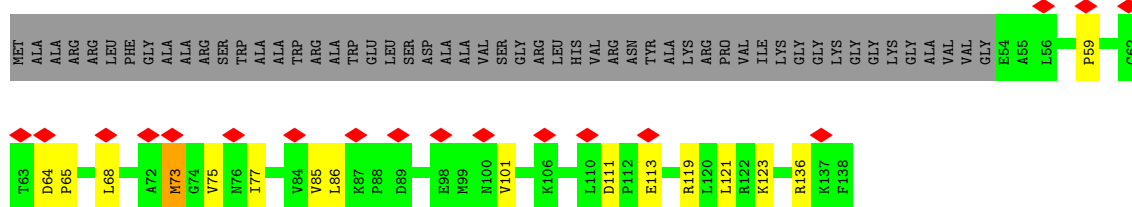
- Molecule 22: Uncharacterized protein



- Molecule 23: mL53



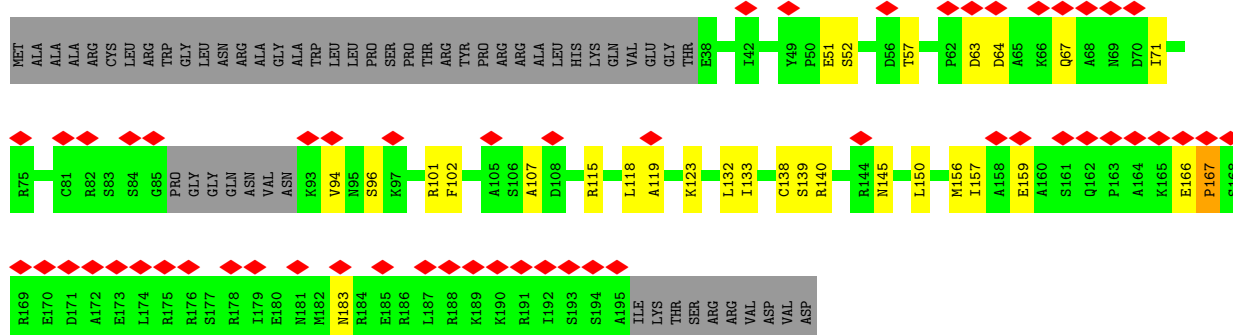
- Molecule 24: Uncharacterized protein



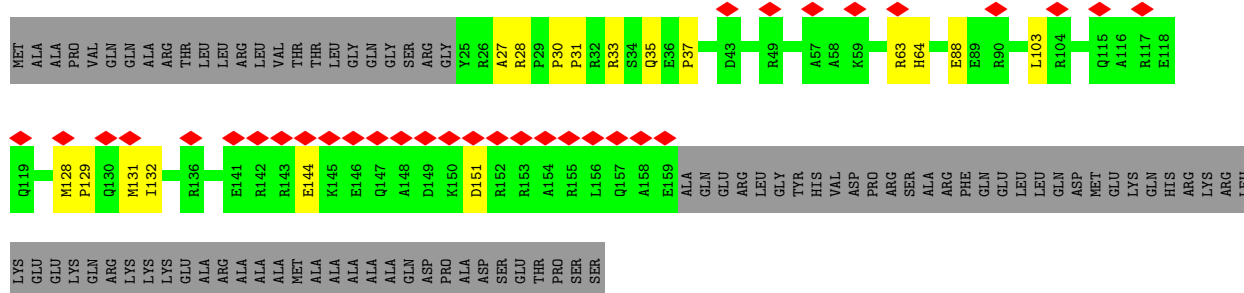
- Molecule 25: Mitochondrial ribosomal protein L57



- Molecule 26: Uncharacterized protein



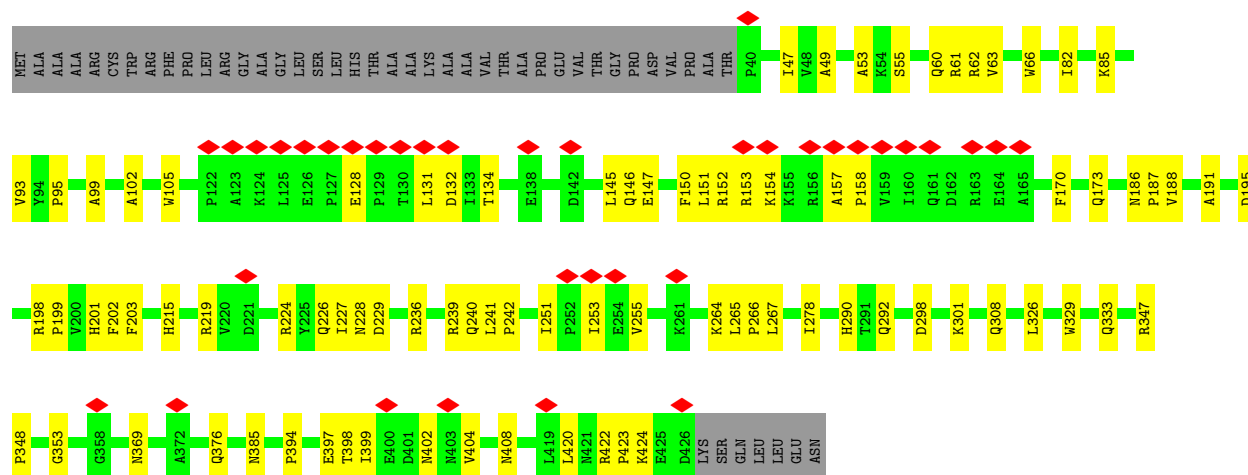
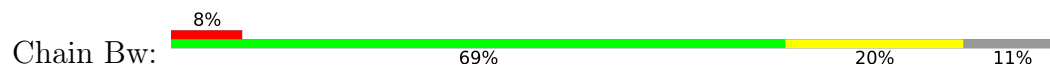
- Molecule 27: Uncharacterized protein



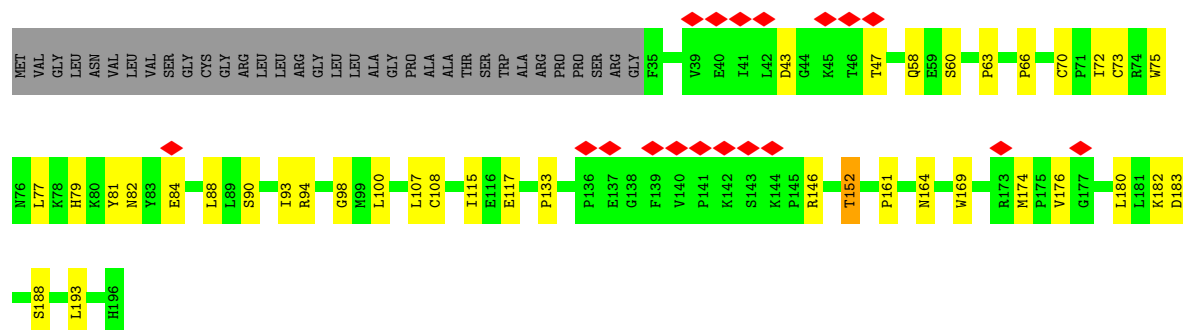
- Molecule 28: Mitochondrial ribosomal protein L27



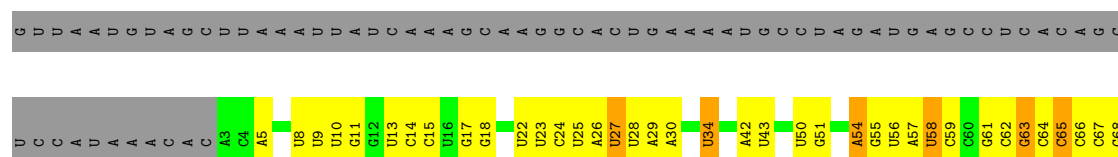
- Molecule 29: 39S ribosomal protein S30, mitochondrial



- Molecule 30: Mitochondrial ribosomal protein S18A



- Molecule 31: 12S rRNA







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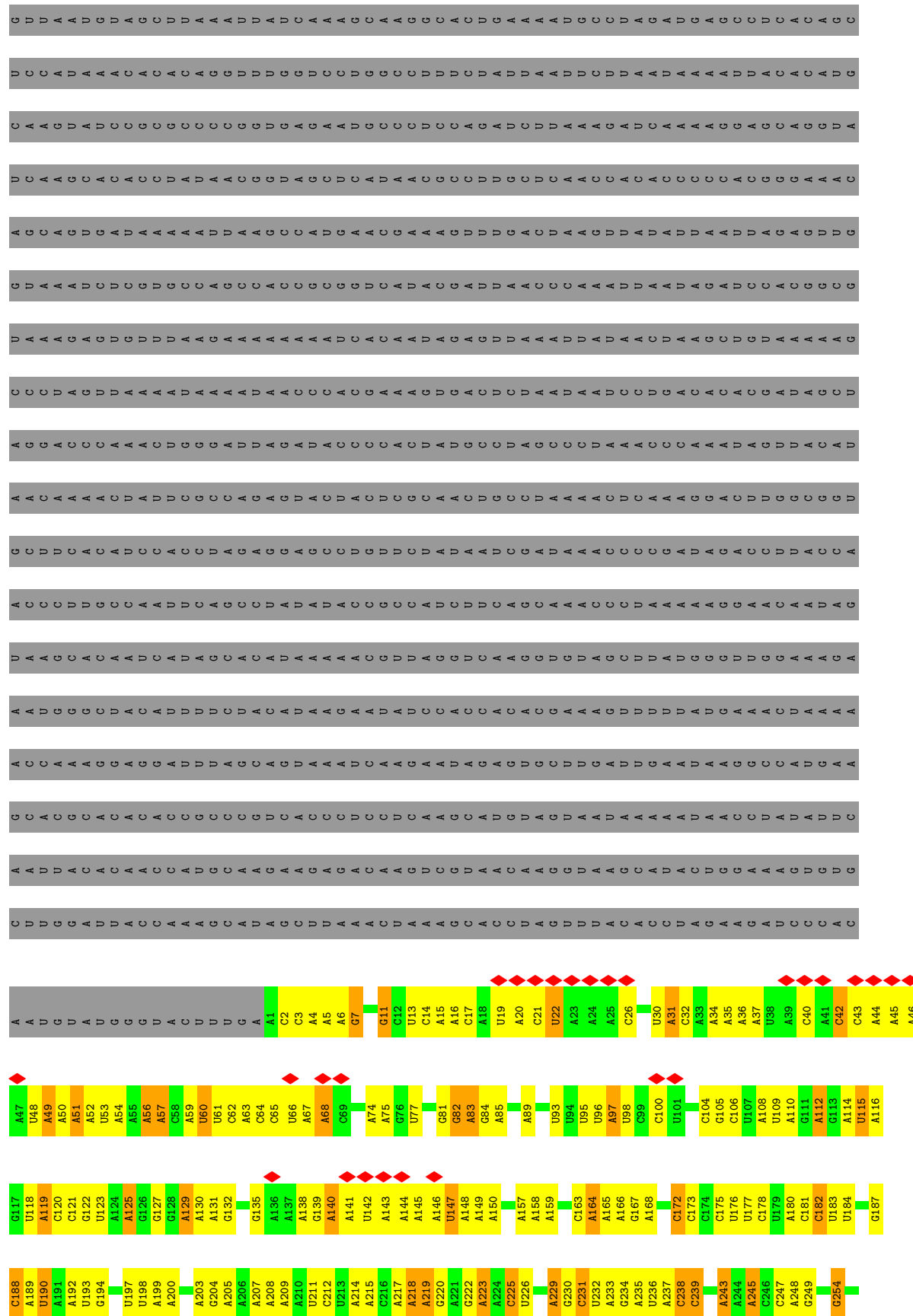
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[illegible]

- Molecule 31: 12S rRNA

Chain BA: 

91%



C1264	C1265	U1266	G1269	G1270	A1271	U1272	A1195	G1196	A1197	C1198	A1199	A1200	A1201	A1204	G1205	G1206	C1207	A1208	A1213	A1214	C1215	C1216	A1217	U1218	U1219	A1219	A1220	C1221	A1222	U1223	C1226	U1230	U1231	G1232	A1233	U1234	C1235	A1307	U1308	U1309	A1310	U1314	U1315	U1316	C1317	C1318	G1319	A1320	C1321	C1322	U1323	C1324	A1325	G1326	U1327	G1328	U1329	U1330	G1331	A1336
A	U	A	A	A	A	C	A	U1121	U1125	U1126	A1127	A1128	C1129	A1130	U1131	G1132	U1135	U1136	A1137	G1138	C1139	A1140	A1141	C1145	G1146	G1147	G1150	G1151	G1152	G1153	U1154	G1155	A1156	G1157	C1158	G1161	G1162	A1163	C1167	A1168	A1169	A1173	C1174	G1180	U1183	A1191	U1192	G1193	U1194											
A1041	A1042	A1043	A1044	U1045	A1046	C1050	G1051	A1055	G1056	A1057	C1058	C1059	C1060	U1061	A1062	U1063	G1064	G1065	A1066	C995	U1067	U1071	A1072	U1073	U1074	U1075	A1076	U1079	A1080	U1081	U1082	G1089	U1090	U1091	A1092	A1093	A	C	A	A	C	U	C	C	A	A	A	A	G	G										
C972	A973	C974	A975	C976	C977	C978	U981	U982	U983	A984	U985	U986	U987	C988	C989	U990	C991	U992	U993	A994	C995	U996	A1000	C1003	A1004	G1005	U1006	G1007	A1008	A1013	A1014	C1015	C1016	U1017	U1018	C1019	C1020	C1021	U1022	G1023	A1025	A1026	G1027	A1028	G1029	G1030	C1031	G1032	G1033	G1034	A1038	A1039	A1040							
U894	U895	A896	A897	C898	C899	G900	C901	G903	G906	U907	A908	U909	U910	C911	U912	G913	A914	C915	C916	G917	U918	G919	C920	A921	A922	A923	G924	G925	U926	U931	A932	A933	C937	U938	U942	C943	A947	A948	U958	G959	U960	A961	G962	G963	A964	A965	U966	G967	G968	C969	A971									
A811	C814	A815	C816	G824	C825	C826	U831	U832	C833	A836	U837	A838	C839	U840	A841	U842	C843	U847	C848	U849	A850	G851	A852	C853	U854	U855	A859	C860	U863	U864	A865	G869	C870	A871	A872	C876	U877	G878	C881	A882	G883	A888	C889	C890	A891	C892	U893													
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C972	A973	C974	A975	C976	C977	C978	U981	U982	U983	A984	U985	U986	U987	C988	C989	U990	C991	U992	U993	A994	C995	U996	A1000	C1003	A1004	G1005	U1006	G1007	A1008	A1013	A1014	C1015	C1016	U1017	U1018	C1019	C1020	C1021	U1022	G1023	A1025	A1026	G1027	A1028	G1029	G1030	C1031	G1032	G1033	G1034	A1038	A1039	A1040							
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G1337	G1338	G1339	C1340	A1341	C1342	C1343	C1344	A1345	U1348	U1351	G1352	C1353	A1354	C1357	G1358	C1359	U1360	G1368	U1369	U1370	C1371	A1381	C1382	G1383	A1384	U1385	U1386	A1387	A1388	A1389	G1390	U1391	A1395	C1396	G1397	U1398	G1399	C1402	U1403	G1404	A1405	G1406	U1407	U1408	G1411	C1414	G1415	G1416	A1417	G1418
C1419	A1420	U1421	U1422	C1423	C1424	A1425	G1426	U1429	G1430	G1431	U1432	U1433	U1436	U1437	U1438	U1445	A1448	U1449	C1452	U1453	C1454	C1455	C1456	A1457	G1458	U1459	A1463	A1464	A1465	G1466	G1467	A1468	G1474	A1475	A1476	U1477	U1478	G1479	G1480	A1491	C1492	A1493	A1494	U1495	C1496	G1497	C1498	U1502	C1503	A1504
G1505	A1506	G1507	A1508	U1509	U1512	U1513	A1514	A1518	U1519	U1520	U1521	C1525	U1526	U1527	A1528	A1529	C1530	C1531	U1532	A1533	A1534	U1535	U1536	A1544	A1548	C1551	C1552	A1553	G1554	C1557	U1558	A1559	G1560	A1561	A1569	C1570	A1571	U	U	A	G	G	G	U	C	A	G			
A	C	C	G	G	U	A	A	U	G	C	U	A	A	A	A	C	U	U	A	A	C	C	U	U	A	U	A	C	U	C	A	G	U	U	C	U	C	A	C	C	U	C	U	C	U	A	A	A	A	
A	C	A	U	G	C	U	C	A	A	A	U	A	A	A	A	U	C	C	A	A	A	C	C	U	U	A	U	U	C	C	A	U	A	C	C	U	A	C	C	U	C	C	G	C	U	C	C	C		
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A	U	A	U	U																																														













The image displays a full-page decorative background. It is composed of numerous horizontal stripes of varying widths and shades of gray, ranging from light to dark. These stripes are arranged in a way that creates a complex, woven texture, reminiscent of a textile or a digital fabric pattern. The overall effect is a sophisticated and modern aesthetic, suitable for use as a background for a book cover or a high-end document.

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U G U C A A A U A A A C C C A G U C A A C C C U A

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U C A C C U A A A A C C G C C C A C A C U U U C C C C U U A

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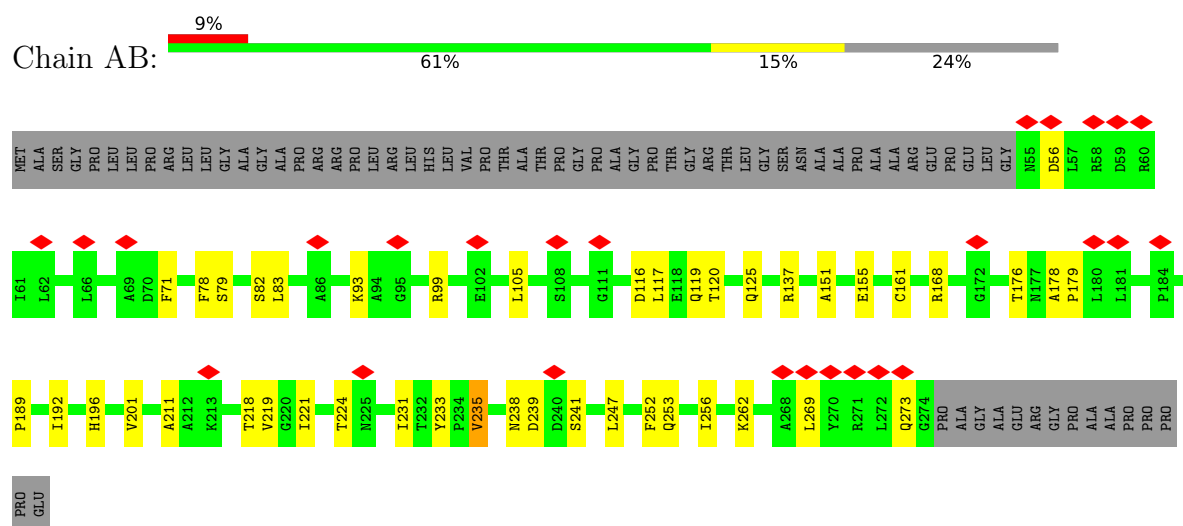
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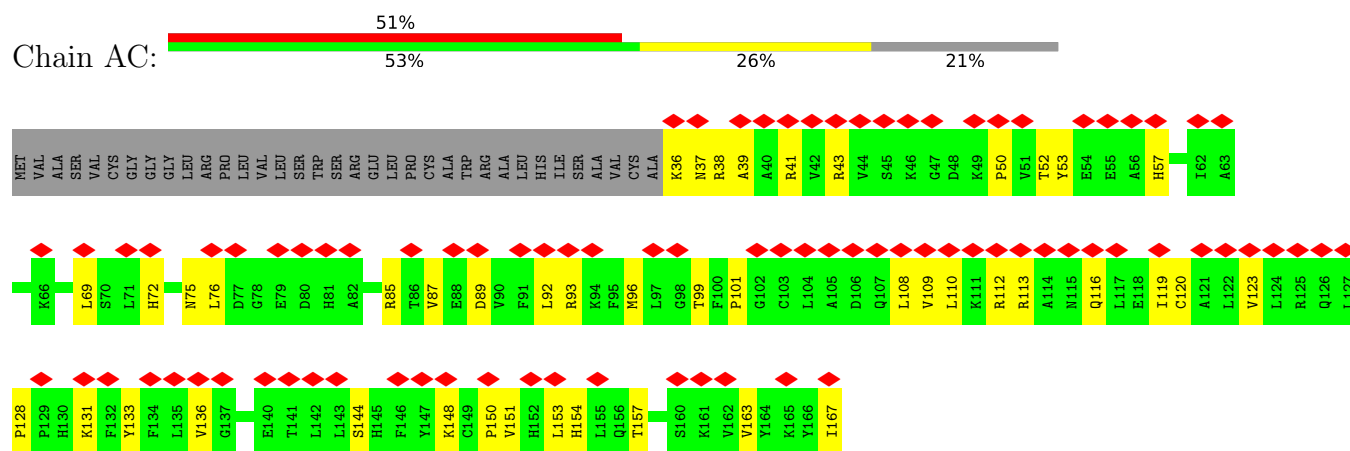
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- Molecule 32: Mitochondrial ribosomal protein S2



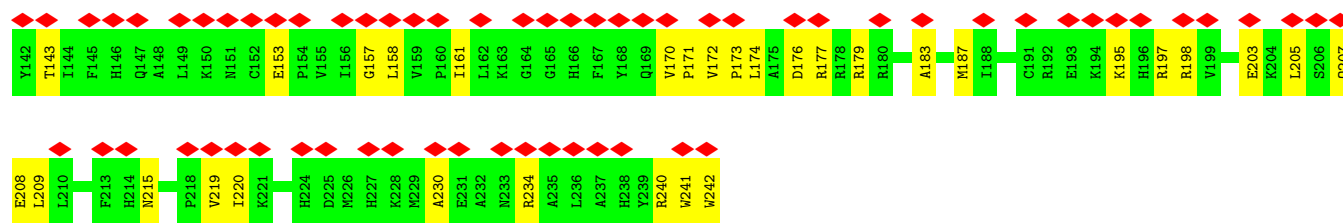
- Molecule 33: Mitochondrial ribosomal protein S24



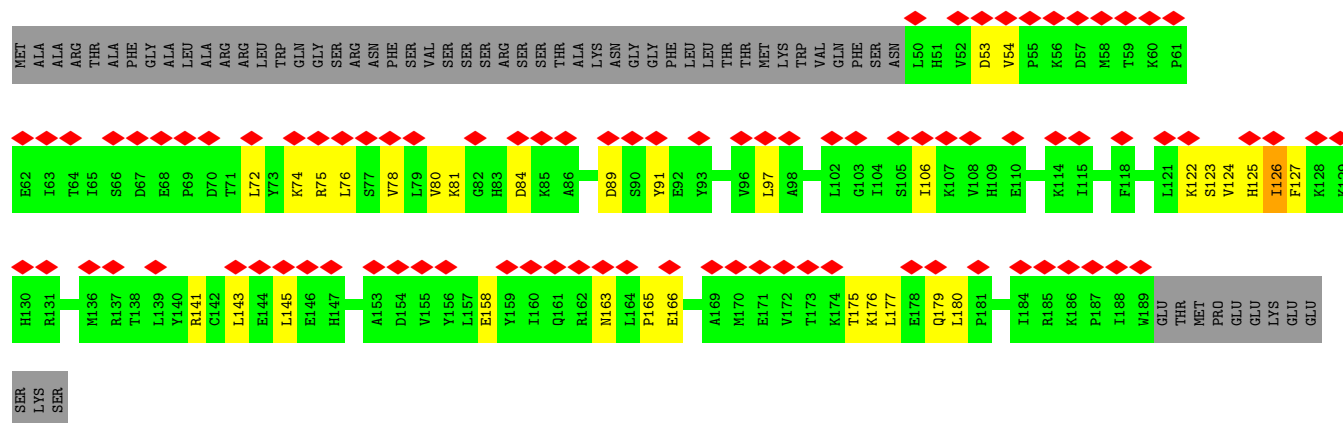
- Molecule 34: Mitochondrial ribosomal protein S5



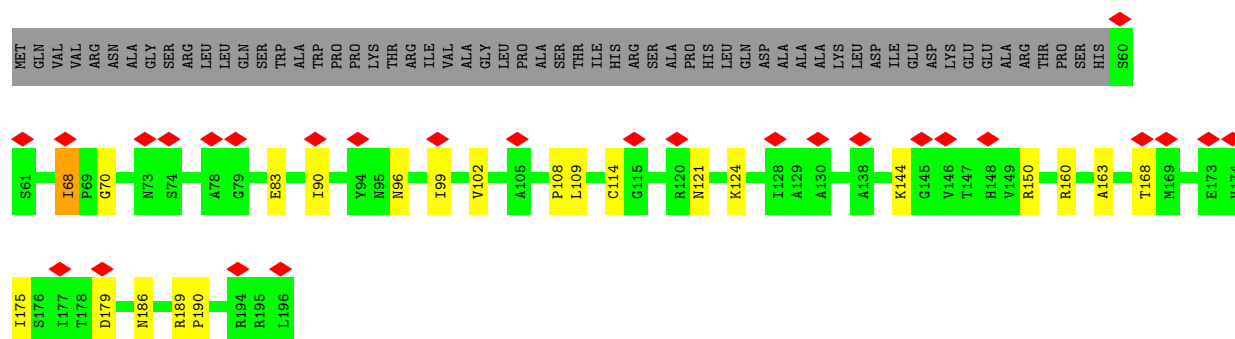




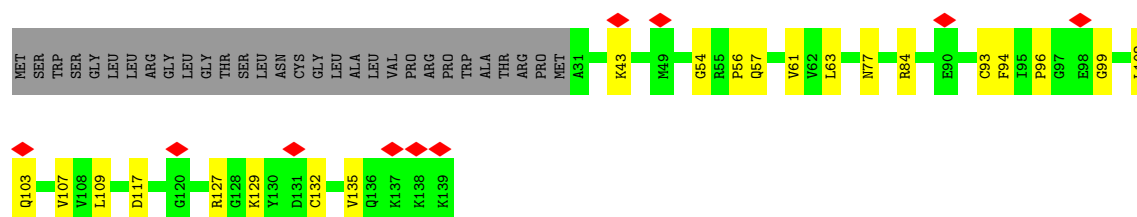
• Molecule 37: Mitochondrial ribosomal protein S10



• Molecule 38: uS11m

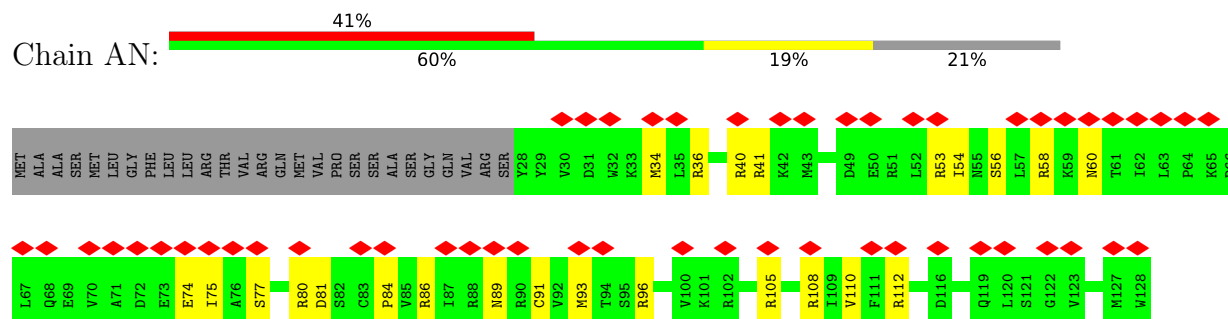


• Molecule 39: Mitochondrial ribosomal protein S12



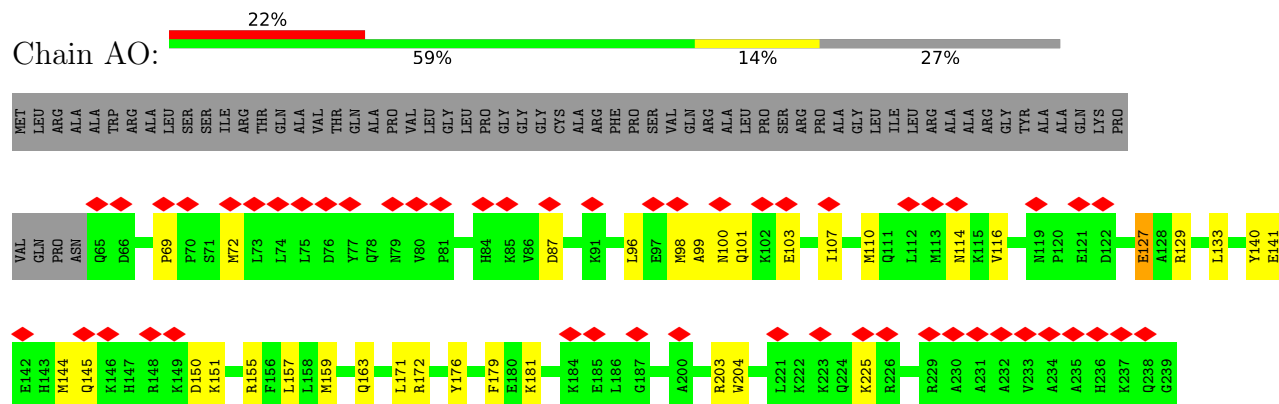
- Molecule 40: Mitochondrial ribosomal protein S14

Chain AN:



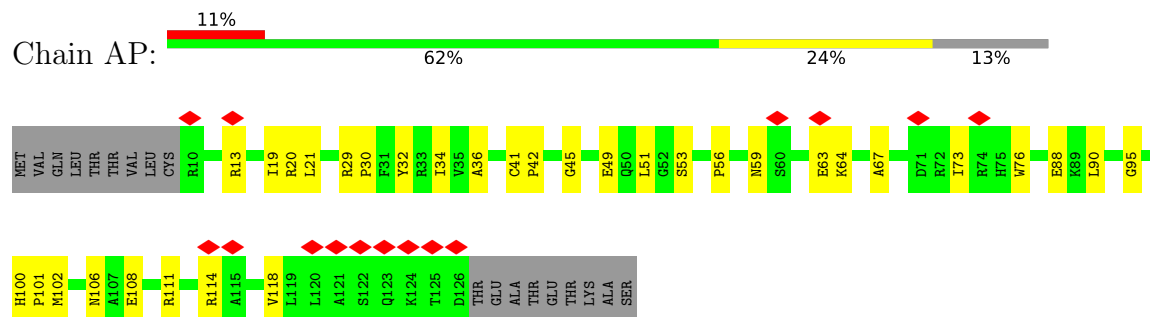
- Molecule 41: uS15m

Chain AO:



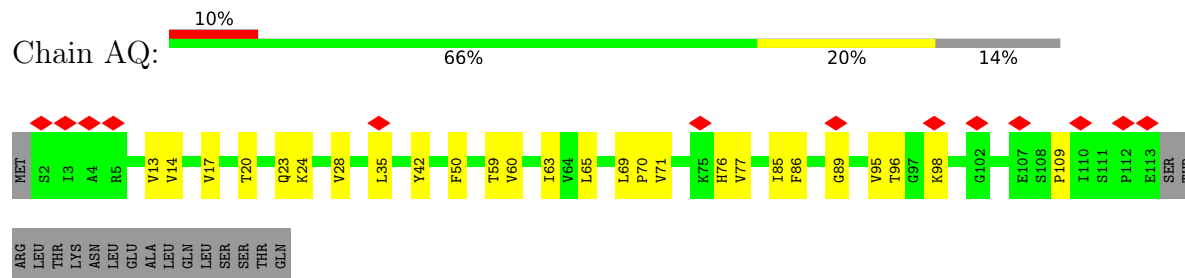
- Molecule 42: 28S ribosomal protein S16, mitochondrial

Chain AP:



- Molecule 43: uS17m

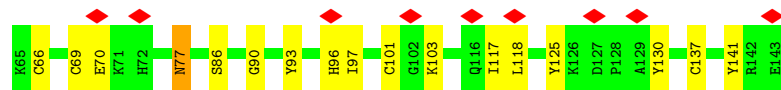
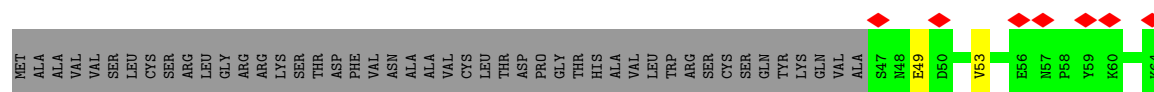
Chain AQ:



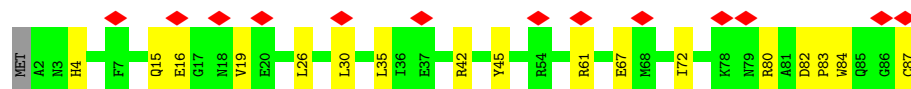
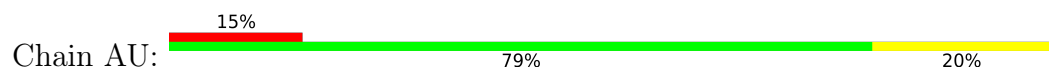
- Molecule 44: Mitochondrial ribosomal protein S18C

Chain AR:

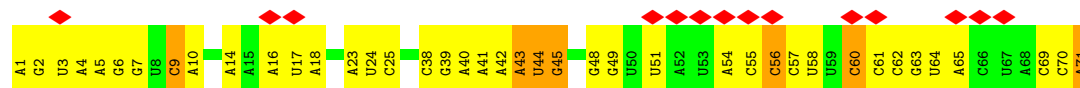
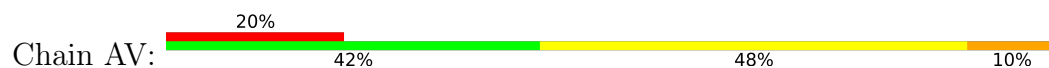




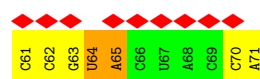
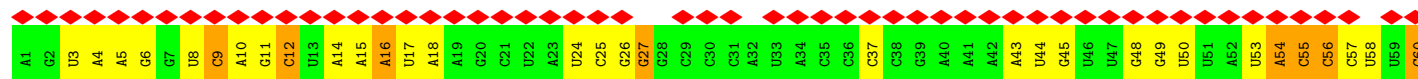
• Molecule 45: bS21m



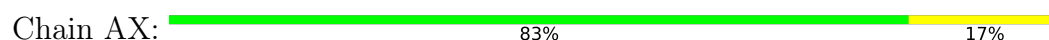
• Molecule 46: tRNAMet



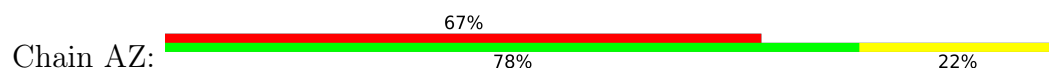
• Molecule 46: tRNAMet



• Molecule 47: mRNA

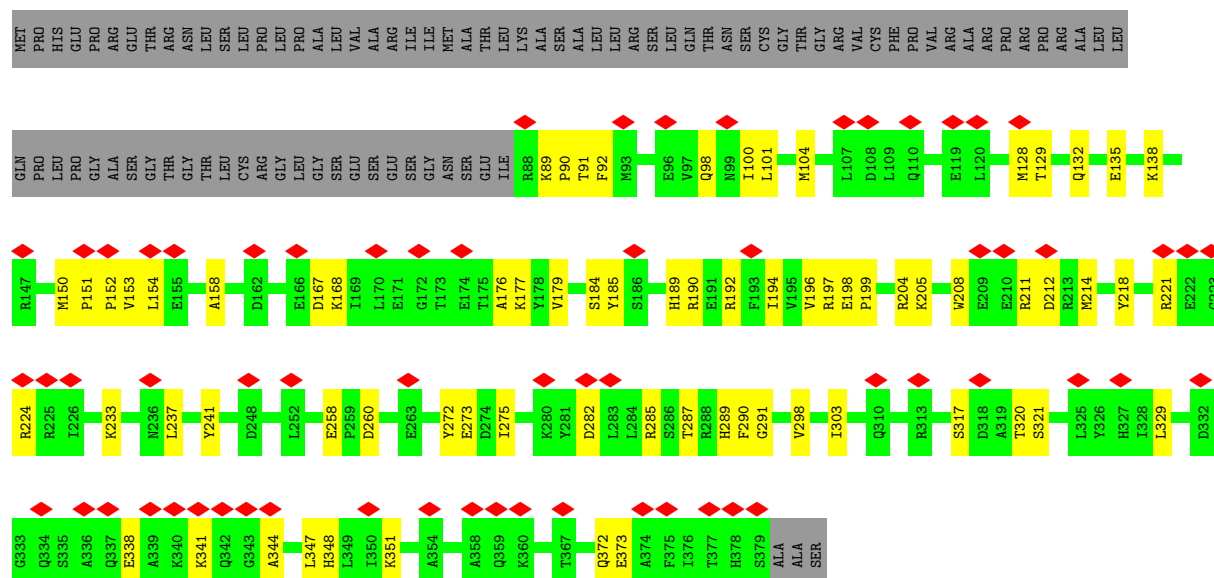


• Molecule 48: unknown peptide

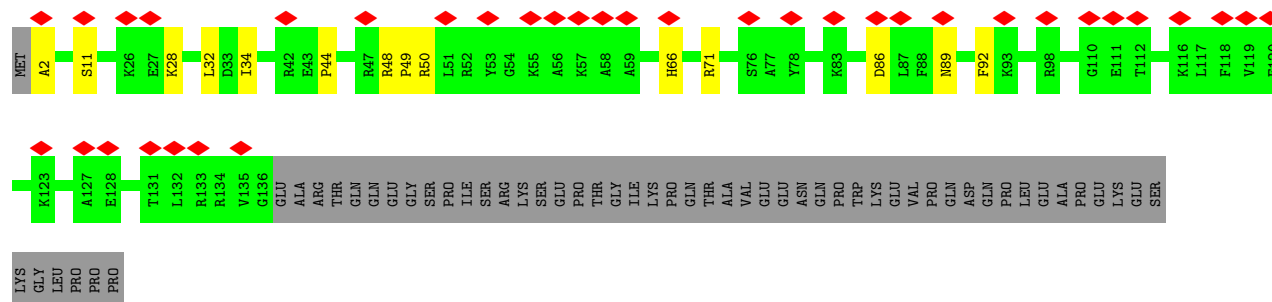


• Molecule 49: Mitochondrial ribosomal protein S22

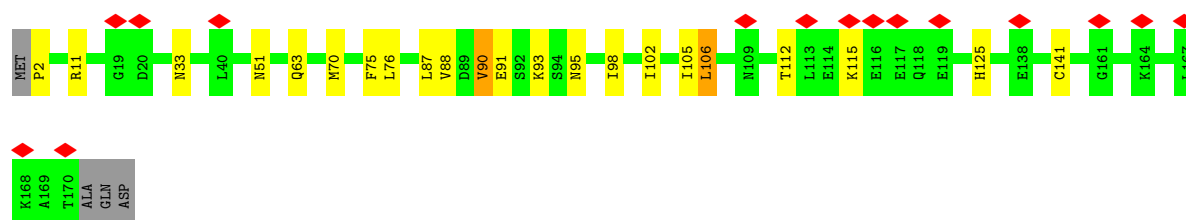
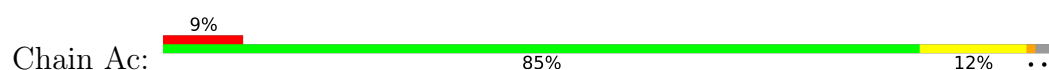




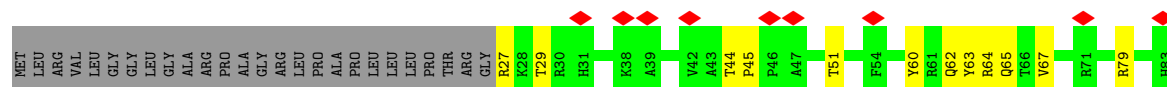
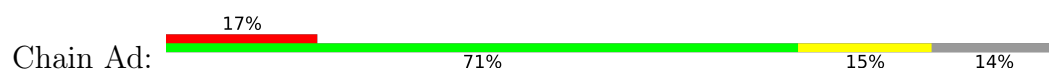
• Molecule 50: mS23

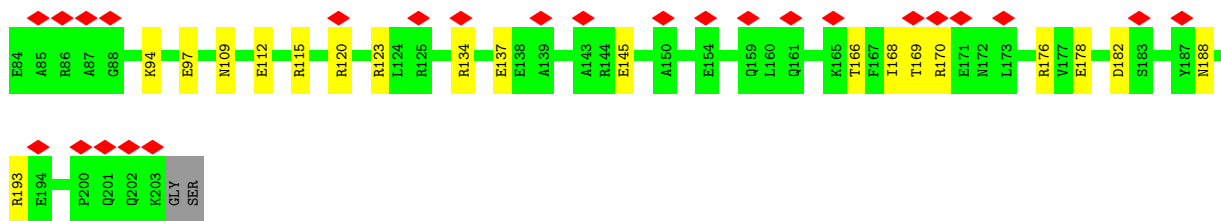


• Molecule 51: Mitochondrial ribosomal protein S25

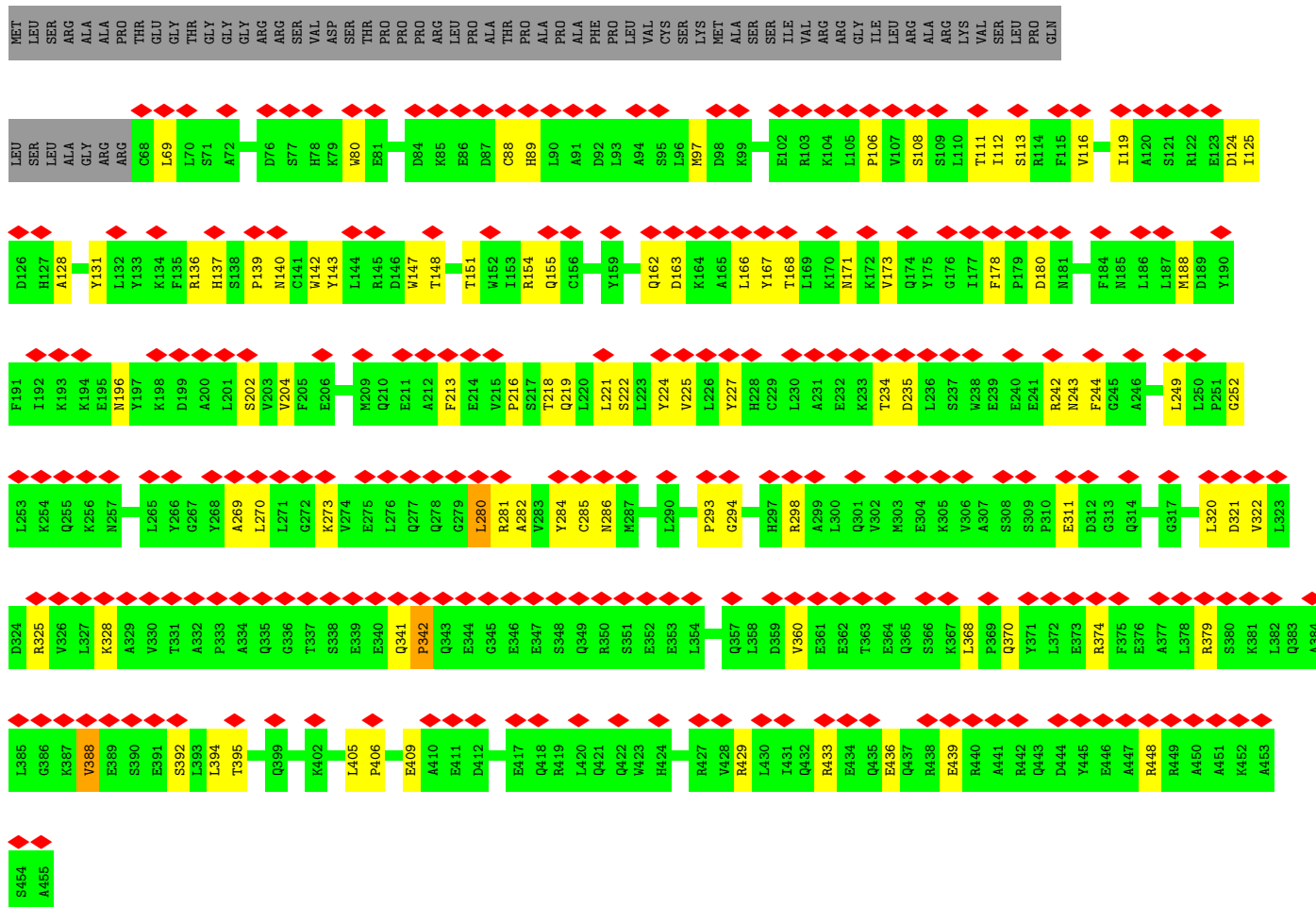


• Molecule 52: Mitochondrial ribosomal protein S26

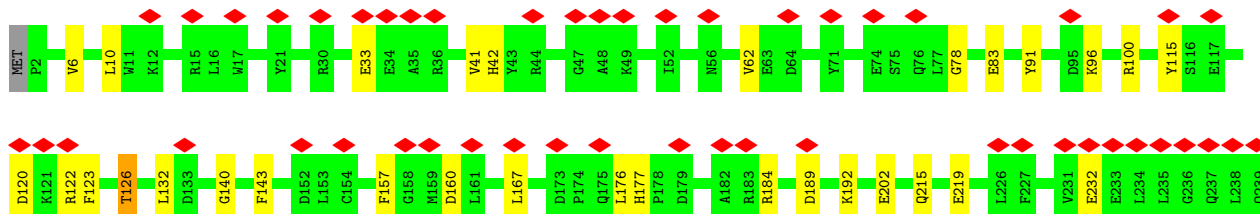
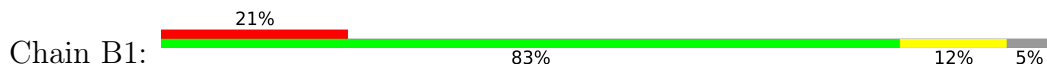


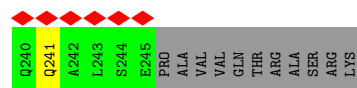


• Molecule 53: Mitochondrial ribosomal protein S27

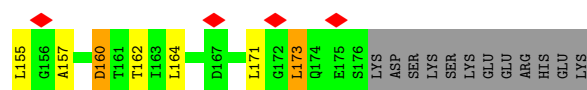
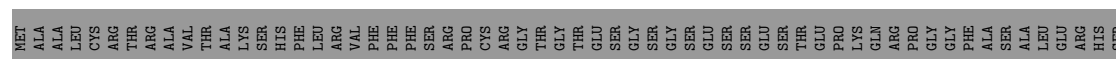


• Molecule 54: Mitochondrial ribosomal protein L28

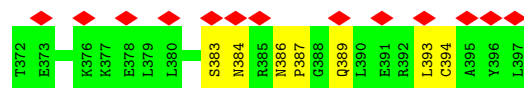
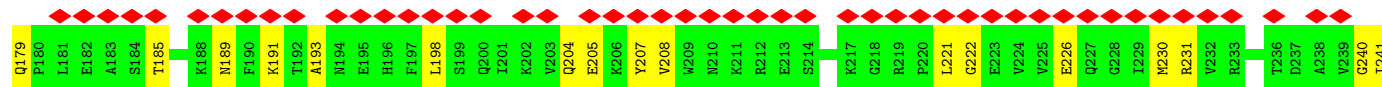
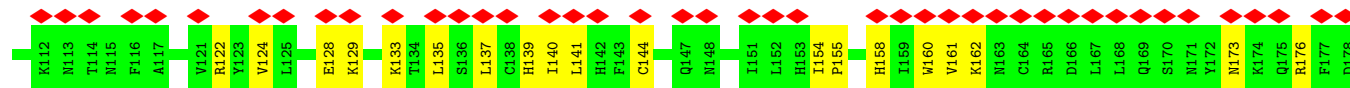
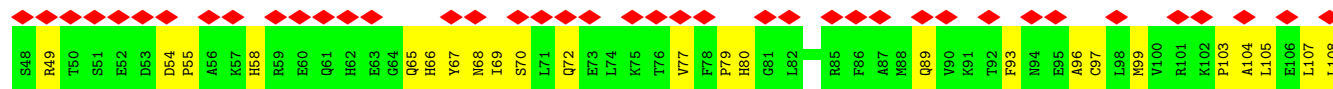
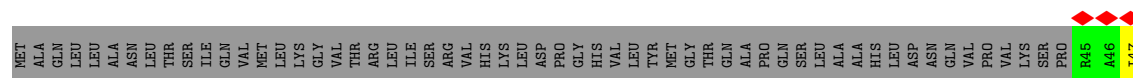




- Molecule 55: Mitoribosomal protein ms28, mrps28

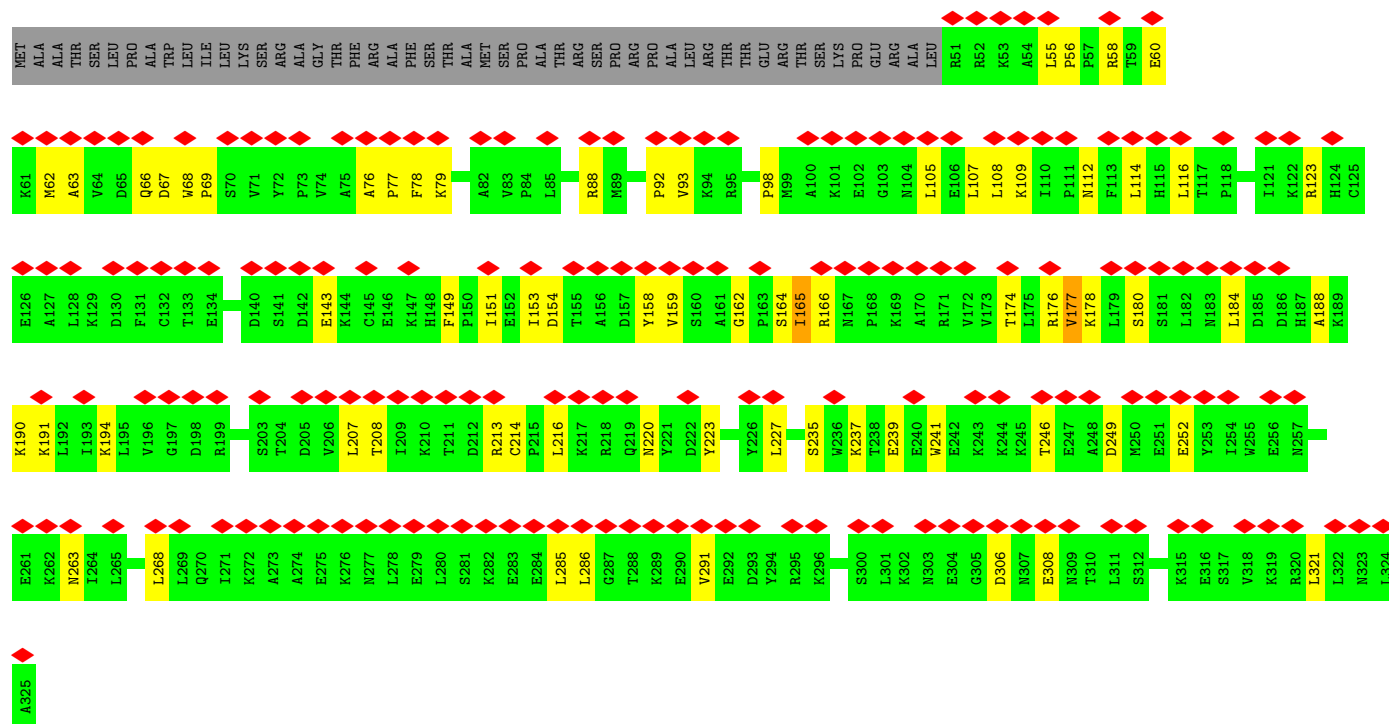


- Molecule 56: Death associated protein 3

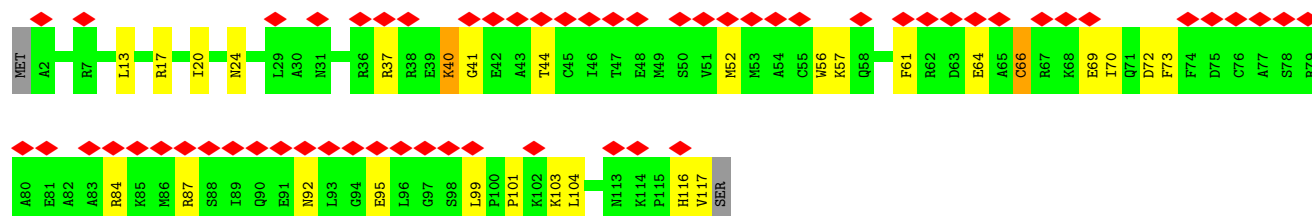
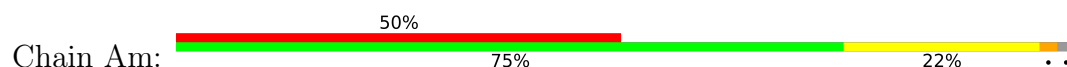


- Molecule 57: Mitochondrial ribosomal protein S31

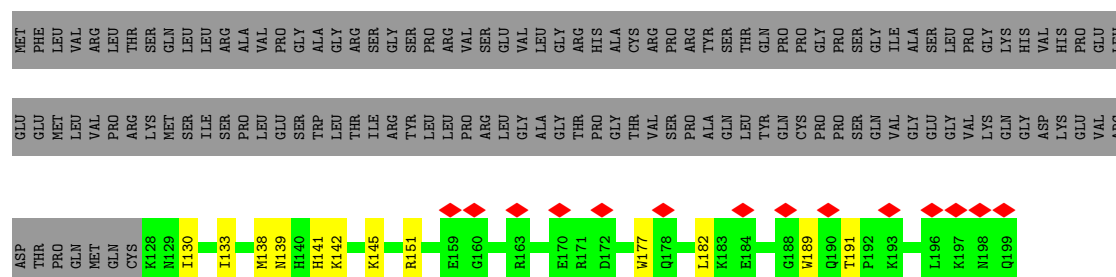




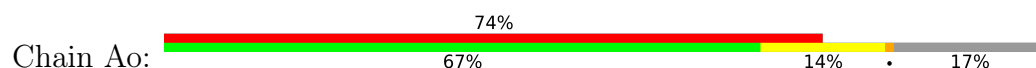
- Molecule 61: mS37

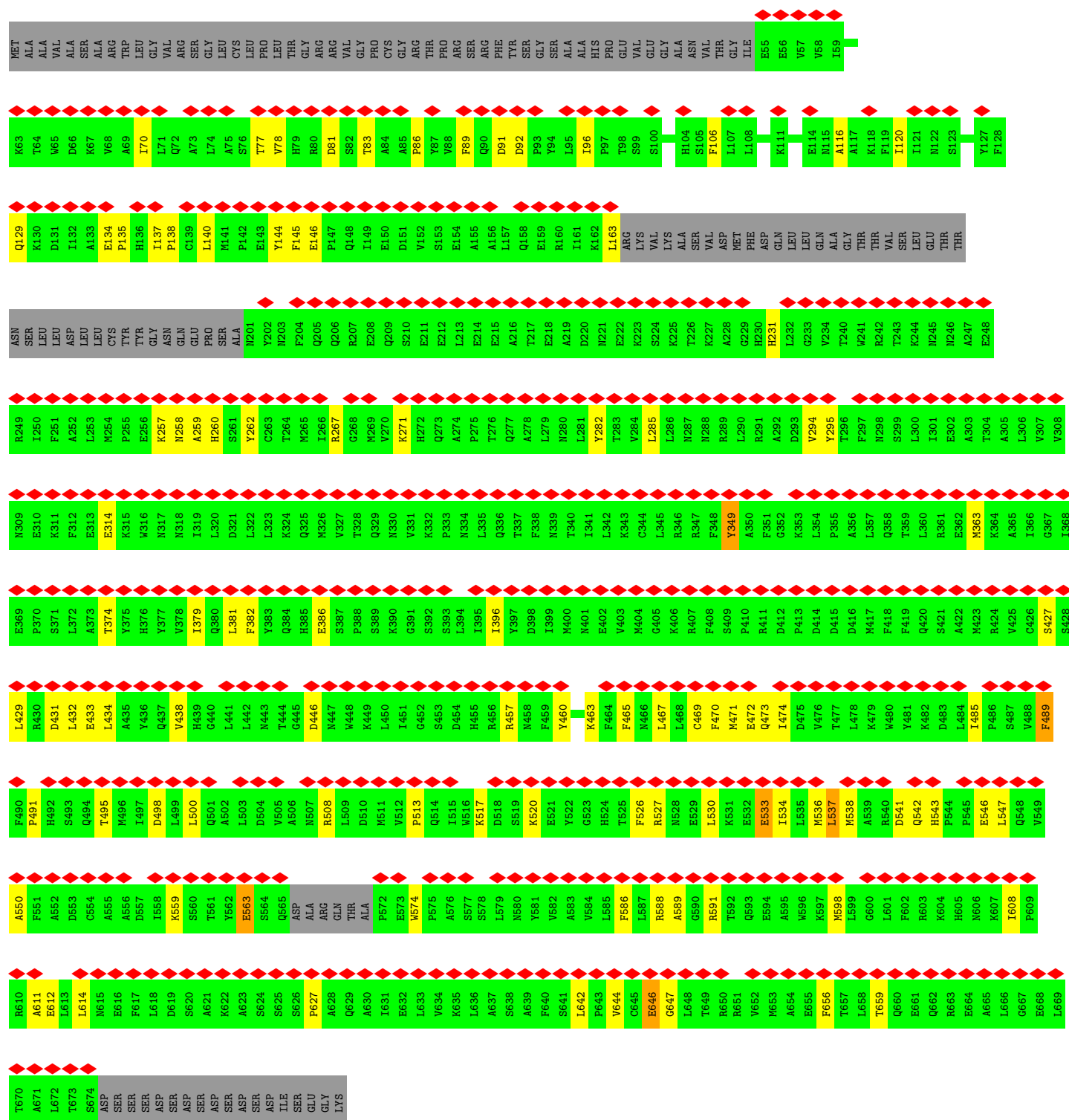


- Molecule 62: Aurora kinase A interacting protein 1

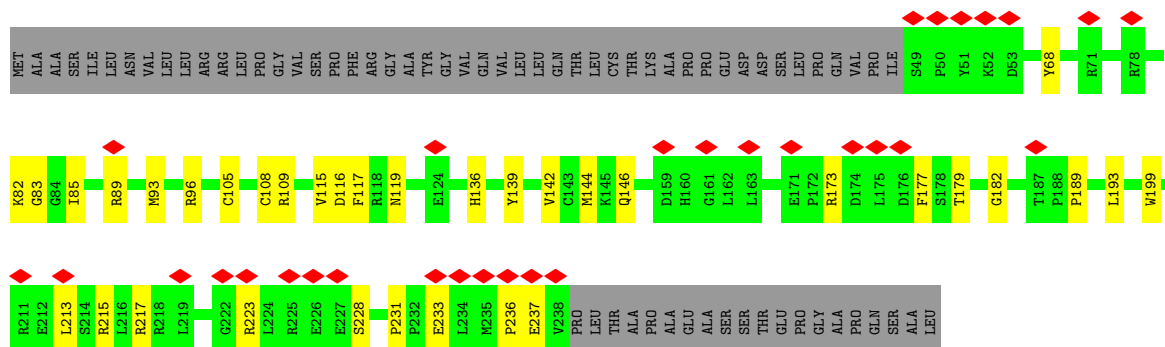


- Molecule 63: mS39

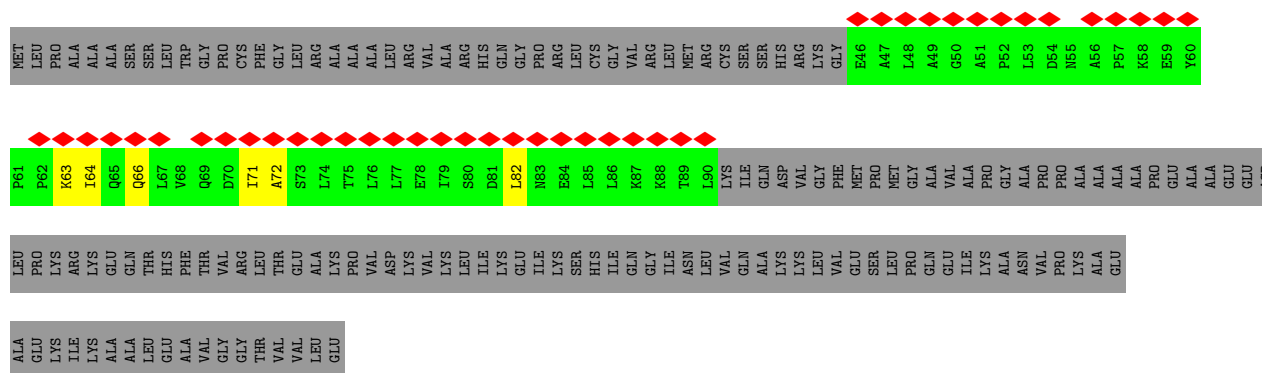




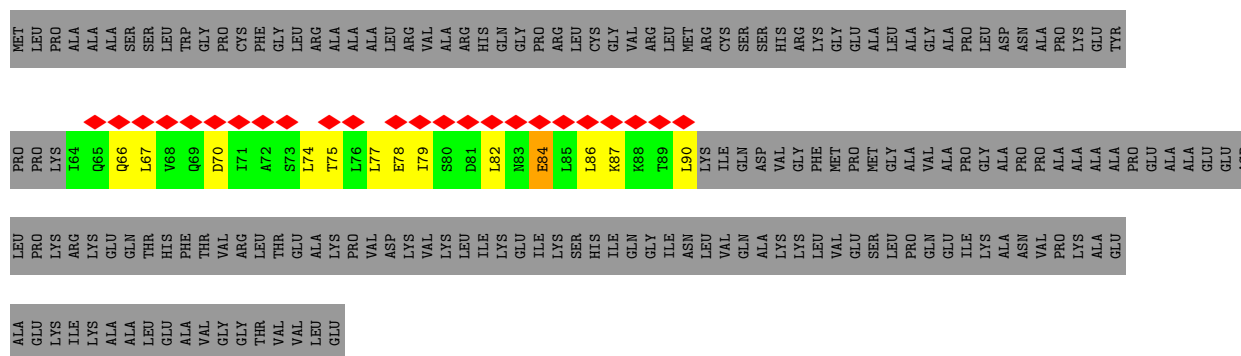
- Molecule 64: 28S ribosomal protein S18b, mitochondrial



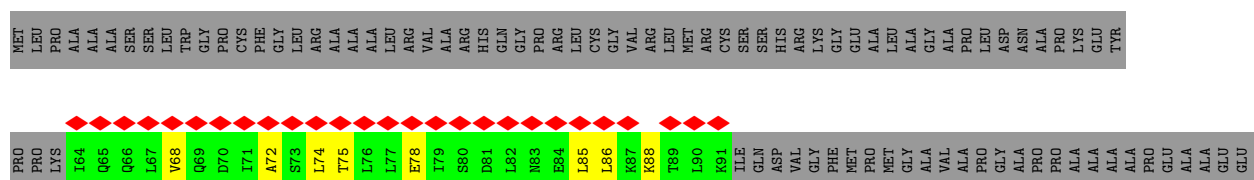
- Molecule 65: Mitochondrial ribosomal protein L12



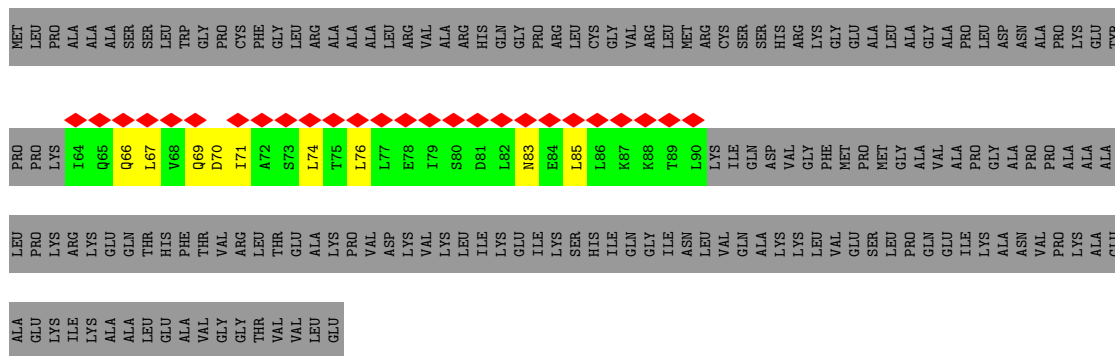
- Molecule 65: Mitochondrial ribosomal protein L12



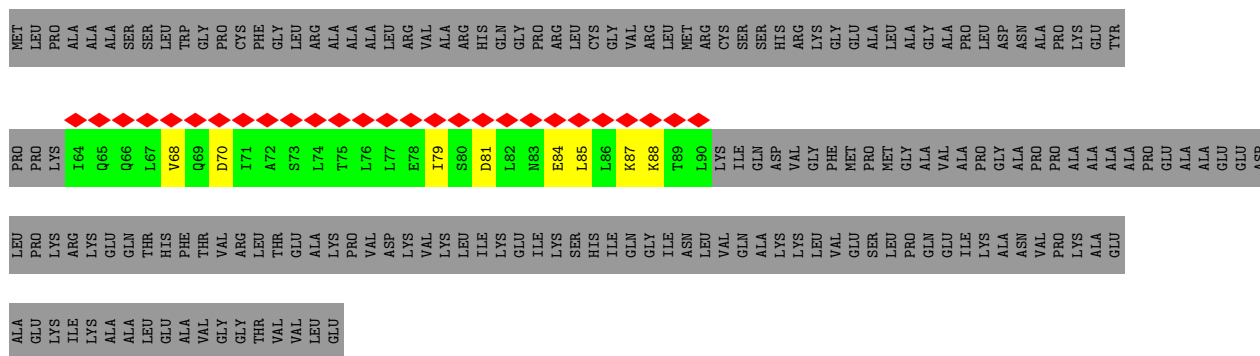
- Molecule 65: Mitochondrial ribosomal protein L12



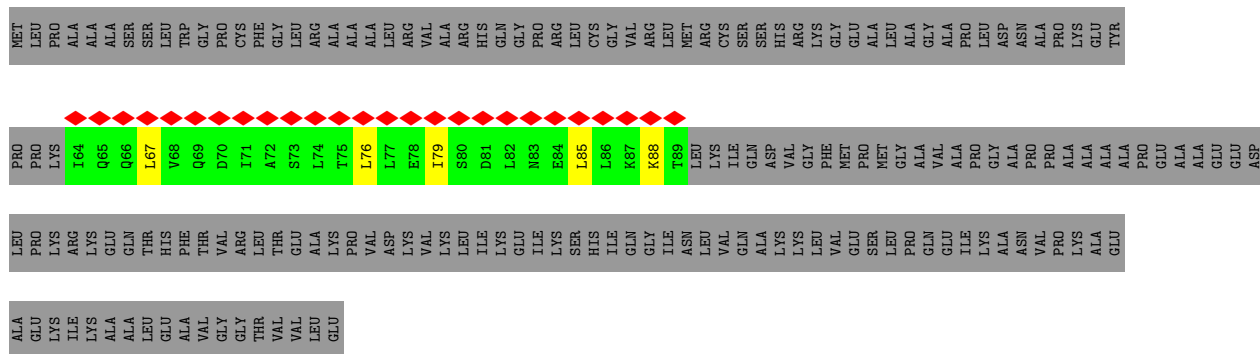
- Molecule 65: Mitochondrial ribosomal protein L12



- Molecule 65: Mitochondrial ribosomal protein L12

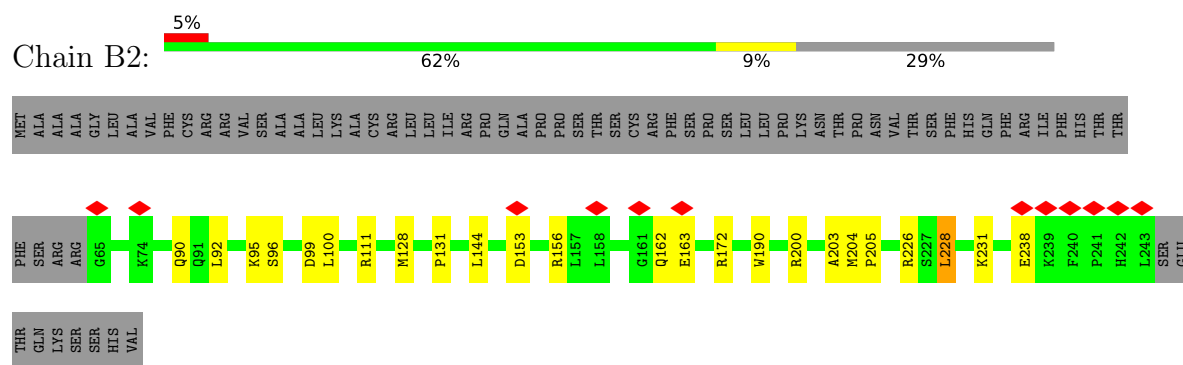


- Molecule 65: Mitochondrial ribosomal protein L12

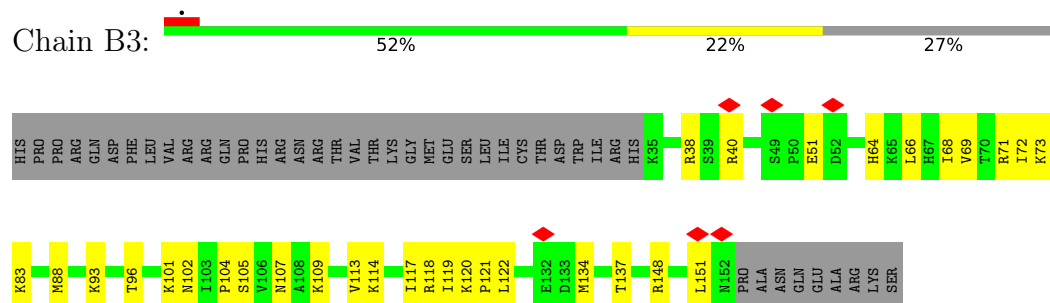


- Molecule 65: Mitochondrial ribosomal protein L12

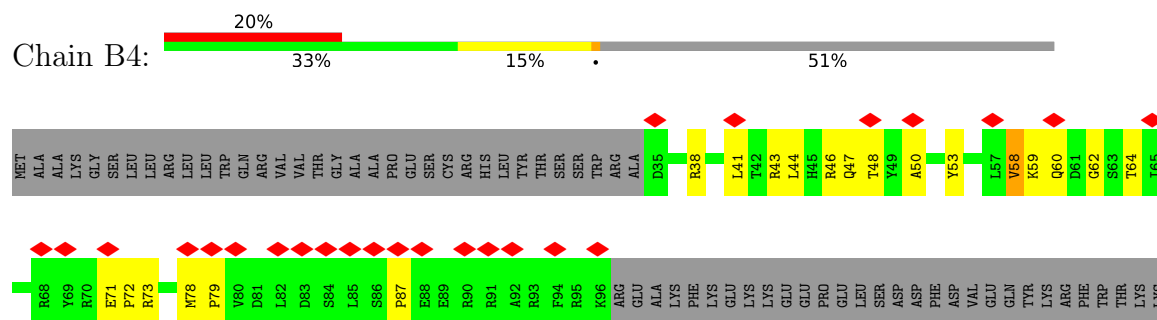
- Molecule 66: Mitochondrial ribosomal protein L47



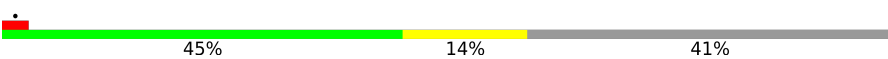
- Molecule 67: Uncharacterized protein

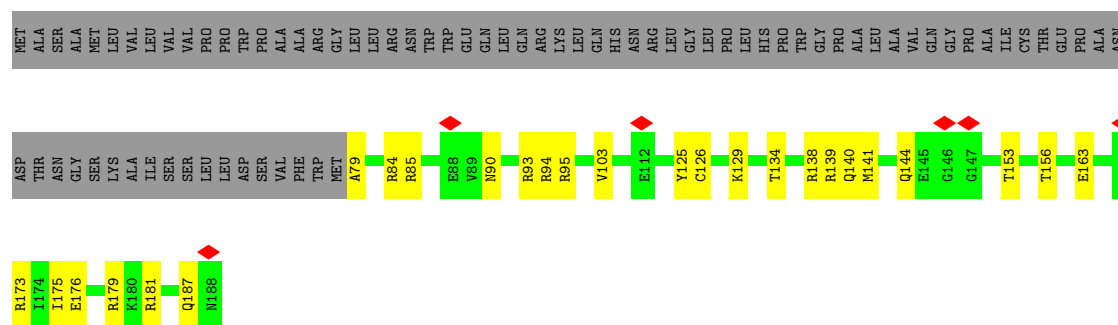


- Molecule 68: Uncharacterized protein



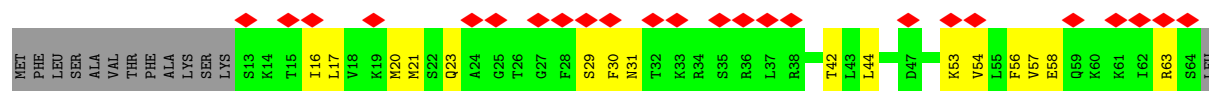
- Molecule 69: Uncharacterized protein

Chain B5: 



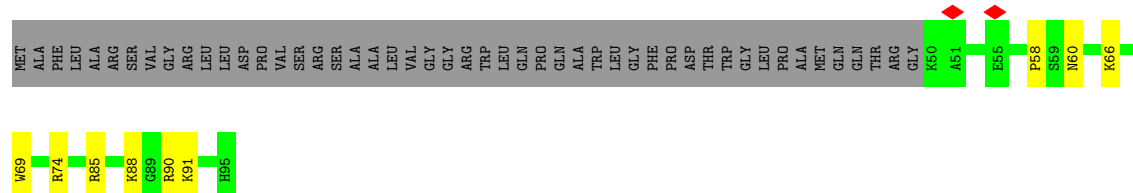
- Molecule 70: Uncharacterized protein

Chain B6: 



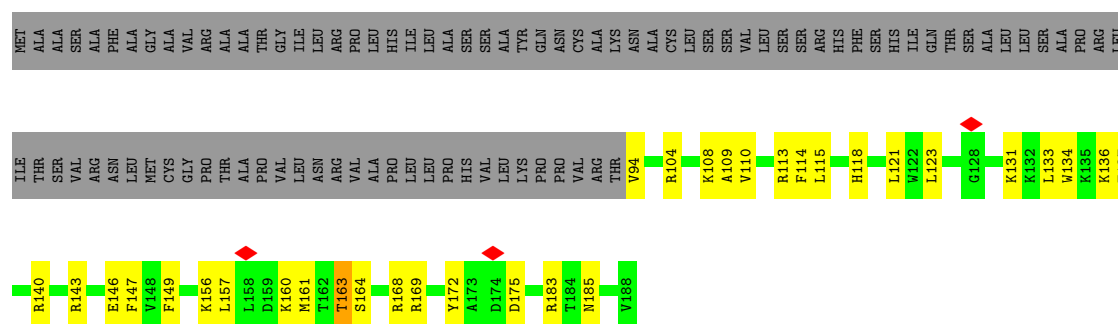
- Molecule 71: Mitochondrial ribosomal protein L34

Chain B7: 



- Molecule 72: Mitochondrial ribosomal protein L35

Chain B8: 



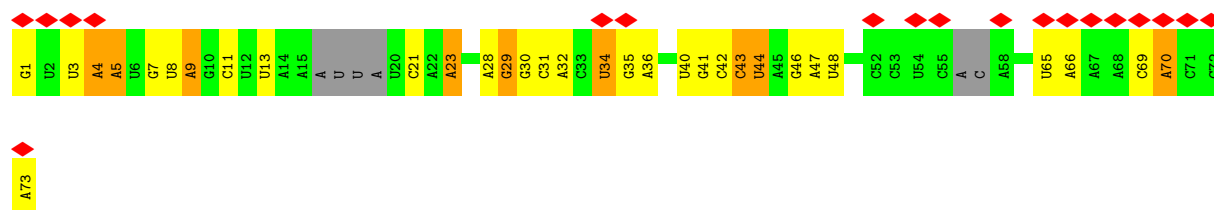
- Molecule 73: Ribosomal protein

Chain B9: 

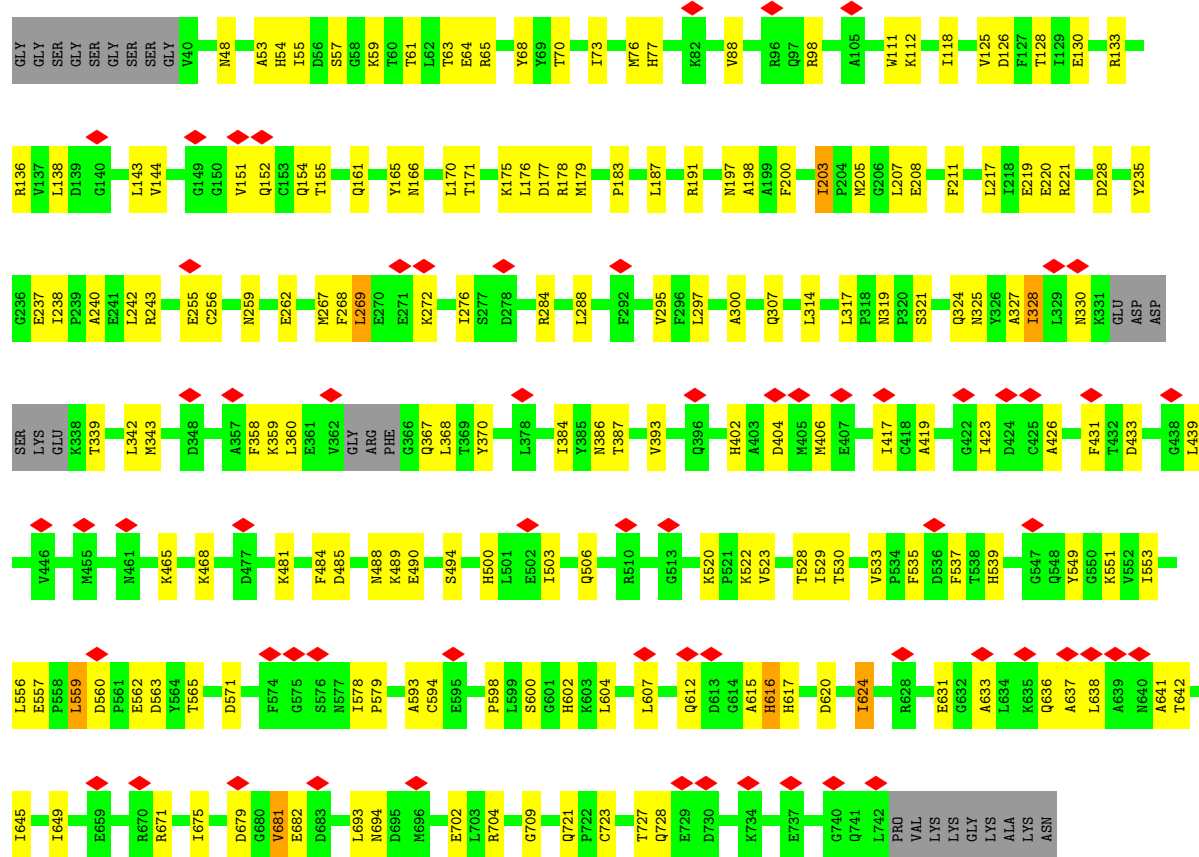
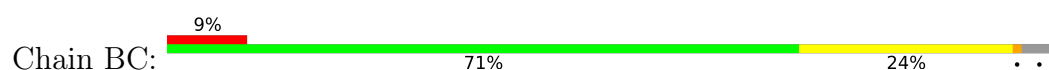




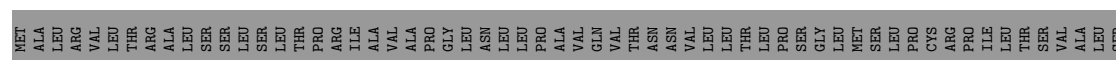
- Molecule 74: CP tRNA-Phe

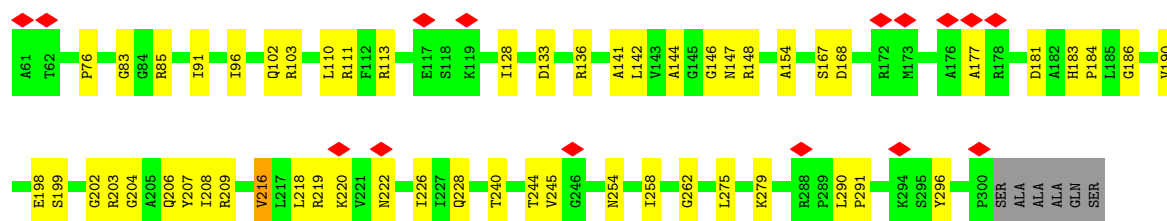


- Molecule 75: Elongation factor G, mitochondrial

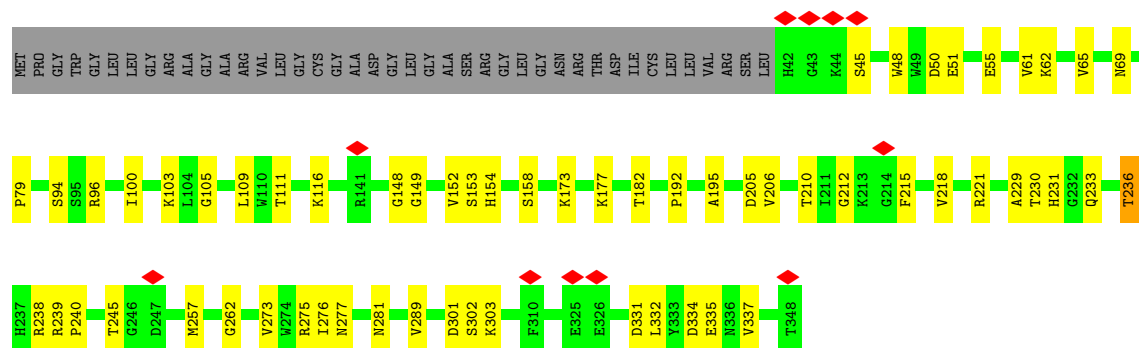


- Molecule 76: Uncharacterized protein

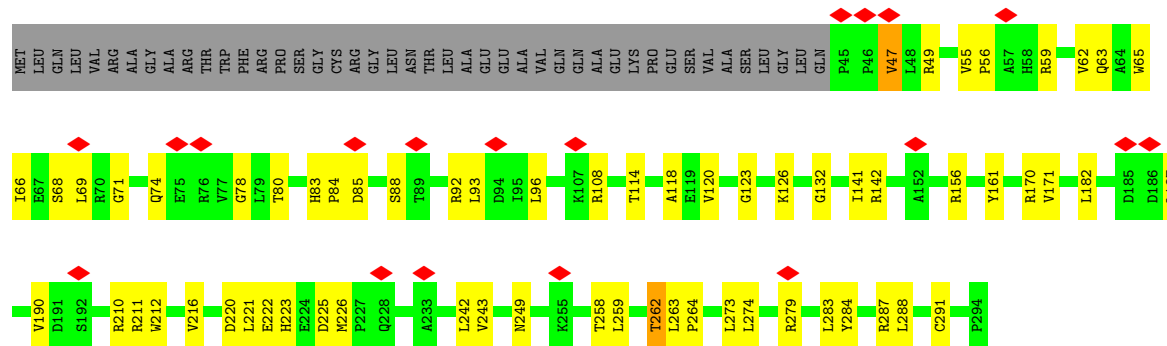




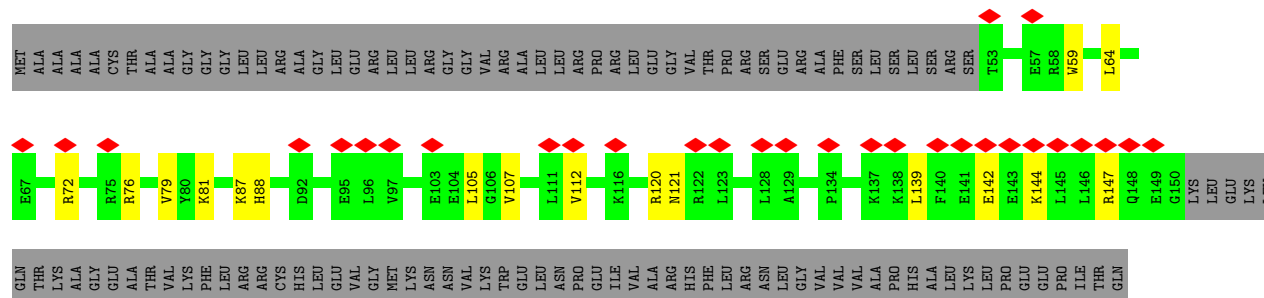
• Molecule 77: ICT1



• Molecule 78: Mitochondrial ribosomal protein L4



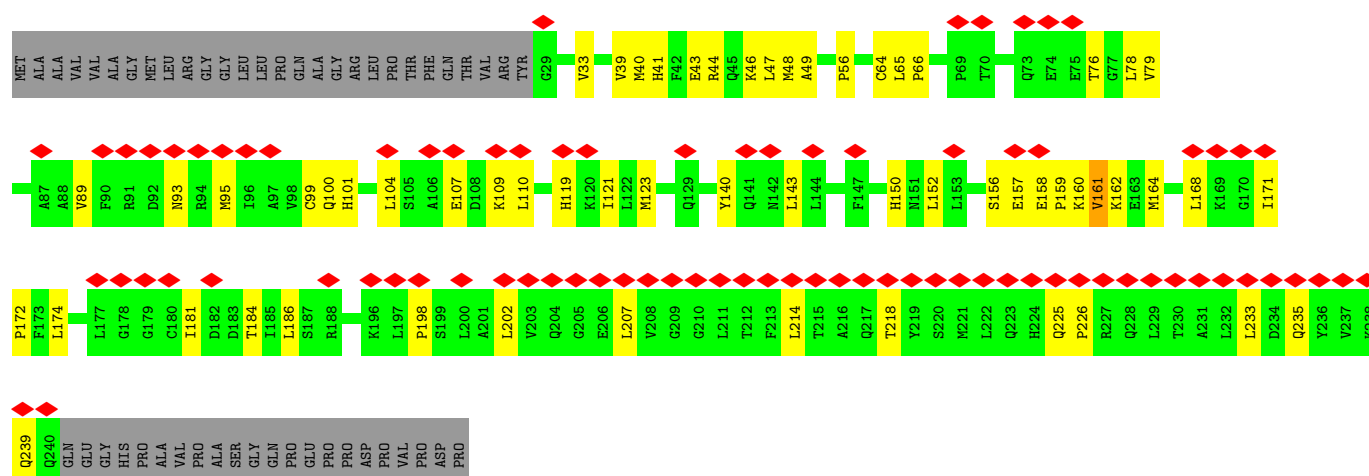
• Molecule 79: Mitochondrial ribosomal protein L9



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

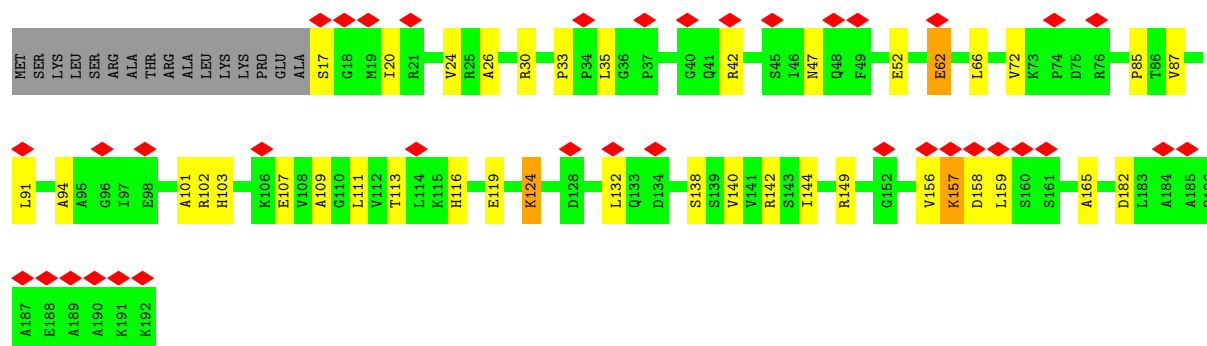
• Molecule 80: Mitochondrial ribosomal protein L10

Chain BJ: 32% 58% 22% 19%



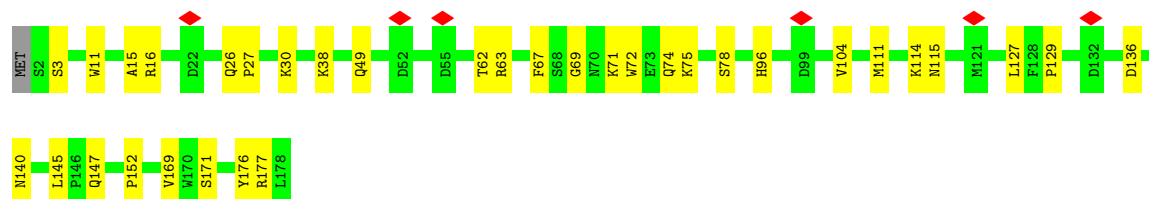
• Molecule 81: Mitochondrial ribosomal protein L11

Chain BK: 19% 71% 19% 8%



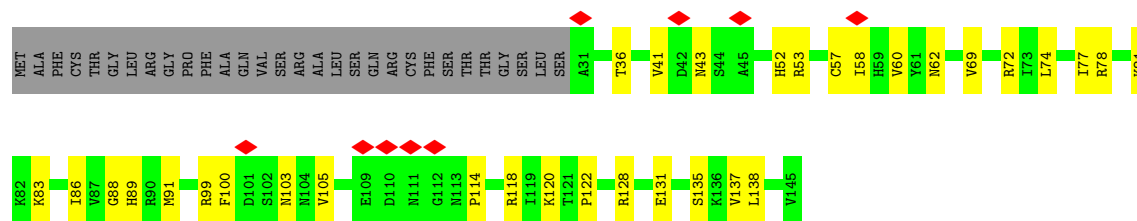
• Molecule 82: Uncharacterized protein

Chain BN: 80% 19%

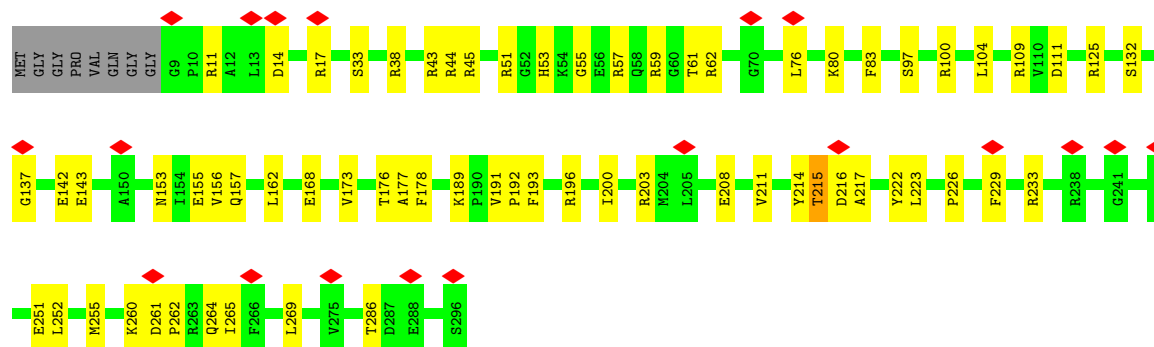
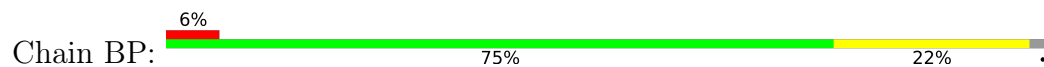


• Molecule 83: Uncharacterized protein

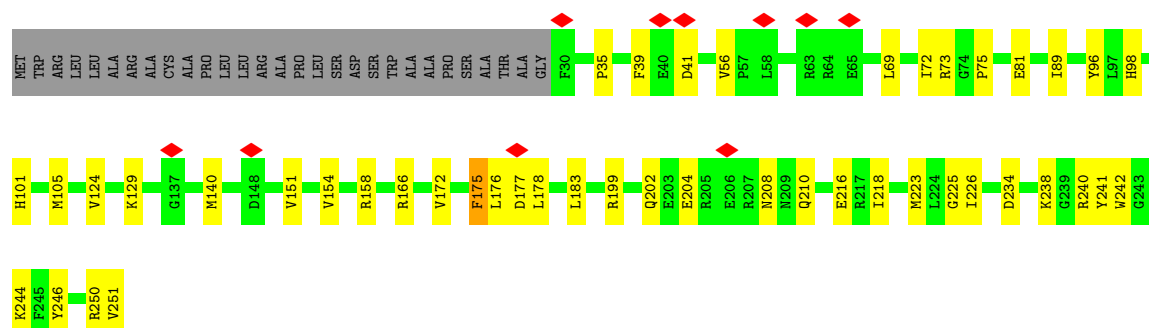
Chain BO: 6% 57% 23% 21%



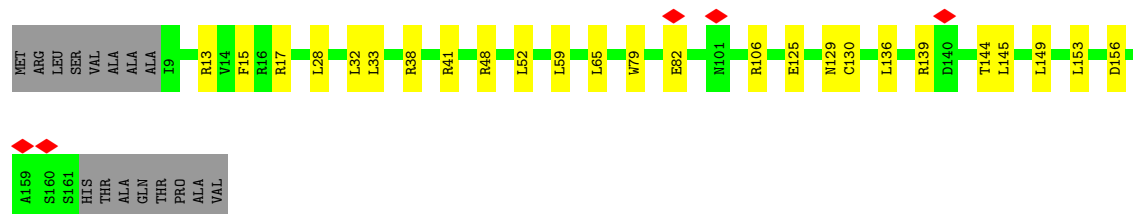
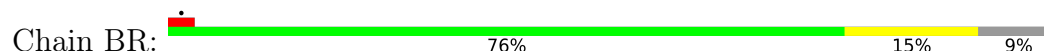
• Molecule 84: Uncharacterized protein



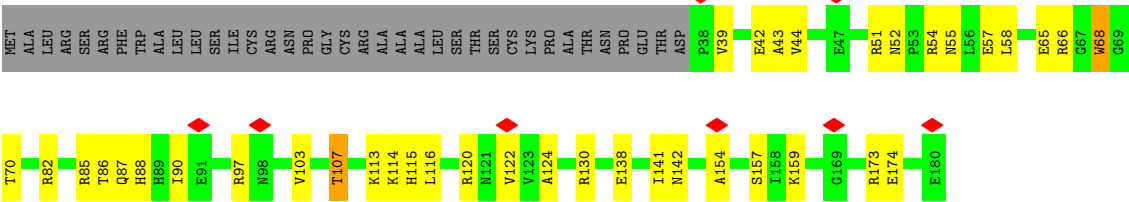
• Molecule 85: Uncharacterized protein



• Molecule 86: Uncharacterized protein



• Molecule 87: Mitochondrial ribosomal protein L18



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	12858	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	40	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	0.289	Depositor
Minimum map value	-0.162	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.012	Depositor
Recommended contour level	0.045	Depositor
Map size (Å)	444.8, 444.8, 444.8	wwPDB
Map dimensions	320, 320, 320	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.39, 1.39, 1.39	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: ZN, GNP, SPM, MG, FME, GTP, 5GP

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	AI	0.10	0/2707	0.29	0/3636
2	BT	0.09	0/1883	0.26	0/2540
3	BU	0.11	0/1179	0.31	0/1578
4	BV	0.11	0/1256	0.30	0/1706
5	BW	0.11	0/1407	0.28	0/1891
6	BX	0.12	0/1211	0.31	0/1646
7	BY	0.10	0/1719	0.28	0/2329
8	Ba	0.10	0/3267	0.28	0/4455
9	Bb	0.10	0/3047	0.29	0/4139
10	Bc	0.09	0/2464	0.27	0/3330
11	Bd	0.11	0/1203	0.29	0/1622
12	Be	0.10	0/1000	0.26	0/1345
13	Bf	0.13	0/851	0.48	2/1159 (0.2%)
14	Bg	0.11	0/1191	0.31	0/1614
15	Bh	0.10	0/2372	0.28	0/3211
16	Bi	0.09	0/2199	0.27	0/2980
17	Bj	0.09	0/1811	0.27	0/2436
18	Bk	0.10	0/1270	0.27	0/1714
19	Bl	0.10	0/1135	0.28	0/1549
20	Bm	0.09	0/917	0.25	0/1248
21	Bn	0.10	0/860	0.30	0/1150
22	Bo	0.09	0/787	0.25	0/1056
23	Bp	0.10	0/752	0.33	0/1013
24	Bq	0.12	0/717	0.39	1/971 (0.1%)
25	Bt	0.11	0/798	0.33	0/1073
26	Bu	0.10	0/1214	0.36	1/1630 (0.1%)
27	Bv	0.10	0/1157	0.28	0/1560
28	B0	0.10	0/880	0.25	0/1189
29	Bw	0.10	0/3206	0.28	0/4354
30	Bx	0.11	0/1364	0.30	0/1849
31	AA	0.08	0/22852	0.20	0/35580
31	BA	0.10	0/36784	0.25	0/57270

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
32	AB	0.12	0/1804	0.33	0/2445
33	AC	0.11	0/1105	0.33	0/1496
34	AE	0.10	0/2785	0.29	0/3735
35	AF	0.11	0/999	0.31	0/1347
36	AG	0.09	0/1763	0.26	0/2368
37	AJ	0.10	0/1181	0.29	0/1597
38	AK	0.09	0/1027	0.28	0/1389
39	AL	0.10	0/858	0.28	0/1152
40	AN	0.10	0/874	0.30	0/1171
41	AO	0.10	0/1473	0.29	0/1970
42	AP	0.11	0/954	0.32	0/1284
43	AQ	0.10	0/894	0.26	0/1213
44	AR	0.10	0/802	0.33	0/1079
45	AU	0.11	0/745	0.31	0/993
46	AV	0.10	0/1673	0.25	0/2602
46	AY	0.10	0/1673	0.27	0/2602
47	AX	0.08	0/142	0.15	0/219
48	AZ	0.06	0/89	0.20	0/123
49	Aa	0.10	0/2428	0.29	0/3279
50	Ab	0.09	0/1126	0.28	0/1514
51	Ac	0.10	0/1399	0.28	0/1881
52	Ad	0.12	0/1490	0.32	0/2005
53	Ae	0.11	0/3171	0.34	1/4292 (0.0%)
54	B1	0.09	0/2093	0.26	0/2835
55	Af	0.08	0/790	0.28	0/1064
56	Ag	0.10	0/2945	0.29	0/3984
57	Ah	0.09	0/1045	0.26	0/1409
58	Ai	0.10	0/841	0.33	0/1121
59	Aj	0.11	0/1835	0.32	0/2484
60	Ak	0.10	0/2268	0.30	0/3069
61	Am	0.11	0/947	0.32	0/1268
62	An	0.10	0/650	0.32	0/858
63	Ao	0.10	0/4625	0.28	0/6267
64	Ap	0.10	0/1616	0.27	0/2195
65	CL	0.09	0/319	0.23	0/435
65	DL	0.08	0/212	0.25	0/286
65	EL	0.07	0/221	0.22	0/297
65	FL	0.08	0/212	0.25	0/286
65	GL	0.08	0/212	0.22	0/286
65	HL	0.09	0/204	0.26	0/275
65	LL	0.11	0/542	0.29	0/729
66	B2	0.09	0/1586	0.26	0/2123
67	B3	0.10	0/993	0.27	0/1341

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
68	B4	0.12	0/481	0.40	1/653 (0.2%)
69	B5	0.10	0/917	0.29	0/1227
70	B6	0.09	0/430	0.27	0/570
71	B7	0.10	0/395	0.29	0/524
72	B8	0.10	0/853	0.29	0/1136
73	B9	0.10	0/342	0.30	0/450
74	BB	0.08	0/1595	0.19	0/2475
75	BC	0.11	0/5522	0.31	0/7451
76	BD	0.10	0/1898	0.31	0/2555
77	BE	0.09	0/2493	0.26	0/3387
78	BF	0.10	0/2069	0.29	0/2816
79	BI	0.10	0/819	0.28	0/1101
80	BJ	0.10	0/1742	0.28	0/2358
81	BK	0.10	0/1359	0.27	0/1828
82	BN	0.10	0/1487	0.26	0/2017
83	BO	0.11	0/912	0.30	0/1231
84	BP	0.10	0/2368	0.30	0/3198
85	BQ	0.10	0/1850	0.28	0/2491
86	BR	0.11	0/1262	0.29	0/1700
87	BS	0.11	0/1197	0.33	0/1624
All	All	0.10	0/190062	0.27	6/269983 (0.0%)

There are no bond length outliers.

The worst 5 of 6 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
13	Bf	80	PRO	N-CA-CB	7.51	111.14	103.25
53	Ae	342	PRO	N-CA-CB	7.46	111.08	103.25
13	Bf	78	PRO	N-CA-CB	7.36	110.98	103.25
26	Bu	167	PRO	N-CA-CB	7.35	110.97	103.25
24	Bq	59	PRO	N-CA-CB	6.71	110.29	103.25

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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	AI	2650	0	2613	41	0
2	BT	1840	0	1855	27	0
3	BU	1159	0	1228	26	0
4	BV	1231	0	1278	26	0
5	BW	1374	0	1405	22	0
6	BX	1181	0	1139	21	0
7	BY	1678	0	1683	31	0
8	Ba	3173	0	3153	81	0
9	Bb	2952	0	2840	63	0
10	Bc	2408	0	2415	43	0
11	Bd	1177	0	1182	36	0
12	Be	972	0	971	23	0
13	Bf	827	0	736	14	0
14	Bg	1167	0	1173	22	0
15	Bh	2319	0	2332	43	0
16	Bi	2138	0	2139	41	0
17	Bj	1775	0	1797	46	0
18	Bk	1246	0	1251	22	0
19	Bl	1097	0	1080	14	0
20	Bm	893	0	878	18	0
21	Bn	837	0	860	15	0
22	Bo	772	0	773	15	0
23	Bp	742	0	749	11	0
24	Bq	697	0	659	11	0
25	Bt	780	0	792	24	0
26	Bu	1198	0	1192	16	0
27	Bv	1131	0	1093	12	0
28	B0	857	0	878	15	0
29	Bw	3126	0	3153	57	0
30	Bx	1325	0	1354	29	0
31	AA	20411	0	10343	393	0
31	BA	32844	0	16617	628	0
32	AB	1762	0	1774	27	0
33	AC	1075	0	1087	37	0
34	AE	2732	0	2774	52	0
35	AF	981	0	1012	24	0
36	AG	1721	0	1747	33	0
37	AJ	1155	0	1193	26	0
38	AK	1007	0	1042	18	0
39	AL	840	0	890	17	0
40	AN	858	0	883	21	0
41	AO	1448	0	1536	24	0
42	AP	932	0	951	26	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
43	AQ	875	0	931	19	0
44	AR	784	0	813	14	0
45	AU	734	0	745	16	0
46	AV	1498	0	765	21	0
46	AY	1498	0	766	18	0
47	AX	128	0	65	1	0
48	AZ	90	0	89	2	0
49	Aa	2378	0	2392	42	0
50	Ab	1101	0	1118	11	0
51	Ac	1367	0	1385	18	0
52	Ad	1467	0	1466	24	0
53	Ae	3109	0	3029	53	0
54	B1	2036	0	2058	21	0
55	Af	778	0	791	18	0
56	Ag	2875	0	2886	69	0
57	Ah	1015	0	969	18	0
58	Ai	824	0	842	25	0
59	Aj	1788	0	1799	39	0
60	Ak	2222	0	2270	52	0
61	Am	930	0	959	21	0
62	An	639	0	709	9	0
63	Ao	4525	0	4433	63	0
64	Ap	1564	0	1531	27	0
65	CL	317	0	309	7	0
65	DL	213	0	234	11	0
65	EL	222	0	247	6	0
65	FL	213	0	234	8	0
65	GL	213	0	234	5	0
65	HL	205	0	223	5	0
65	LL	537	0	591	15	0
66	B2	1548	0	1583	19	0
67	B3	968	0	1018	30	0
68	B4	474	0	454	18	0
69	B5	902	0	916	21	0
70	B6	425	0	471	10	0
71	B7	387	0	413	9	0
72	B8	833	0	883	24	0
73	B9	335	0	359	8	0
74	BB	1427	0	726	19	0
75	BC	5425	0	5412	115	0
76	BD	1860	0	1922	36	0
77	BE	2420	0	2418	46	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
78	BF	2011	0	2049	47	0
79	BI	805	0	845	10	0
80	BJ	1705	0	1804	43	0
81	BK	1339	0	1407	23	0
82	BN	1444	0	1437	34	0
83	BO	896	0	946	26	0
84	BP	2312	0	2373	47	0
85	BQ	1803	0	1841	32	0
86	BR	1240	0	1260	20	0
87	BS	1168	0	1159	35	0
88	AA	102	0	0	0	0
88	AB	1	0	0	0	0
88	AX	1	0	0	0	0
88	Ag	1	0	0	0	0
88	Am	1	0	0	0	0
88	An	1	0	0	0	0
88	B0	1	0	0	0	0
88	BA	200	0	0	0	0
88	BB	1	0	0	0	0
88	BC	2	0	0	0	0
88	BD	3	0	0	0	0
88	BF	1	0	0	0	0
88	BJ	1	0	0	0	0
88	BP	3	0	0	0	0
88	BQ	1	0	0	0	0
88	BW	1	0	0	0	0
88	Be	1	0	0	0	0
88	Bl	1	0	0	0	0
88	Bq	1	0	0	0	0
88	Bt	1	0	0	0	0
89	AR	1	0	0	0	0
89	Ac	1	0	0	0	0
89	Ap	1	0	0	0	0
89	B5	1	0	0	0	0
89	B9	1	0	0	0	0
89	Bx	1	0	0	0	0
90	AA	14	0	0	0	0
90	BA	28	0	0	0	0
91	AV	10	0	10	0	0
92	Ag	32	0	12	0	0
93	BA	24	0	0	0	0
94	BC	32	0	13	3	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
95	Ag	3	0	0	0	0
95	BC	2	0	0	2	0
All	All	180836	0	153114	2847	0

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

The worst 5 of 2847 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)
31:BA:118:U:H3	31:BA:129:A:N6	1.44	1.14
31:AA:405:G:H1	31:AA:452:C:HO2'	1.17	0.89
81:BK:113:THR:HG1	81:BK:116:HIS:HD1	1.24	0.86
31:BA:56:A:H61	31:BA:377:G:H21	1.25	0.85
31:AA:548:G:H1	31:AA:785:U:H3	1.21	0.84

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	
1	AI	326/397 (82%)	318 (98%)	8 (2%)	0	100	100
2	BT	220/292 (75%)	217 (99%)	3 (1%)	0	100	100
3	BU	138/149 (93%)	137 (99%)	1 (1%)	0	100	100
4	BV	153/209 (73%)	149 (97%)	4 (3%)	0	100	100
5	BW	164/210 (78%)	158 (96%)	6 (4%)	0	100	100
6	BX	147/150 (98%)	144 (98%)	3 (2%)	0	100	100
7	BY	204/216 (94%)	199 (98%)	5 (2%)	0	100	100
8	Ba	391/423 (92%)	379 (97%)	12 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
9	Bb	352/380 (93%)	336 (96%)	16 (4%)	0	100	100
10	Bc	293/334 (88%)	279 (95%)	14 (5%)	0	100	100
11	Bd	138/206 (67%)	133 (96%)	5 (4%)	0	100	100
12	Be	120/135 (89%)	115 (96%)	5 (4%)	0	100	100
13	Bf	106/142 (75%)	101 (95%)	3 (3%)	2 (2%)	6	32
14	Bg	146/159 (92%)	135 (92%)	11 (8%)	0	100	100
15	Bh	287/332 (86%)	274 (96%)	13 (4%)	0	100	100
16	Bi	258/306 (84%)	249 (96%)	9 (4%)	0	100	100
17	Bj	211/279 (76%)	204 (97%)	7 (3%)	0	100	100
18	Bk	151/269 (56%)	146 (97%)	5 (3%)	0	100	100
19	Bl	131/166 (79%)	129 (98%)	2 (2%)	0	100	100
20	Bm	107/198 (54%)	104 (97%)	3 (3%)	0	100	100
21	Bn	95/128 (74%)	90 (95%)	5 (5%)	0	100	100
22	Bo	95/124 (77%)	93 (98%)	2 (2%)	0	100	100
23	Bp	95/112 (85%)	91 (96%)	4 (4%)	0	100	100
24	Bq	83/138 (60%)	75 (90%)	8 (10%)	0	100	100
25	Bt	92/102 (90%)	89 (97%)	3 (3%)	0	100	100
26	Bu	147/205 (72%)	140 (95%)	5 (3%)	2 (1%)	9	39
27	Bv	133/222 (60%)	133 (100%)	0	0	100	100
28	B0	108/148 (73%)	106 (98%)	2 (2%)	0	100	100
29	Bw	385/433 (89%)	363 (94%)	22 (6%)	0	100	100
30	Bx	160/196 (82%)	152 (95%)	8 (5%)	0	100	100
32	AB	218/289 (75%)	210 (96%)	8 (4%)	0	100	100
33	AC	130/167 (78%)	124 (95%)	6 (5%)	0	100	100
34	AE	341/430 (79%)	324 (95%)	17 (5%)	0	100	100
35	AF	120/276 (44%)	115 (96%)	5 (4%)	0	100	100
36	AG	206/242 (85%)	206 (100%)	0	0	100	100
37	AJ	138/200 (69%)	130 (94%)	8 (6%)	0	100	100
38	AK	135/196 (69%)	131 (97%)	4 (3%)	0	100	100
39	AL	107/139 (77%)	102 (95%)	5 (5%)	0	100	100
40	AN	99/128 (77%)	98 (99%)	1 (1%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
41	AO	173/239 (72%)	169 (98%)	4 (2%)	0	100	100
42	AP	115/135 (85%)	112 (97%)	3 (3%)	0	100	100
43	AQ	110/130 (85%)	109 (99%)	1 (1%)	0	100	100
44	AR	95/143 (66%)	95 (100%)	0	0	100	100
45	AU	84/87 (97%)	83 (99%)	1 (1%)	0	100	100
48	AZ	16/18 (89%)	16 (100%)	0	0	100	100
49	Aa	290/382 (76%)	286 (99%)	4 (1%)	0	100	100
50	Ab	133/190 (70%)	131 (98%)	2 (2%)	0	100	100
51	Ac	167/173 (96%)	165 (99%)	2 (1%)	0	100	100
52	Ad	175/205 (85%)	174 (99%)	1 (1%)	0	100	100
53	Ae	386/455 (85%)	365 (95%)	19 (5%)	2 (0%)	24	62
54	B1	242/256 (94%)	242 (100%)	0	0	100	100
55	Af	97/188 (52%)	91 (94%)	6 (6%)	0	100	100
56	Ag	351/410 (86%)	337 (96%)	14 (4%)	0	100	100
57	Ah	118/387 (30%)	118 (100%)	0	0	100	100
58	Ai	97/106 (92%)	97 (100%)	0	0	100	100
59	Aj	211/218 (97%)	205 (97%)	6 (3%)	0	100	100
60	Ak	273/325 (84%)	267 (98%)	6 (2%)	0	100	100
61	Am	114/118 (97%)	112 (98%)	2 (2%)	0	100	100
62	An	70/199 (35%)	69 (99%)	1 (1%)	0	100	100
63	Ao	564/692 (82%)	552 (98%)	12 (2%)	0	100	100
64	Ap	188/258 (73%)	181 (96%)	7 (4%)	0	100	100
65	CL	43/198 (22%)	40 (93%)	3 (7%)	0	100	100
65	DL	25/198 (13%)	25 (100%)	0	0	100	100
65	EL	26/198 (13%)	26 (100%)	0	0	100	100
65	FL	25/198 (13%)	24 (96%)	1 (4%)	0	100	100
65	GL	25/198 (13%)	25 (100%)	0	0	100	100
65	HL	24/198 (12%)	24 (100%)	0	0	100	100
65	LL	68/198 (34%)	67 (98%)	1 (2%)	0	100	100
66	B2	177/252 (70%)	176 (99%)	1 (1%)	0	100	100
67	B3	116/161 (72%)	113 (97%)	3 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
68	B4	60/126 (48%)	52 (87%)	8 (13%)	0	100	100
69	B5	108/188 (57%)	107 (99%)	1 (1%)	0	100	100
70	B6	50/65 (77%)	50 (100%)	0	0	100	100
71	B7	44/95 (46%)	44 (100%)	0	0	100	100
72	B8	93/188 (50%)	91 (98%)	2 (2%)	0	100	100
73	B9	36/100 (36%)	36 (100%)	0	0	100	100
75	BC	688/721 (95%)	641 (93%)	47 (7%)	0	100	100
76	BD	238/306 (78%)	229 (96%)	9 (4%)	0	100	100
77	BE	305/348 (88%)	287 (94%)	18 (6%)	0	100	100
78	BF	248/294 (84%)	243 (98%)	5 (2%)	0	100	100
79	BI	96/268 (36%)	95 (99%)	1 (1%)	0	100	100
80	BJ	210/262 (80%)	197 (94%)	13 (6%)	0	100	100
81	BK	174/192 (91%)	166 (95%)	8 (5%)	0	100	100
82	BN	175/178 (98%)	169 (97%)	6 (3%)	0	100	100
83	BO	113/145 (78%)	109 (96%)	4 (4%)	0	100	100
84	BP	286/296 (97%)	274 (96%)	12 (4%)	0	100	100
85	BQ	220/251 (88%)	216 (98%)	4 (2%)	0	100	100
86	BR	151/169 (89%)	144 (95%)	7 (5%)	0	100	100
87	BS	141/180 (78%)	130 (92%)	11 (8%)	0	100	100
All	All	14964/20312 (74%)	14454 (97%)	504 (3%)	6 (0%)	100	100

5 of 6 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
13	Bf	80	PRO
26	Bu	167	PRO
13	Bf	78	PRO
53	Ae	342	PRO
53	Ae	341	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	
1	AI	273/333 (82%)	272 (100%)	1 (0%)	84	82
2	BT	204/258 (79%)	200 (98%)	4 (2%)	48	65
3	BU	118/127 (93%)	118 (100%)	0	100	100
4	BV	136/178 (76%)	131 (96%)	5 (4%)	30	51
5	BW	144/180 (80%)	144 (100%)	0	100	100
6	BX	116/134 (87%)	116 (100%)	0	100	100
7	BY	185/192 (96%)	181 (98%)	4 (2%)	45	64
8	Ba	348/365 (95%)	337 (97%)	11 (3%)	34	56
9	Bb	310/328 (94%)	306 (99%)	4 (1%)	61	71
10	Bc	271/299 (91%)	268 (99%)	3 (1%)	65	73
11	Bd	129/181 (71%)	126 (98%)	3 (2%)	44	64
12	Be	100/108 (93%)	99 (99%)	1 (1%)	68	75
13	Bf	80/133 (60%)	80 (100%)	0	100	100
14	Bg	128/136 (94%)	123 (96%)	5 (4%)	28	50
15	Bh	251/284 (88%)	246 (98%)	5 (2%)	48	65
16	Bi	236/275 (86%)	230 (98%)	6 (2%)	42	62
17	Bj	190/242 (78%)	186 (98%)	4 (2%)	47	65
18	Bk	135/226 (60%)	132 (98%)	3 (2%)	45	64
19	Bl	122/147 (83%)	119 (98%)	3 (2%)	42	62
20	Bm	103/178 (58%)	103 (100%)	0	100	100
21	Bn	88/113 (78%)	85 (97%)	3 (3%)	32	55
22	Bo	77/97 (79%)	77 (100%)	0	100	100
23	Bp	79/88 (90%)	76 (96%)	3 (4%)	29	51
24	Bq	70/114 (61%)	65 (93%)	5 (7%)	13	36
25	Bt	75/82 (92%)	75 (100%)	0	100	100
26	Bu	126/177 (71%)	126 (100%)	0	100	100
27	Bv	115/183 (63%)	112 (97%)	3 (3%)	40	61
28	B0	90/115 (78%)	87 (97%)	3 (3%)	33	55
29	Bw	340/373 (91%)	337 (99%)	3 (1%)	70	75
30	Bx	149/173 (86%)	146 (98%)	3 (2%)	48	65

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
32	AB	187/233 (80%)	185 (99%)	2 (1%)	65	73
33	AC	115/142 (81%)	114 (99%)	1 (1%)	70	75
34	AE	282/351 (80%)	277 (98%)	5 (2%)	51	66
35	AF	107/210 (51%)	104 (97%)	3 (3%)	38	59
36	AG	181/205 (88%)	178 (98%)	3 (2%)	53	67
37	AJ	130/180 (72%)	126 (97%)	4 (3%)	35	56
38	AK	103/151 (68%)	102 (99%)	1 (1%)	68	75
39	AL	92/116 (79%)	91 (99%)	1 (1%)	65	73
40	AN	92/114 (81%)	92 (100%)	0	100	100
41	AO	159/205 (78%)	158 (99%)	1 (1%)	78	80
42	AP	97/113 (86%)	97 (100%)	0	100	100
43	AQ	97/114 (85%)	96 (99%)	1 (1%)	68	75
44	AR	89/127 (70%)	87 (98%)	2 (2%)	45	64
45	AU	77/78 (99%)	77 (100%)	0	100	100
49	Aa	258/330 (78%)	250 (97%)	8 (3%)	35	56
50	Ab	113/162 (70%)	113 (100%)	0	100	100
51	Ac	152/155 (98%)	150 (99%)	2 (1%)	61	71
52	Ad	149/168 (89%)	145 (97%)	4 (3%)	39	60
53	Ae	325/393 (83%)	319 (98%)	6 (2%)	51	66
54	B1	219/229 (96%)	212 (97%)	7 (3%)	34	56
55	Af	86/160 (54%)	83 (96%)	3 (4%)	32	53
56	Ag	312/361 (86%)	305 (98%)	7 (2%)	45	64
57	Ah	109/346 (32%)	109 (100%)	0	100	100
58	Ai	86/93 (92%)	85 (99%)	1 (1%)	63	73
59	Aj	188/190 (99%)	185 (98%)	3 (2%)	55	69
60	Ak	249/289 (86%)	242 (97%)	7 (3%)	38	59
61	Am	100/102 (98%)	97 (97%)	3 (3%)	36	57
62	An	66/174 (38%)	66 (100%)	0	100	100
63	Ao	478/604 (79%)	463 (97%)	15 (3%)	35	56
64	Ap	170/225 (76%)	167 (98%)	3 (2%)	51	66
65	CL	30/157 (19%)	30 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
65	DL	26/157 (17%)	23 (88%)	3 (12%)	5	20
65	EL	27/157 (17%)	27 (100%)	0	100	100
65	FL	26/157 (17%)	26 (100%)	0	100	100
65	GL	26/157 (17%)	25 (96%)	1 (4%)	29	51
65	HL	25/157 (16%)	25 (100%)	0	100	100
65	LL	59/157 (38%)	59 (100%)	0	100	100
66	B2	164/228 (72%)	161 (98%)	3 (2%)	51	66
67	B3	110/150 (73%)	110 (100%)	0	100	100
68	B4	45/114 (40%)	43 (96%)	2 (4%)	25	48
69	B5	99/163 (61%)	97 (98%)	2 (2%)	48	65
70	B6	49/60 (82%)	48 (98%)	1 (2%)	48	65
71	B7	41/78 (53%)	41 (100%)	0	100	100
72	B8	87/162 (54%)	85 (98%)	2 (2%)	44	64
73	B9	36/77 (47%)	35 (97%)	1 (3%)	38	59
75	BC	589/608 (97%)	568 (96%)	21 (4%)	31	52
76	BD	193/248 (78%)	189 (98%)	4 (2%)	47	65
77	BE	263/290 (91%)	259 (98%)	4 (2%)	57	70
78	BF	217/251 (86%)	214 (99%)	3 (1%)	59	70
79	BI	88/228 (39%)	86 (98%)	2 (2%)	44	64
80	BJ	192/230 (84%)	189 (98%)	3 (2%)	55	69
81	BK	138/151 (91%)	130 (94%)	8 (6%)	18	41
82	BN	156/157 (99%)	156 (100%)	0	100	100
83	BO	99/123 (80%)	99 (100%)	0	100	100
84	BP	245/249 (98%)	241 (98%)	4 (2%)	55	69
85	BQ	190/210 (90%)	187 (98%)	3 (2%)	55	69
86	BR	132/143 (92%)	130 (98%)	2 (2%)	57	70
87	BS	123/153 (80%)	120 (98%)	3 (2%)	43	63
All	All	13131/17311 (76%)	12881 (98%)	250 (2%)	49	66

5 of 250 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
49	Aa	329	LEU

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Mol	Chain	Res	Type
77	BE	273	VAL
56	Ag	306	VAL
77	BE	236	THR
81	BK	124	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 298 such sidechains are listed below:

Mol	Chain	Res	Type
70	B6	23	GLN
83	BO	142	GLN
75	BC	349	ASN
77	BE	313	ASN
29	Bw	402	ASN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
31	AA	959/16770 (5%)	182 (18%)	2 (0%)
31	BA	1542/16770 (9%)	410 (26%)	1 (0%)
46	AV	70/71 (98%)	20 (28%)	0
46	AY	70/71 (98%)	24 (34%)	1 (1%)
47	AX	5/6 (83%)	0	0
74	BB	64/73 (87%)	18 (28%)	0
All	All	2710/33761 (8%)	654 (24%)	4 (0%)

5 of 654 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
31	AA	5	A
31	AA	10	U
31	AA	27	U
31	AA	34	U
31	AA	42	A

All (4) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
31	AA	530	G
31	AA	825	C
46	AY	44	U

Continued on next page...

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Mol	Chain	Res	Type
31	BA	48	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 oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 338 ligands modelled in this entry, 331 are monoatomic - leaving 7 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	$\# Z > 2$
91	FME	AV	101	46	8,9,10	0.96	0	7,9,11	0.89	0
93	5GP	BA	15901	88	26,26,26	1.00	2 (7%)	40,40,40	1.67	7 (17%)
90	SPM	BA	15903	-	13,13,13	0.34	0	12,12,12	0.78	0
92	GTP	Ag	500	88	30,34,34	0.83	1 (3%)	46,54,54	1.83	11 (23%)
94	GNP	BC	802	88	33,34,34	1.29	5 (15%)	46,54,54	0.76	2 (4%)
90	SPM	BA	15902	-	13,13,13	0.34	0	12,12,12	0.76	0
90	SPM	AA	16801	-	13,13,13	0.33	0	12,12,12	0.80	0

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
91	FME	AV	101	46	-	3/7/9/11	-
93	5GP	BA	15901	88	-	0/10/26/26	0/3/3/3

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Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
90	SPM	BA	15903	-	-	1/11/11/11	-
92	GTP	Ag	500	88	-	1/22/38/38	0/3/3/3
94	GNP	BC	802	88	-	9/18/38/38	0/3/3/3
90	SPM	BA	15902	-	-	1/11/11/11	-
90	SPM	AA	16801	-	-	2/11/11/11	-

The worst 5 of 8 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
94	BC	802	GNP	PB-O3A	4.53	1.64	1.59
94	BC	802	GNP	PB-O1B	3.05	1.51	1.46
94	BC	802	GNP	PG-N3B	2.98	1.71	1.63
93	BA	15901	5GP	C6-N1	-2.58	1.34	1.38
94	BC	802	GNP	PG-O1G	2.53	1.50	1.46

The worst 5 of 20 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
93	BA	15901	5GP	C5-C4-N3	-5.60	119.37	128.46
92	Ag	500	GTP	C5-C4-N3	-5.39	119.72	128.46
92	Ag	500	GTP	C2-N3-C4	4.70	120.67	112.30
93	BA	15901	5GP	C2-N3-C4	4.31	119.98	112.30
92	Ag	500	GTP	PA-O3A-PB	-3.91	119.41	132.83

There are no chirality outliers.

5 of 17 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
91	AV	101	FME	N-CA-CB-CG
94	BC	802	GNP	PB-N3B-PG-O1G
94	BC	802	GNP	PG-N3B-PB-O1B
94	BC	802	GNP	PA-O3A-PB-O1B
94	BC	802	GNP	PA-O3A-PB-O2B

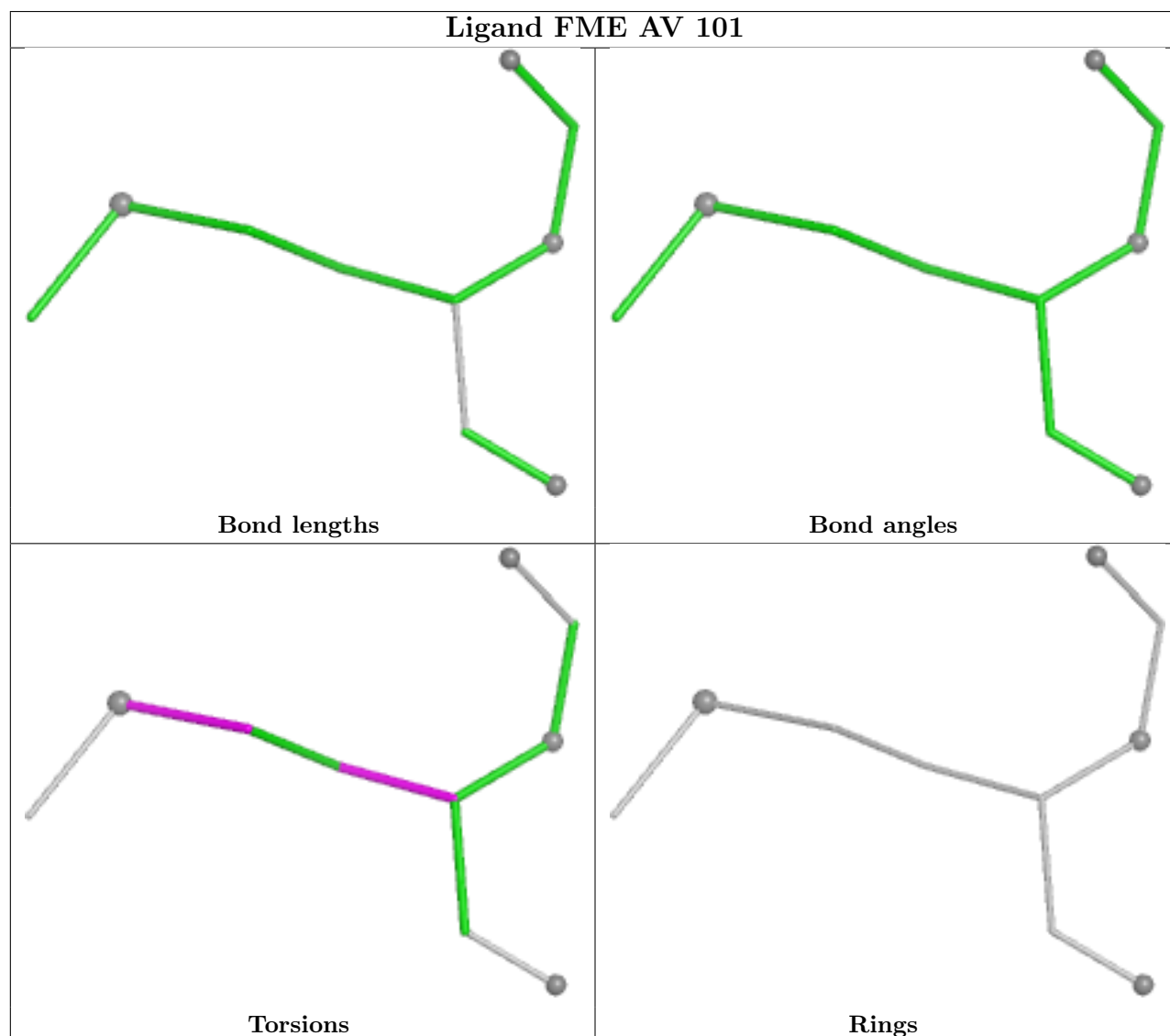
There are no ring outliers.

1 monomer is involved in 3 short contacts:

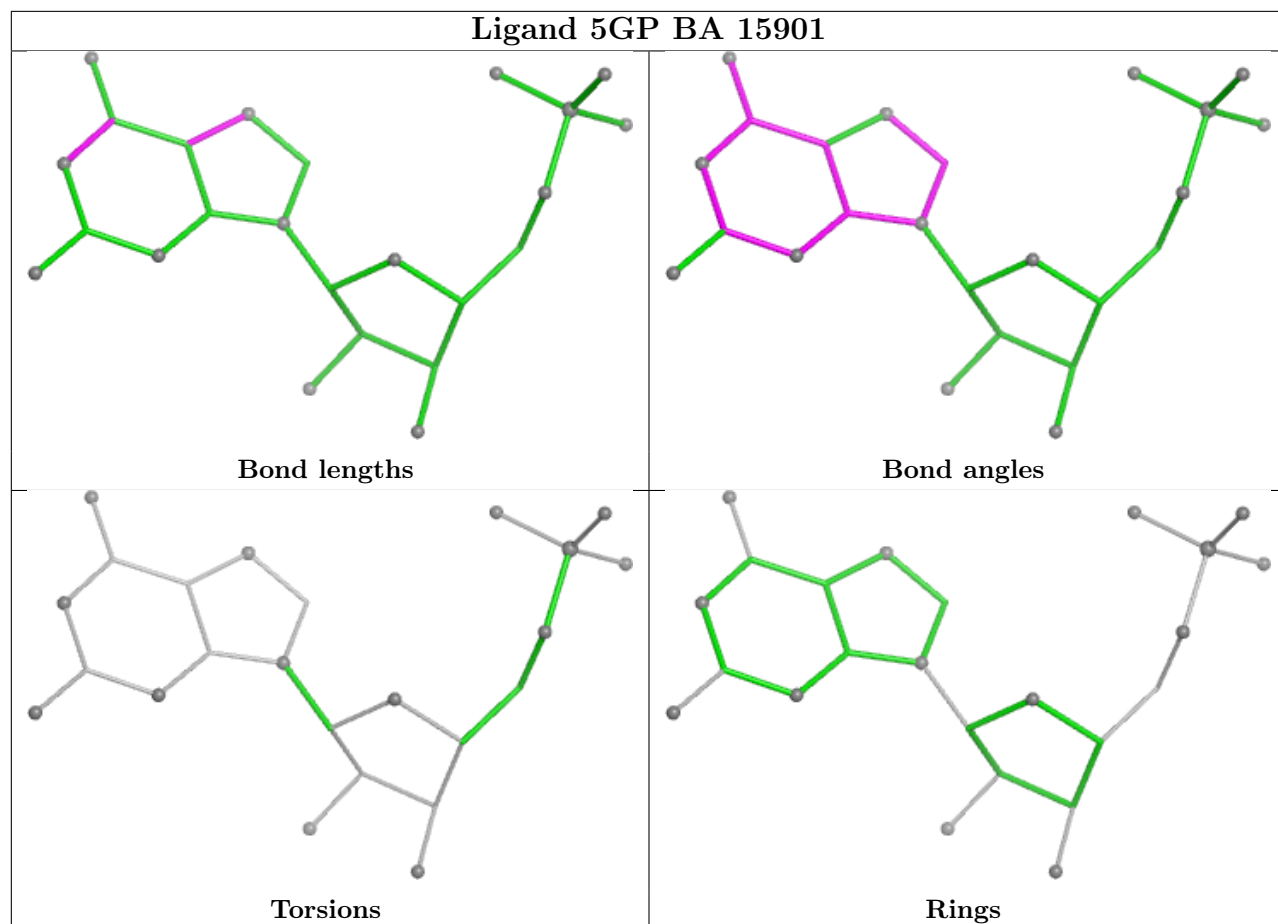
Mol	Chain	Res	Type	Clashes	Symm-Clashes
94	BC	802	GNP	3	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths,

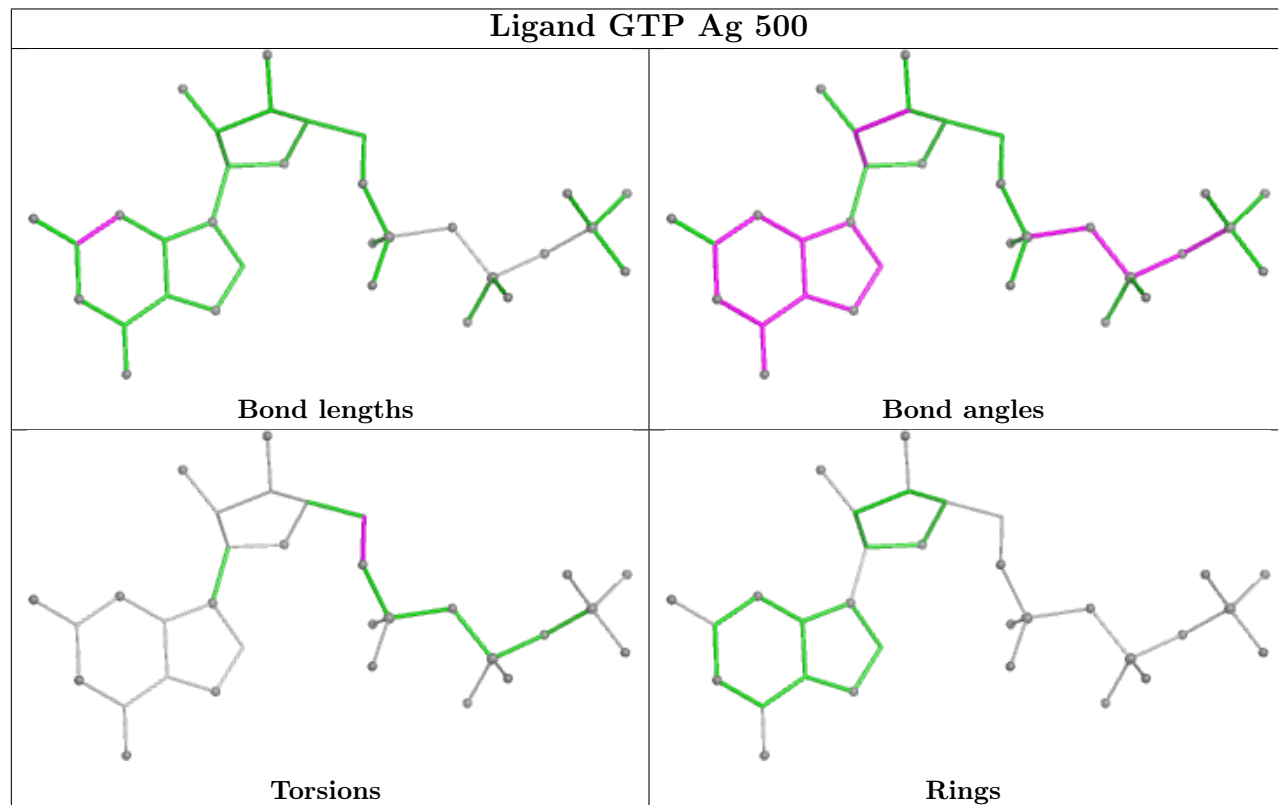
bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 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.

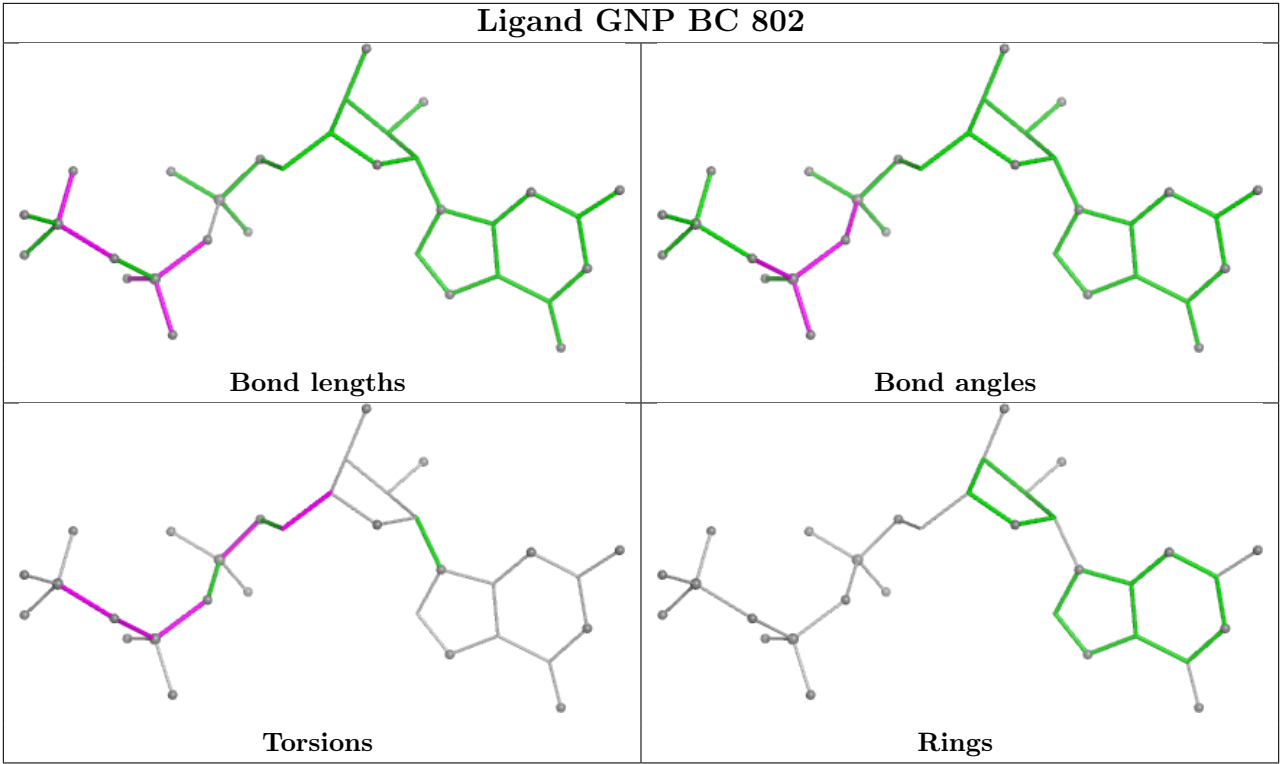


Ligand 5GP BA 15901



Ligand GTP Ag 500





5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

The following chains have linkage breaks:

Mol	Chain	Number of breaks
63	Ao	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	Ao	234:VAL	C	240:THR	N	8.13

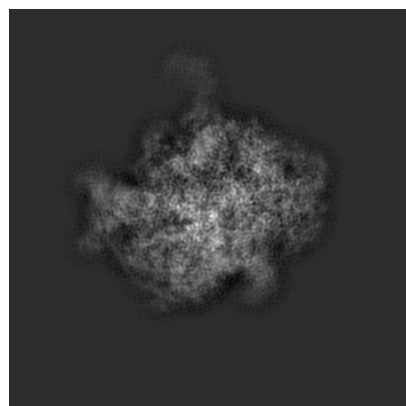
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-10779. These allow visual inspection of the internal detail of the map and identification of artifacts.

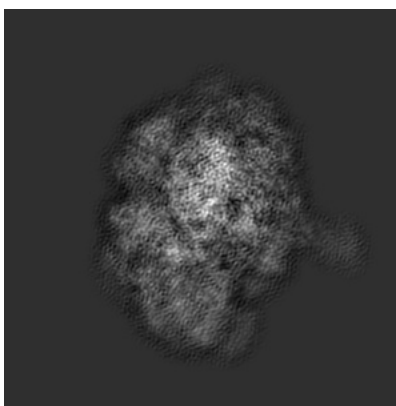
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

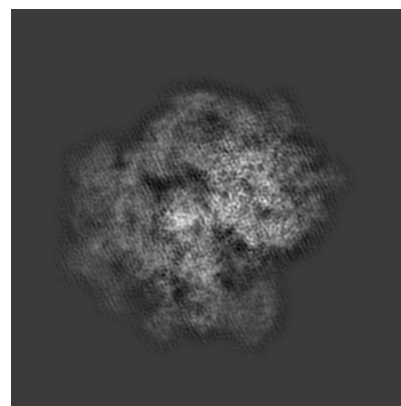
6.1.1 Primary map



X

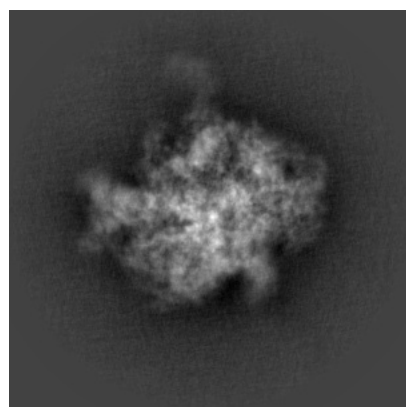


Y

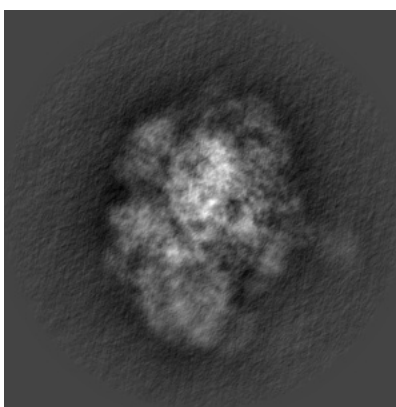


Z

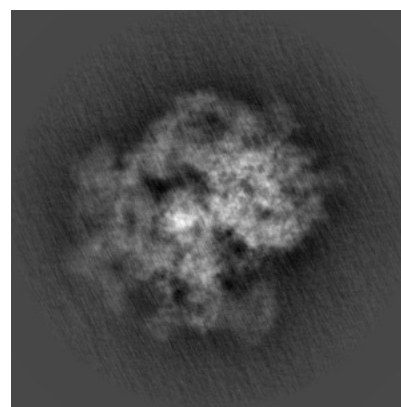
6.1.2 Raw map



X



Y

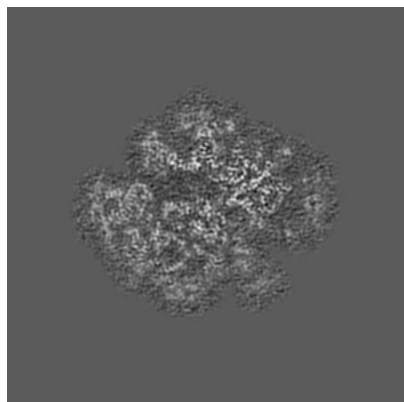


Z

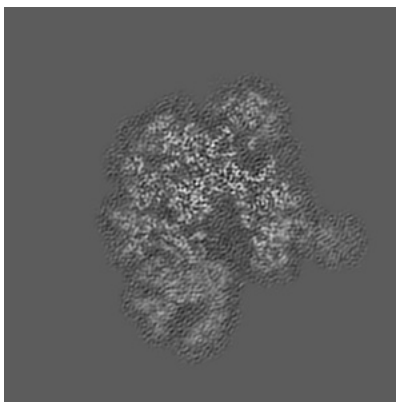
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

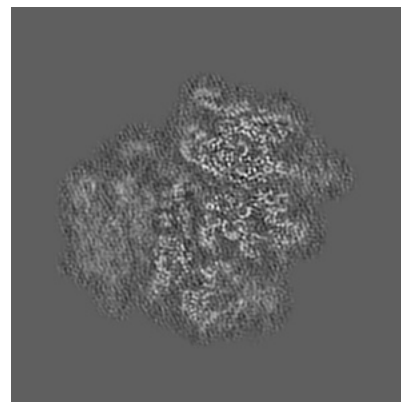
6.2.1 Primary map



X Index: 160

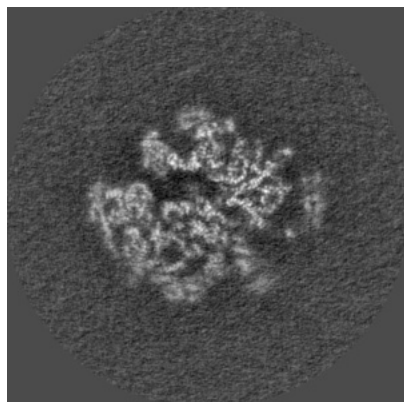


Y Index: 160

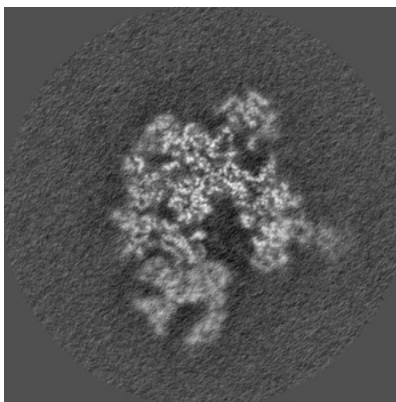


Z Index: 160

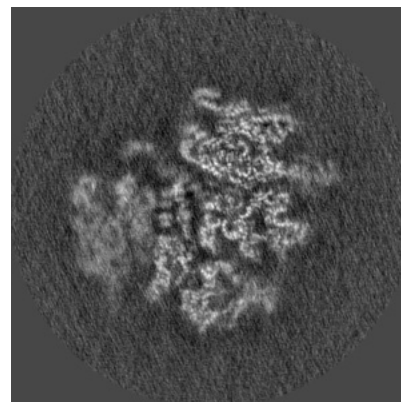
6.2.2 Raw map



X Index: 160



Y Index: 160

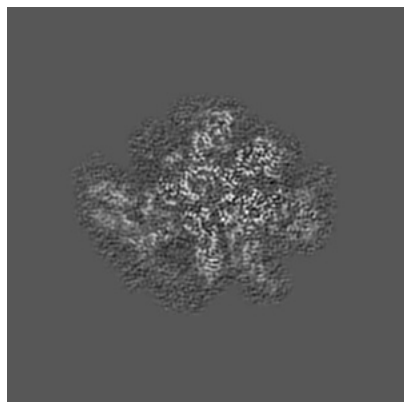


Z Index: 160

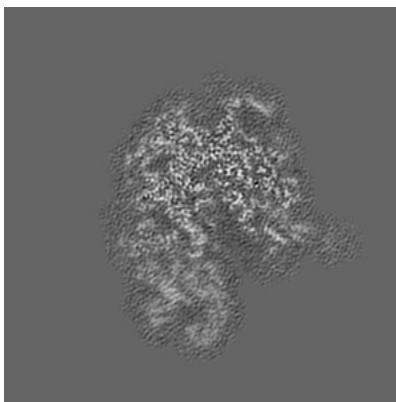
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

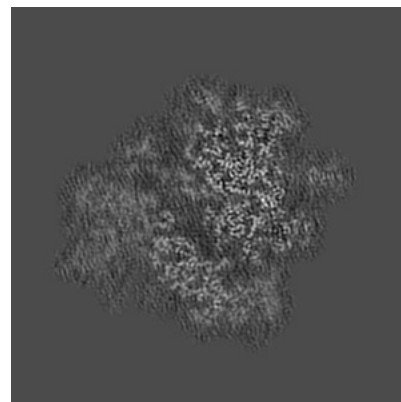
6.3.1 Primary map



X Index: 168

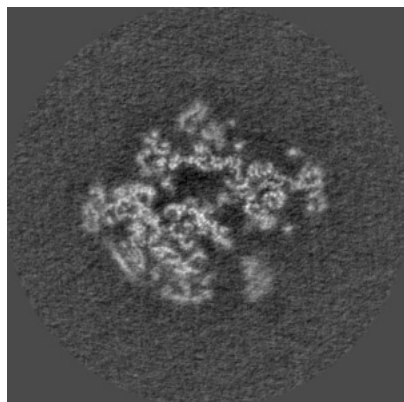


Y Index: 166

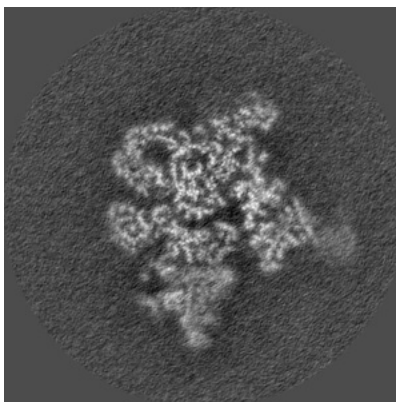


Z Index: 166

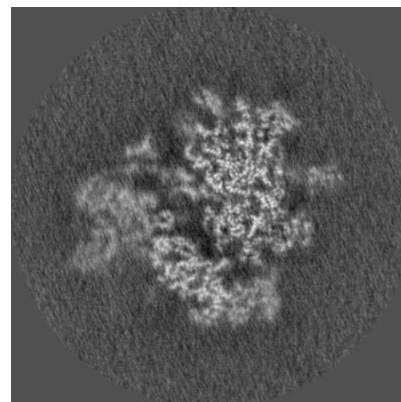
6.3.2 Raw map



X Index: 154



Y Index: 150

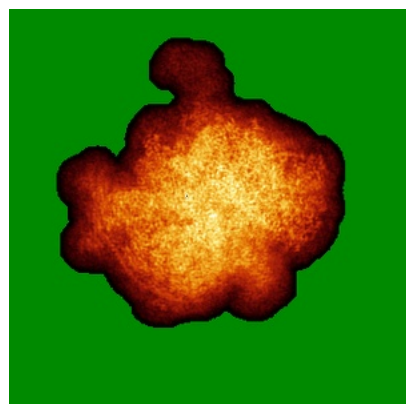


Z Index: 166

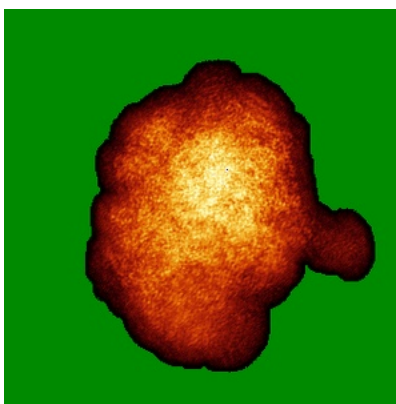
The images above show the largest variance slices of the map in three orthogonal directions.

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

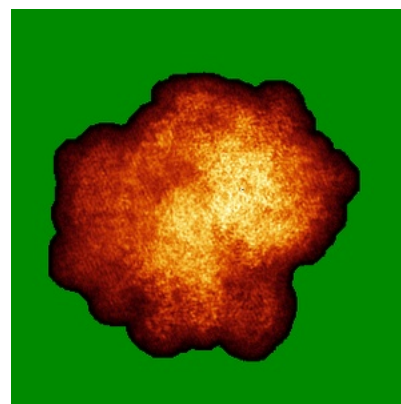
6.4.1 Primary map



X

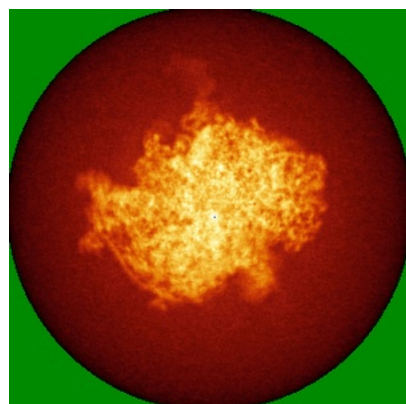


Y

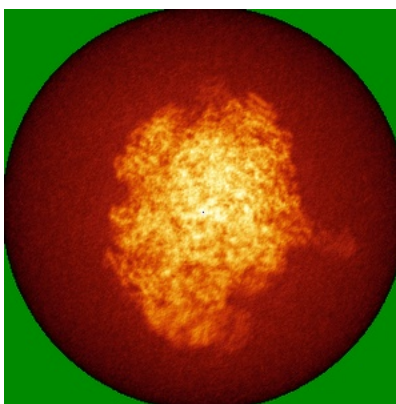


Z

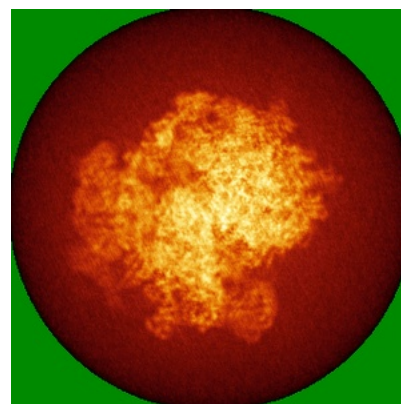
6.4.2 Raw map



X



Y

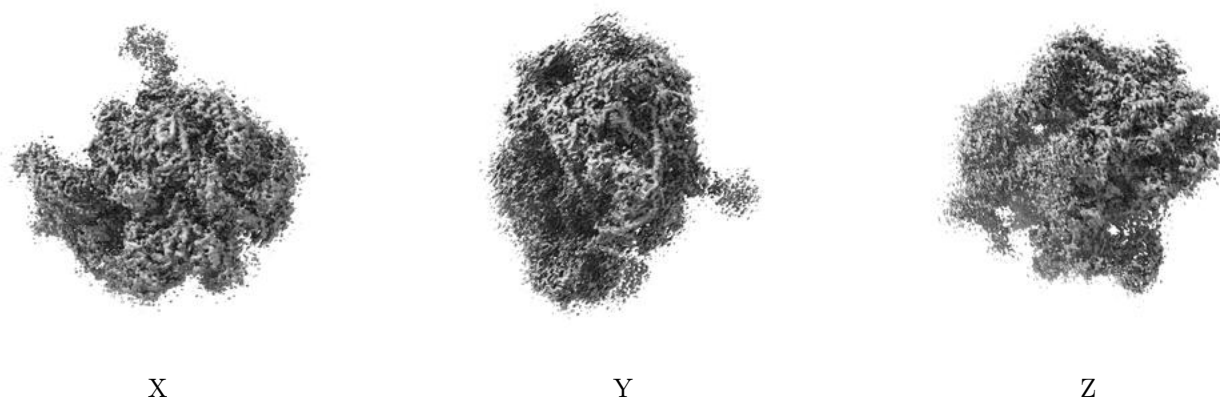


Z

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.

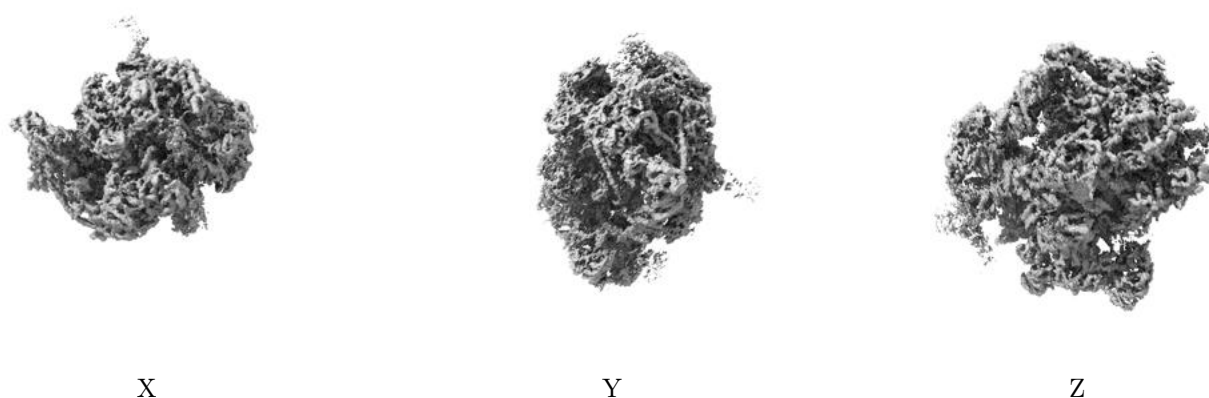
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.045. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

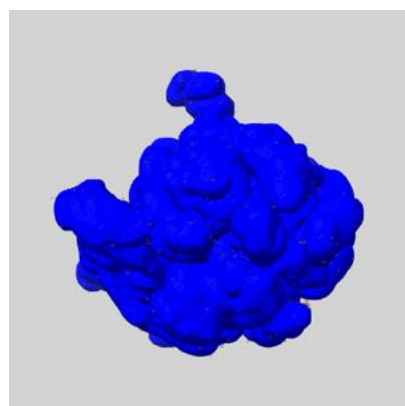
6.6 Mask visualisation [i](#)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

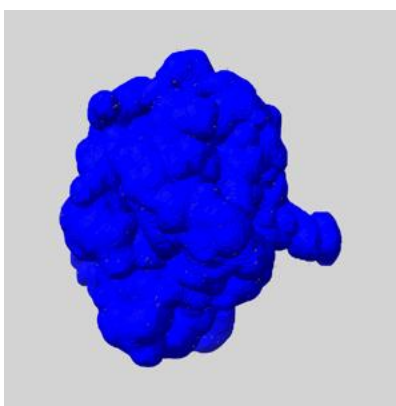
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

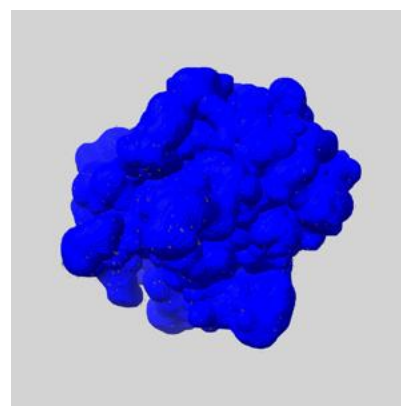
6.6.1 emd_10779_msk_1.map [i](#)



X



Y

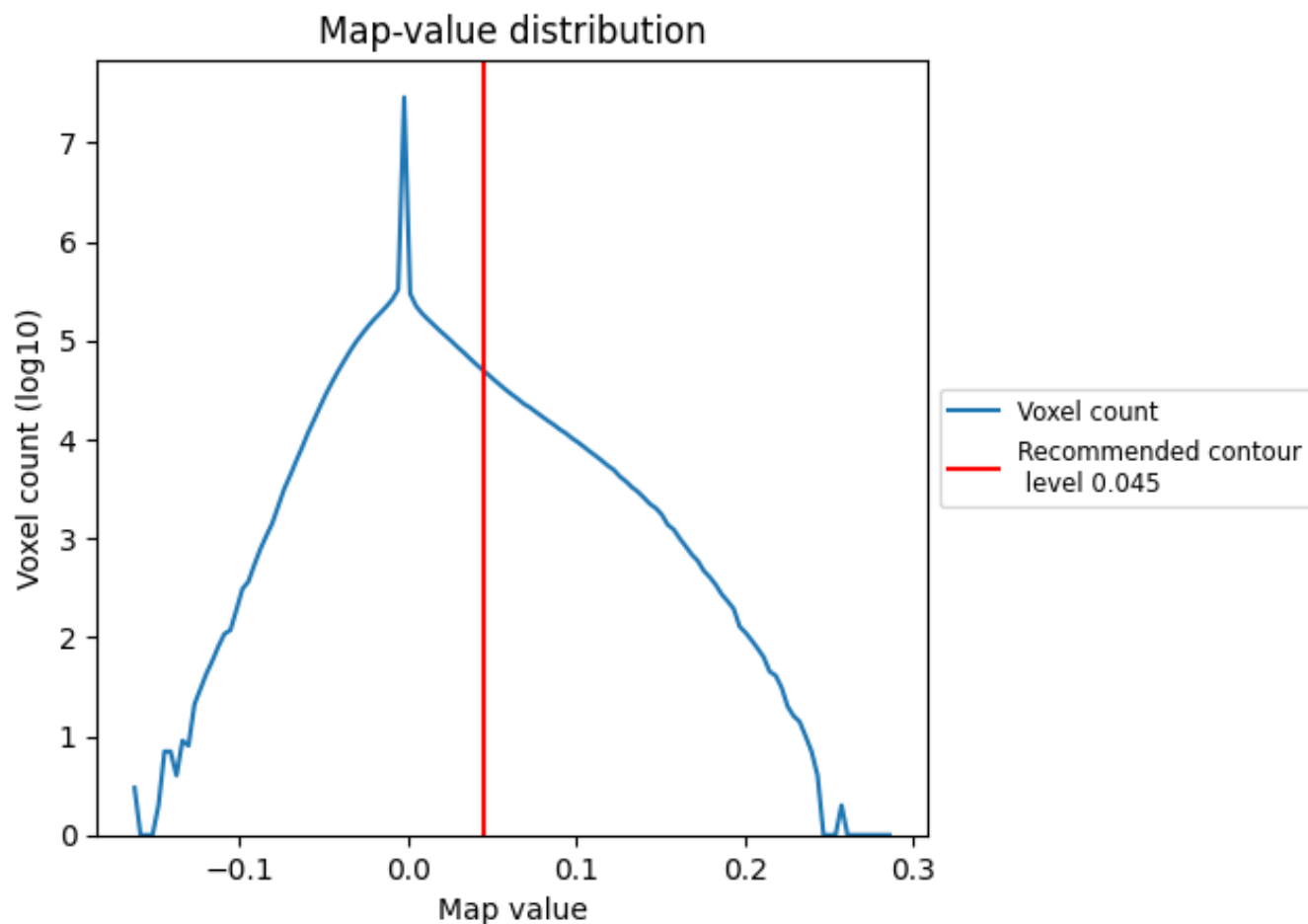


Z

7 Map analysis [i](#)

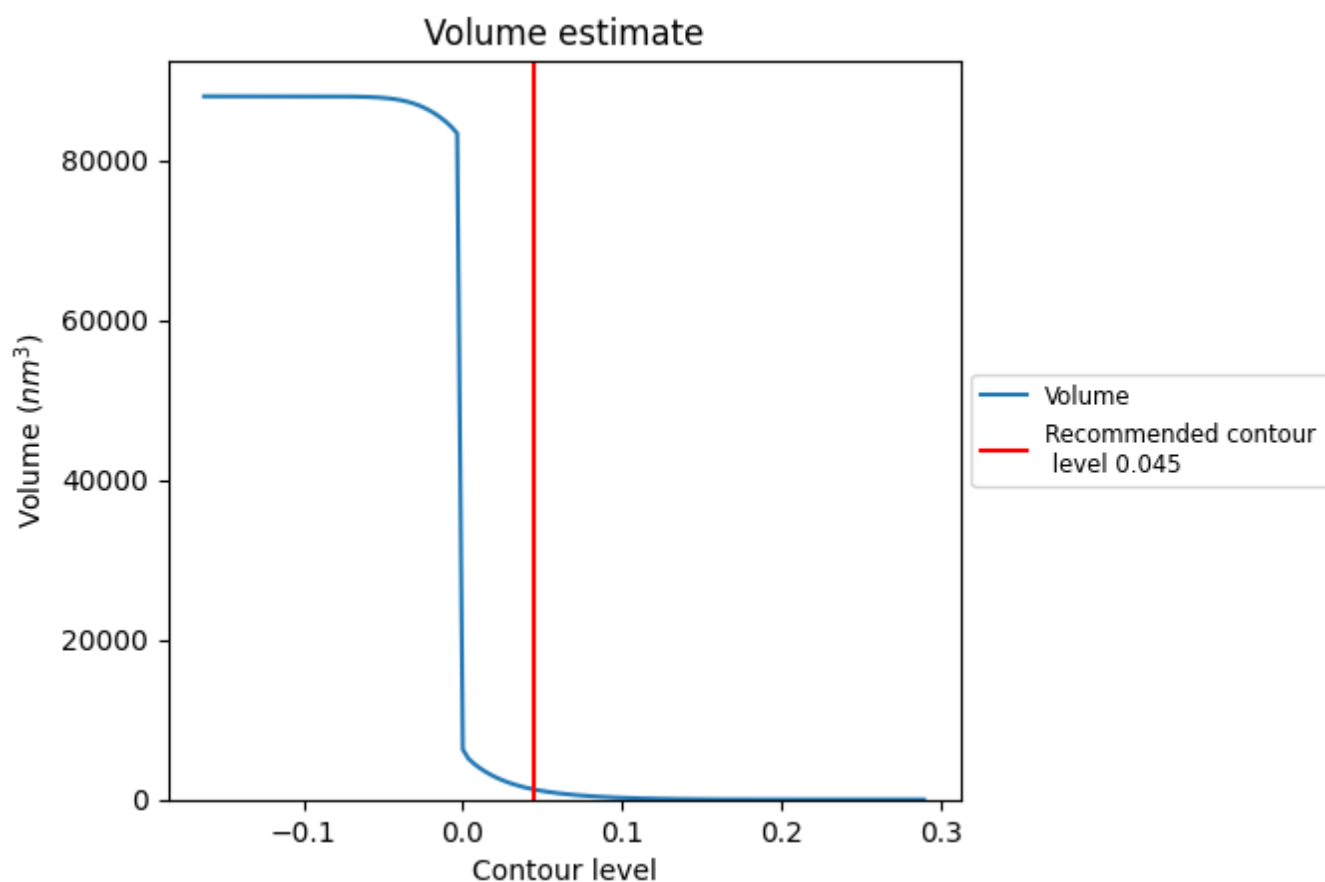
This section contains the results of statistical analysis of the map.

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.

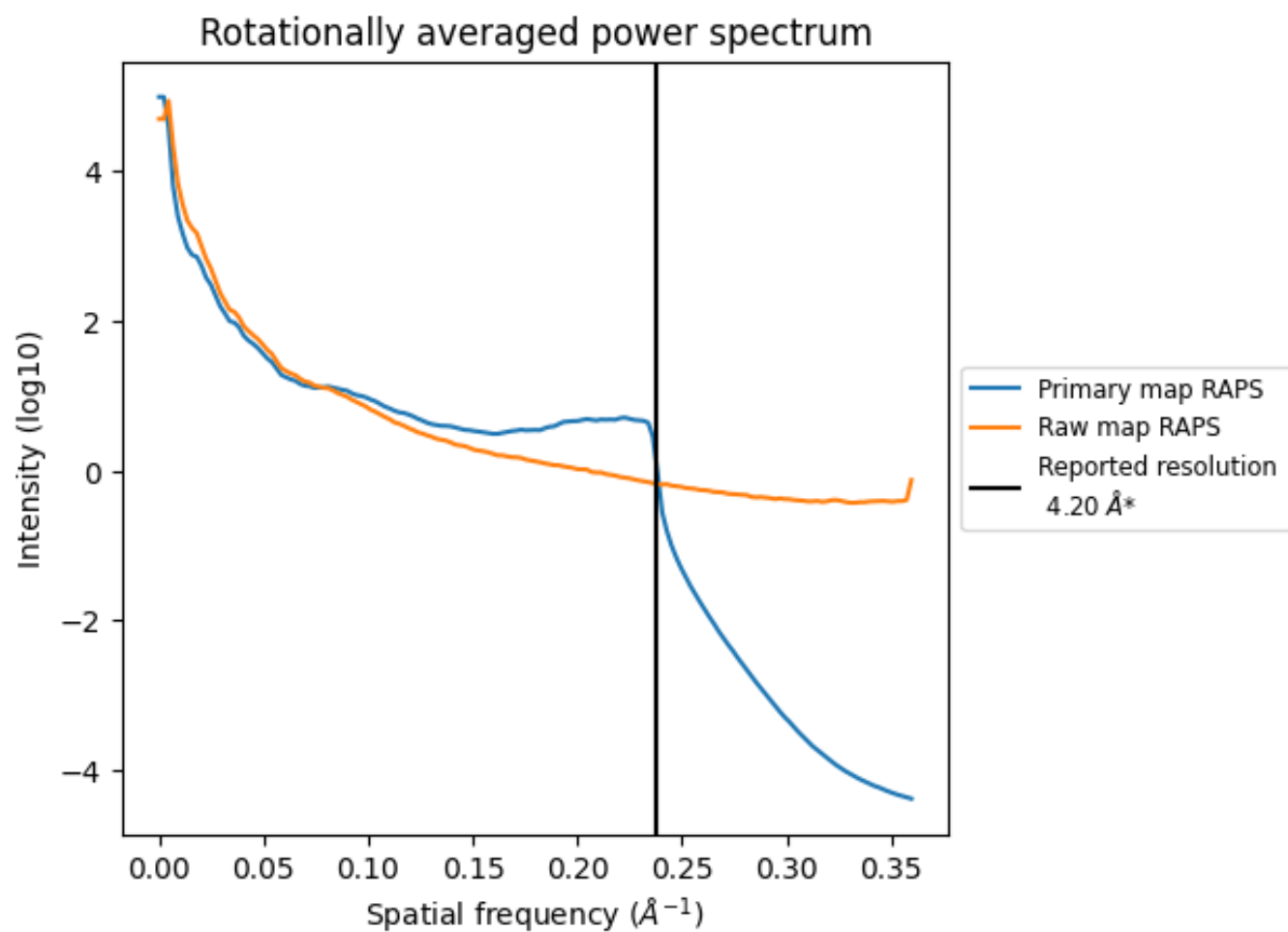
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1253 nm³; this corresponds to an approximate mass of 1132 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 ⓘ

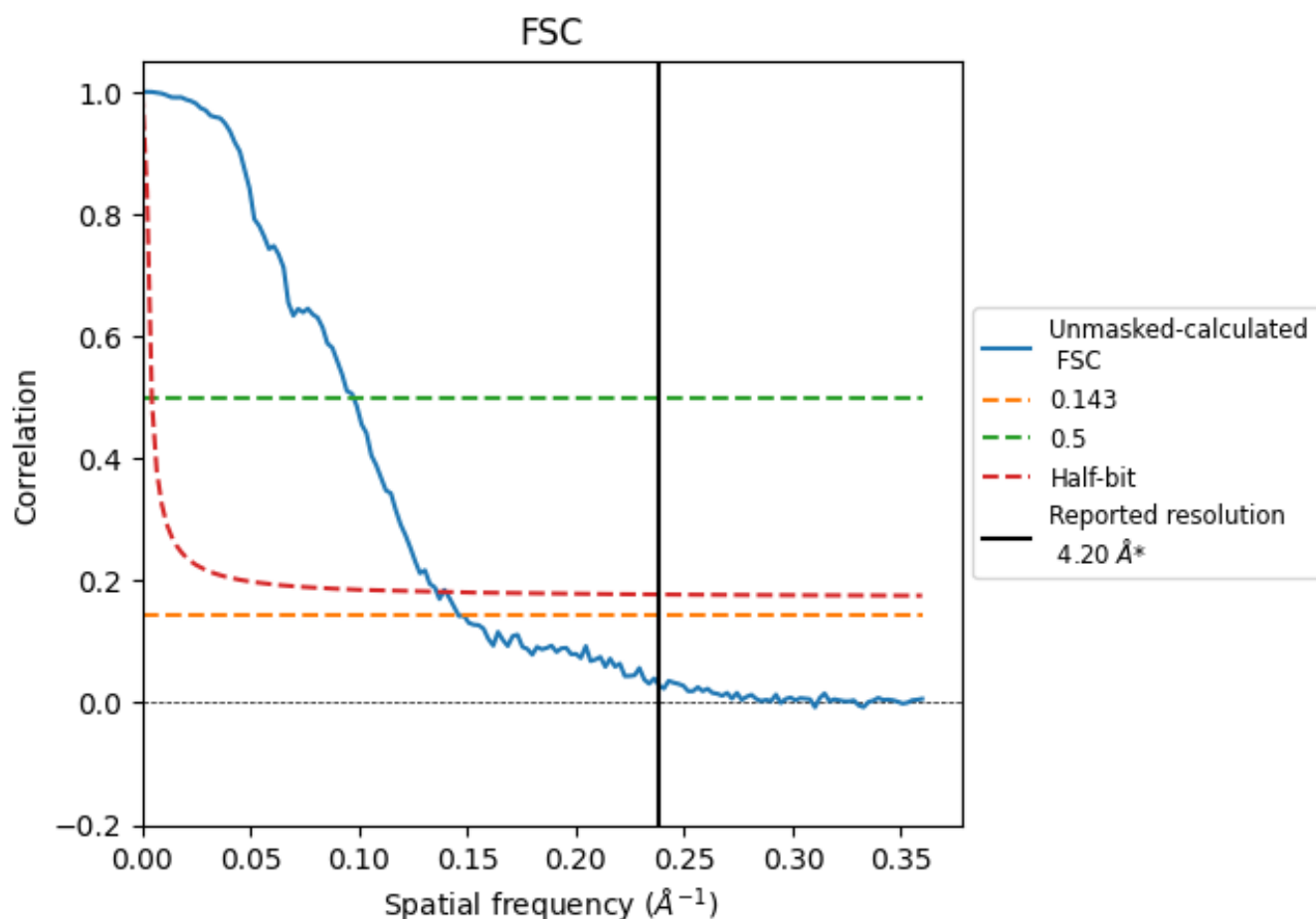


*Reported resolution corresponds to spatial frequency of 0.238 Å⁻¹

8 Fourier-Shell correlation [i](#)

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.238 Å⁻¹

8.2 Resolution estimates [i](#)

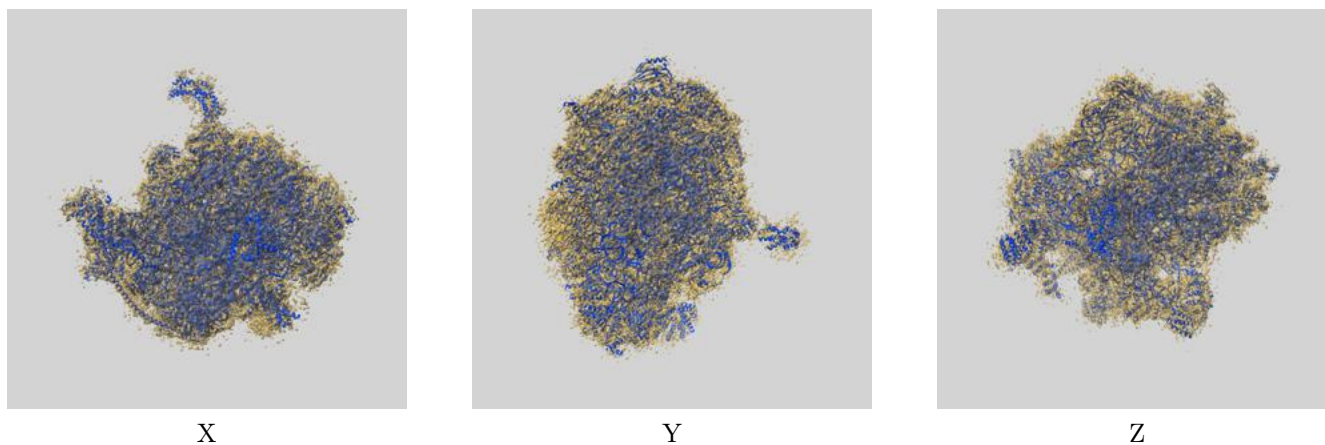
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.20	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	6.85	10.27	7.36

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 6.85 differs from the reported value 4.2 by more than 10 %

9 Map-model fit [i](#)

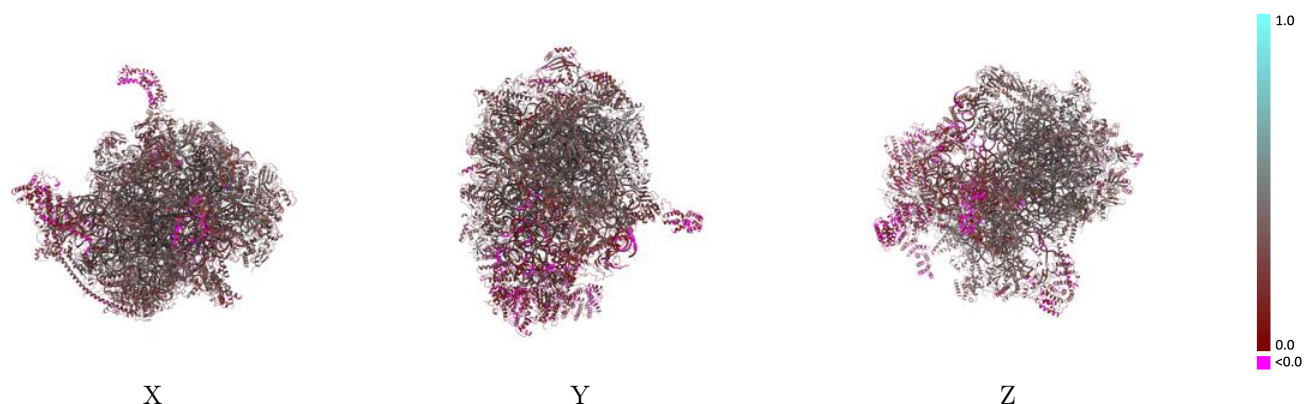
This section contains information regarding the fit between EMDB map EMD-10779 and PDB model 6YDW. Per-residue inclusion information can be found in section [3](#) on page [26](#).

9.1 Map-model overlay [i](#)



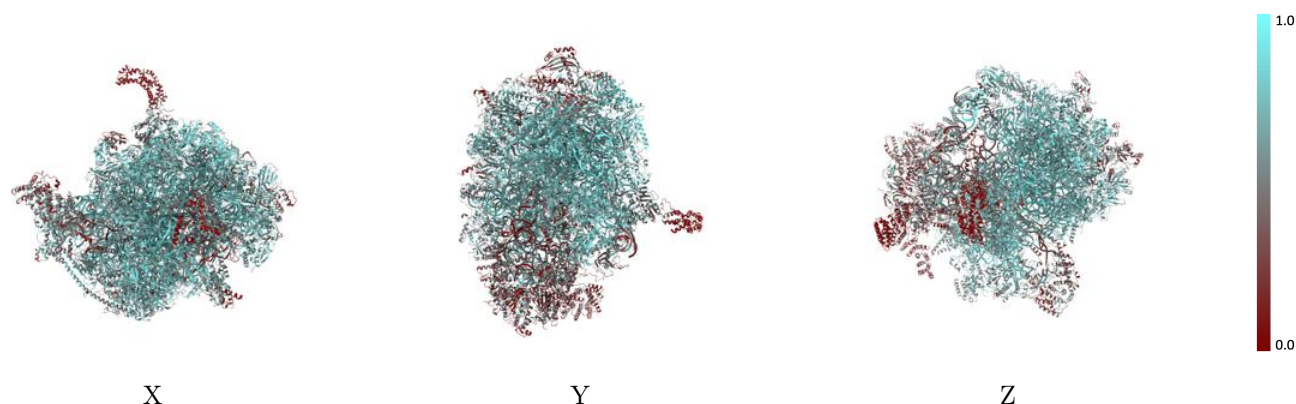
The images above show the 3D surface view of the map at the recommended contour level 0.045 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



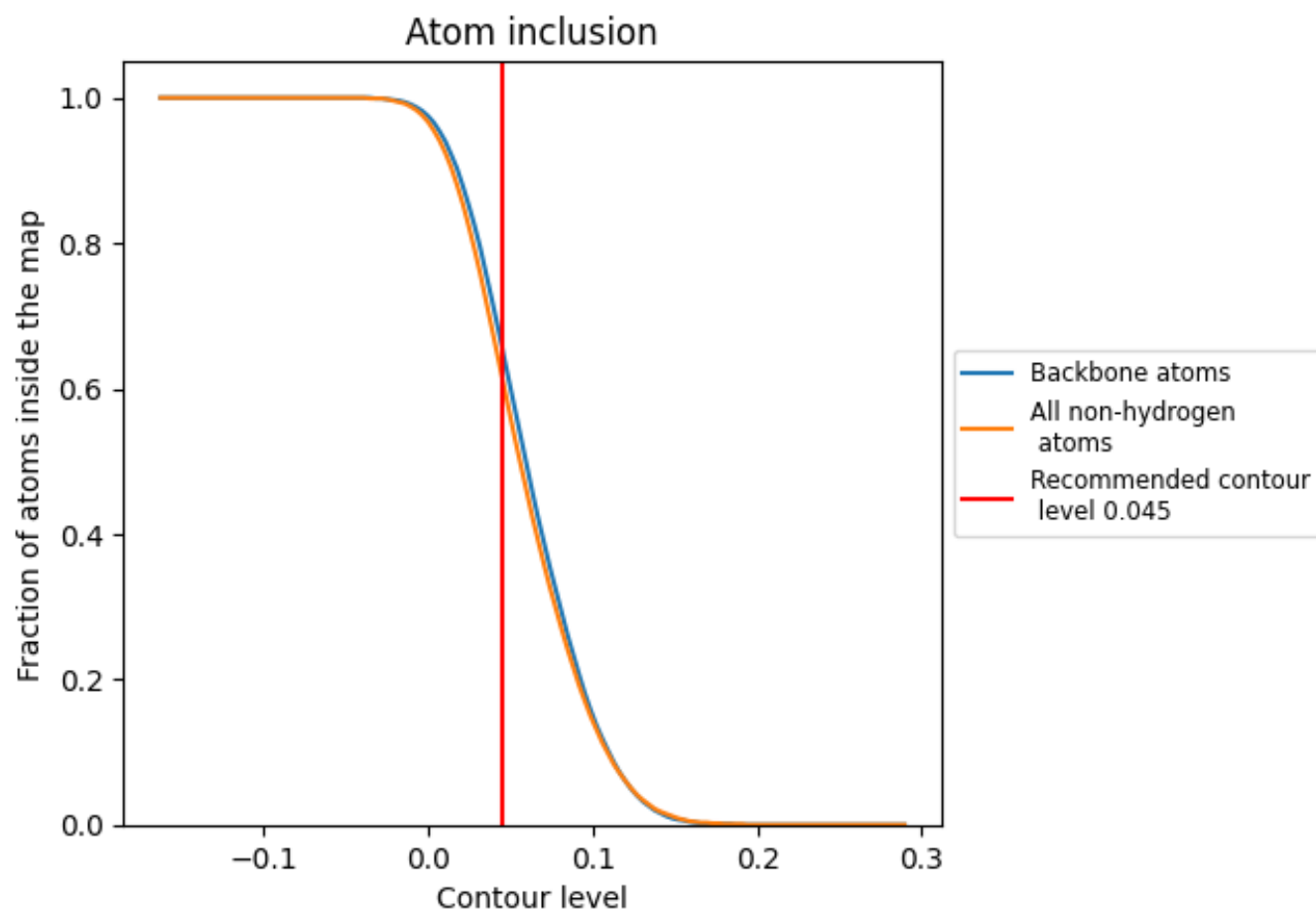
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.045).

9.4 Atom inclusion [i](#)



At the recommended contour level, 66% of all backbone atoms, 62% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.045) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.6160	 0.3100
AA	 0.7160	 0.3050
AB	 0.6280	 0.3230
AC	 0.3190	 0.2000
AE	 0.4730	 0.3040
AF	 0.5390	 0.2990
AG	 0.3430	 0.1640
AI	 0.4420	 0.2460
AJ	 0.3430	 0.2150
AK	 0.5650	 0.3020
AL	 0.6430	 0.4010
AN	 0.3930	 0.2180
AO	 0.5290	 0.2940
AP	 0.6470	 0.3250
AQ	 0.6330	 0.3610
AR	 0.5980	 0.3150
AU	 0.6260	 0.3520
AV	 0.6020	 0.2450
AX	 0.6670	 0.3200
AY	 0.2070	 0.1010
AZ	 0.3890	 0.1530
Aa	 0.5870	 0.2900
Ab	 0.5550	 0.2810
Ac	 0.6280	 0.3450
Ad	 0.5920	 0.2550
Ae	 0.3390	 0.1420
Af	 0.5850	 0.3250
Ag	 0.3160	 0.1270
Ah	 0.2600	 0.1710
Ai	 0.3430	 0.2060
Aj	 0.4880	 0.2530
Ak	 0.3240	 0.1790
Am	 0.3950	 0.2510
An	 0.5870	 0.3470
Ao	 0.1450	 0.0880



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Chain	Atom inclusion	Q-score
Ap	 0.6180	 0.3150
B0	 0.7330	 0.4150
B1	 0.5970	 0.3470
B2	 0.6690	 0.3460
B3	 0.7250	 0.4110
B4	 0.4970	 0.2140
B5	 0.6870	 0.3720
B6	 0.4520	 0.2850
B7	 0.7320	 0.4100
B8	 0.6960	 0.4170
B9	 0.7540	 0.4190
BA	 0.8230	 0.3750
BB	 0.6390	 0.2140
BC	 0.6490	 0.3510
BD	 0.6960	 0.3900
BE	 0.7110	 0.3890
BF	 0.6830	 0.3830
BI	 0.5330	 0.3160
BJ	 0.4620	 0.2430
BK	 0.5950	 0.2900
BN	 0.7450	 0.4160
BO	 0.6410	 0.4040
BP	 0.7030	 0.3790
BQ	 0.7110	 0.3970
BR	 0.7110	 0.3900
BS	 0.6980	 0.3500
BT	 0.6730	 0.3730
BU	 0.7170	 0.3910
BV	 0.7320	 0.4080
BW	 0.7010	 0.4040
BX	 0.6290	 0.3680
BY	 0.3630	 0.2760
Ba	 0.6840	 0.3490
Bb	 0.6930	 0.3390
Bc	 0.6640	 0.3290
Bd	 0.4510	 0.1900
Be	 0.5560	 0.3240
Bf	 0.6740	 0.3510
Bg	 0.7130	 0.4040
Bh	 0.6940	 0.3450
Bi	 0.2990	 0.2280
Bj	 0.4430	 0.1670

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Chain	Atom inclusion	Q-score
Bk	 0.4650	 0.2380
Bl	 0.7350	 0.3890
Bm	 0.3850	 0.2860
Bn	 0.6920	 0.3910
Bo	 0.7190	 0.3680
Bp	 0.5250	 0.2570
Bq	 0.6270	 0.2870
Bt	 0.7330	 0.3940
Bu	 0.5090	 0.2650
Bv	 0.5630	 0.2700
Bw	 0.6790	 0.3480
Bx	 0.6960	 0.3650
CL	 0.0890	 0.0840
DL	 0.1740	 0.1540
EL	 0.0810	 0.0630
FL	 0.0850	 0.0830
GL	 0.0470	 0.0660
HL	 0.0490	 0.1430
LL	 0.2000	 0.1800