



wwPDB EM Validation Summary Report ⓘ

Apr 23, 2024 – 10:41 am BST

PDB ID : 6ZQF
EMDB ID : EMD-11362
Title : Cryo-EM structure of the 90S pre-ribosome from *Saccharomyces cerevisiae*, state Dis-B (Poly-Ala)
Authors : Cheng, J.; Lau, B.; Venuta, G.L.; Berninghausen, O.; Hurt, E.; Beckmann, R.
Deposited on : 2020-07-09
Resolution : 4.90 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.dev92
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36.2

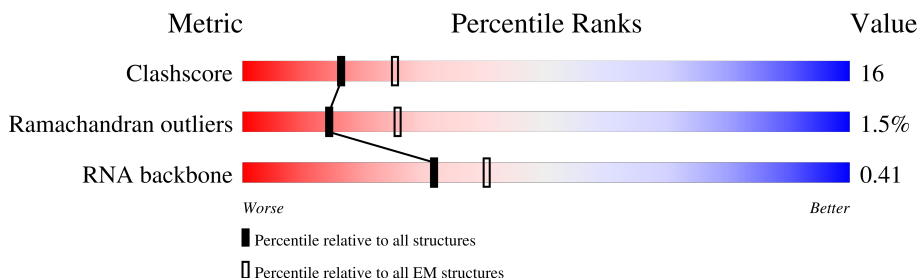
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 4.90 Å.

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



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

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

Mol	Chain	Length	Quality of chain
1	UA	923	
2	UB	810	
3	UC	610	
4	UL	943	
5	UM	817	
6	US	552	
7	UU	939	
8	UV	1237	

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Mol	Chain	Length	Quality of chain
9	CI	183	26% 85% 14%
10	CJ	290	7% 68% 7% 24%
11	CK	593	6% 34% 63%
12	CL	1183	55% 41%
13	CM	367	97% ..
14	CN	297	62% 57% 5% 38%
15	JD	1267	49% 59% 36%
16	JF	252	86% 85% 14%
16	JG	252	86% 87% 12%
17	JH	483	54% 54% 46%
18	JL	318	53% 84% 11%
19	JJ	274	60% 6% 34%
20	DF	225	11% 92% 5%
21	DQ	143	6% 85% 13%
22	DS	146	49% 46% 7% 47%
23	DT	144	96% 87% 12%
24	Dc	67	94% 6%
25	D2	20	55% 10% 60% 25% 5%
26	D3	1758	13% 28% 28% 18% 21%
27	DA	255	65% 16% 16%
28	DE	261	91% 8%
29	DG	236	91% 5%
30	DH	190	7% 82% 14%
31	DI	200	82% 9% 6%
32	DJ	197	83% 10% 6%

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Mol	Chain	Length	Quality of chain
33	DL	156	
34	DN	151	
35	DO	137	
36	DZ	108	
37	DW	130	
38	DX	145	
39	DY	135	
40	Db	82	
41	D4	35	

2 Entry composition [i](#)

There are 42 unique types of molecules in this entry. The entry contains 89582 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 Periodic tryptophan protein 2.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
1	UA	792	3916	2332	792	792	0	0

- Molecule 2 is a protein called Nucleolar complex protein 14.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
2	UB	370	1845	1105	370	370	0	0

- Molecule 3 is a protein called Something about silencing protein 10.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
3	UC	47	233	139	47	47	0	0

- Molecule 4 is a protein called U3 small nucleolar RNA-associated protein 12.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
4	UL	777	3841	2287	777	777	0	0

- Molecule 5 is a protein called U3 small nucleolar RNA-associated protein 13.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
5	UM	762	3763	2239	762	762	0	0

- Molecule 6 is a protein called Nucleolar complex protein 4.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
6	US	499	2486	1488	499	499	0	0

- Molecule 7 is a protein called U3 small nucleolar RNA-associated protein 21.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
7	UU	878	4328	2572	878	878	0	0

- Molecule 8 is a protein called U3 small nucleolar RNA-associated protein 22.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
8	UV	1093	5417	3231	1093	1093	0	0

- Molecule 9 is a protein called U3 small nucleolar ribonucleoprotein protein IMP3.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
9	CI	157	781	467	157	157	0	0

- Molecule 10 is a protein called U3 small nucleolar ribonucleoprotein protein IMP4.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
10	CJ	219	1083	645	219	219	0	0

- Molecule 11 is a protein called U3 small nucleolar RNA-associated protein MPP10.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
11	CK	221	1101	659	221	221	0	0

- Molecule 12 is a protein called Ribosome biogenesis protein BMS1.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
12	CL	695	3433	2044	695	694	0	0

- Molecule 13 is a protein called RNA 3'-terminal phosphate cyclase-like protein.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
13	CM	360	1767	1047	360	360	0	0

- Molecule 14 is a protein called Ribosomal RNA-processing protein 7.

Mol	Chain	Residues	Atoms				AltConf	Trace
14	CN	184	Total	C	N	O	0	0
			916	548	184	184		

- Molecule 15 is a protein called Probable ATP-dependent RNA helicase DHR1.

Mol	Chain	Residues	Atoms				AltConf	Trace
15	JD	807	Total	C	N	O	0	0
			3995	2381	807	807		

- Molecule 16 is a protein called Ribosomal RNA small subunit methyltransferase NEP1.

Mol	Chain	Residues	Atoms				AltConf	Trace
16	JF	216	Total	C	N	O	0	0
			1071	639	216	216		
16	JG	221	Total	C	N	O	0	0
			1096	654	221	221		

- Molecule 17 is a protein called Essential nuclear protein 1.

Mol	Chain	Residues	Atoms				AltConf	Trace
17	JH	261	Total	C	N	O	0	0
			1295	773	261	261		

- Molecule 18 is a protein called Dimethyladenosine transferase.

Mol	Chain	Residues	Atoms				AltConf	Trace
18	JL	283	Total	C	N	O	0	0
			1401	835	283	283		

- Molecule 19 is a protein called Pre-rRNA-processing protein PNO1.

Mol	Chain	Residues	Atoms				AltConf	Trace
19	JJ	181	Total	C	N	O	0	0
			893	531	181	181		

- Molecule 20 is a protein called Rps5p.

Mol	Chain	Residues	Atoms				AltConf	Trace
20	DF	213	Total	C	N	O	0	0
			1055	629	213	213		

- Molecule 21 is a protein called 40S ribosomal protein S16-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
21	DQ	125	Total	C	N	O	0	0
			616	366	125	125		

- Molecule 22 is a protein called 40S ribosomal protein S18-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
22	DS	77	Total	C	N	O	0	0
			381	227	77	77		

- Molecule 23 is a protein called 40S ribosomal protein S19-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
23	DT	143	Total	C	N	O	0	0
			700	414	143	143		

- Molecule 24 is a protein called 40S ribosomal protein S28-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
24	Dc	63	Total	C	N	O	0	0
			310	184	63	63		

- Molecule 25 is a RNA chain called 5ETS RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	D2	20	Total	C	N	O	P	0	0
			429	191	75	143	20		

- Molecule 26 is a RNA chain called 18S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	D3	1392	Total	C	N	O	P	0	0
			29645	13257	5244	9752	1392		

- Molecule 27 is a protein called 40S ribosomal protein S1-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
27	DA	214	Total	C	N	O	0	0
			1061	633	214	214		

- Molecule 28 is a protein called 40S ribosomal protein S4-A.

Mol	Chain	Residues	Atoms			AltConf	Trace	
			Total	C	N			O
28	DE	260	1276	756	260	260	0	0

- Molecule 29 is a protein called 40S ribosomal protein S6-A.

Mol	Chain	Residues	Atoms			AltConf	Trace	
			Total	C	N			O
29	DG	226	1113	661	226	226	0	0

- Molecule 30 is a protein called 40S ribosomal protein S7-A.

Mol	Chain	Residues	Atoms			AltConf	Trace	
			Total	C	N			O
30	DH	184	913	545	184	184	0	0

- Molecule 31 is a protein called 40S ribosomal protein S8-A.

Mol	Chain	Residues	Atoms			AltConf	Trace	
			Total	C	N			O
31	DI	188	924	548	188	188	0	0

- Molecule 32 is a protein called 40S ribosomal protein S9-A.

Mol	Chain	Residues	Atoms			AltConf	Trace	
			Total	C	N			O
32	DJ	185	915	545	185	185	0	0

- Molecule 33 is a protein called 40S ribosomal protein S11-A.

Mol	Chain	Residues	Atoms			AltConf	Trace	
			Total	C	N			O
33	DL	155	766	456	155	155	0	0

- Molecule 34 is a protein called 40S ribosomal protein S13.

Mol	Chain	Residues	Atoms			AltConf	Trace	
			Total	C	N			O
34	DN	150	742	442	150	150	0	0

- Molecule 35 is a protein called 40S ribosomal protein S14-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
35	DO	127	Total	C	N	O	0	0
			620	366	127	127		

- Molecule 36 is a protein called 40S ribosomal protein S25-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
36	DZ	67	Total	C	N	O	0	0
			332	198	67	67		

- Molecule 37 is a protein called 40S ribosomal protein S22-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
37	DW	129	Total	C	N	O	0	0
			634	376	129	129		

- Molecule 38 is a protein called 40S ribosomal protein S23-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
38	DX	140	Total	C	N	O	0	0
			684	404	140	140		

- Molecule 39 is a protein called 40S ribosomal protein S24-A.

Mol	Chain	Residues	Atoms				AltConf	Trace
39	DY	134	Total	C	N	O	0	0
			661	393	134	134		

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

Mol	Chain	Residues	Atoms				AltConf	Trace
40	Db	81	Total	C	N	O	0	0
			400	238	81	81		

- Molecule 41 is a RNA chain called U3 snoRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	D4	35	Total	C	N	O	P	0	0
			743	333	134	241	35		

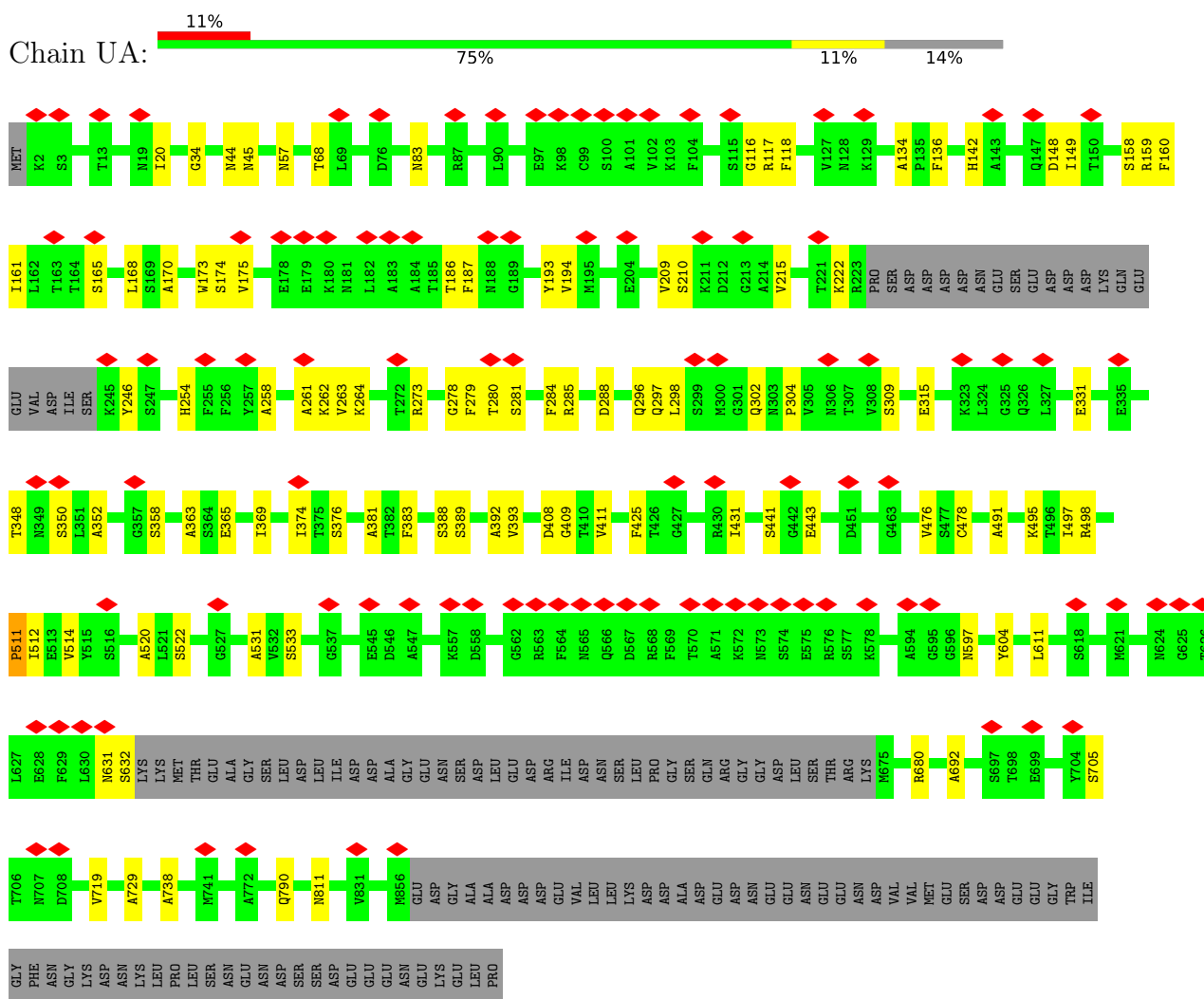
- Molecule 42 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
42	Db	1	Total 1	Zn 1	0

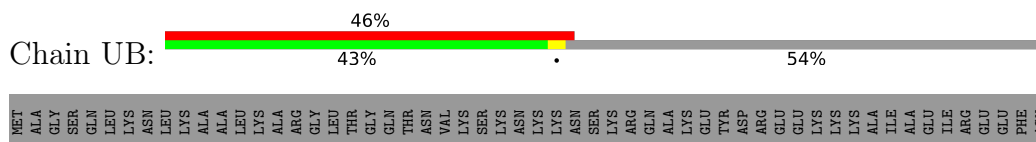
3 Residue-property plots [i](#)

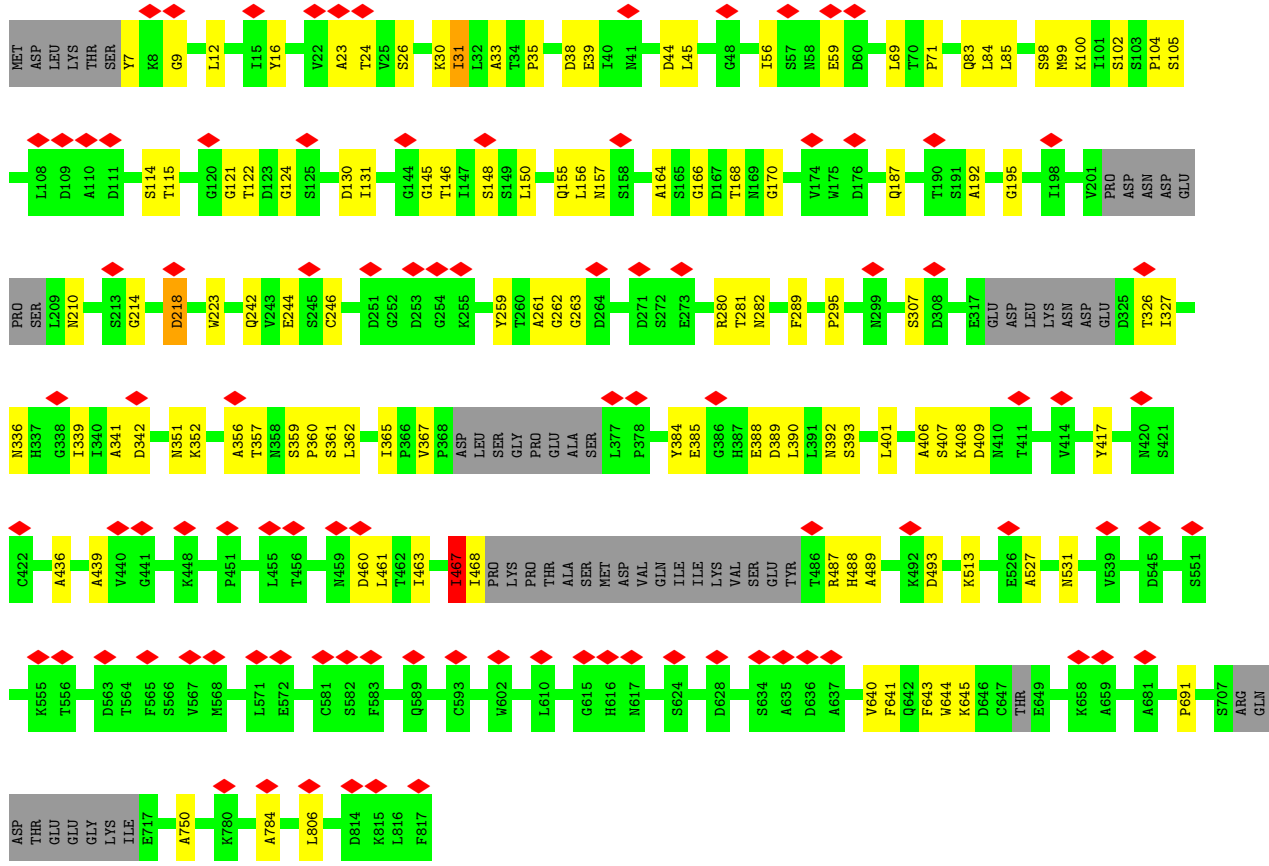
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

- Molecule 1: Periodic tryptophan protein 2

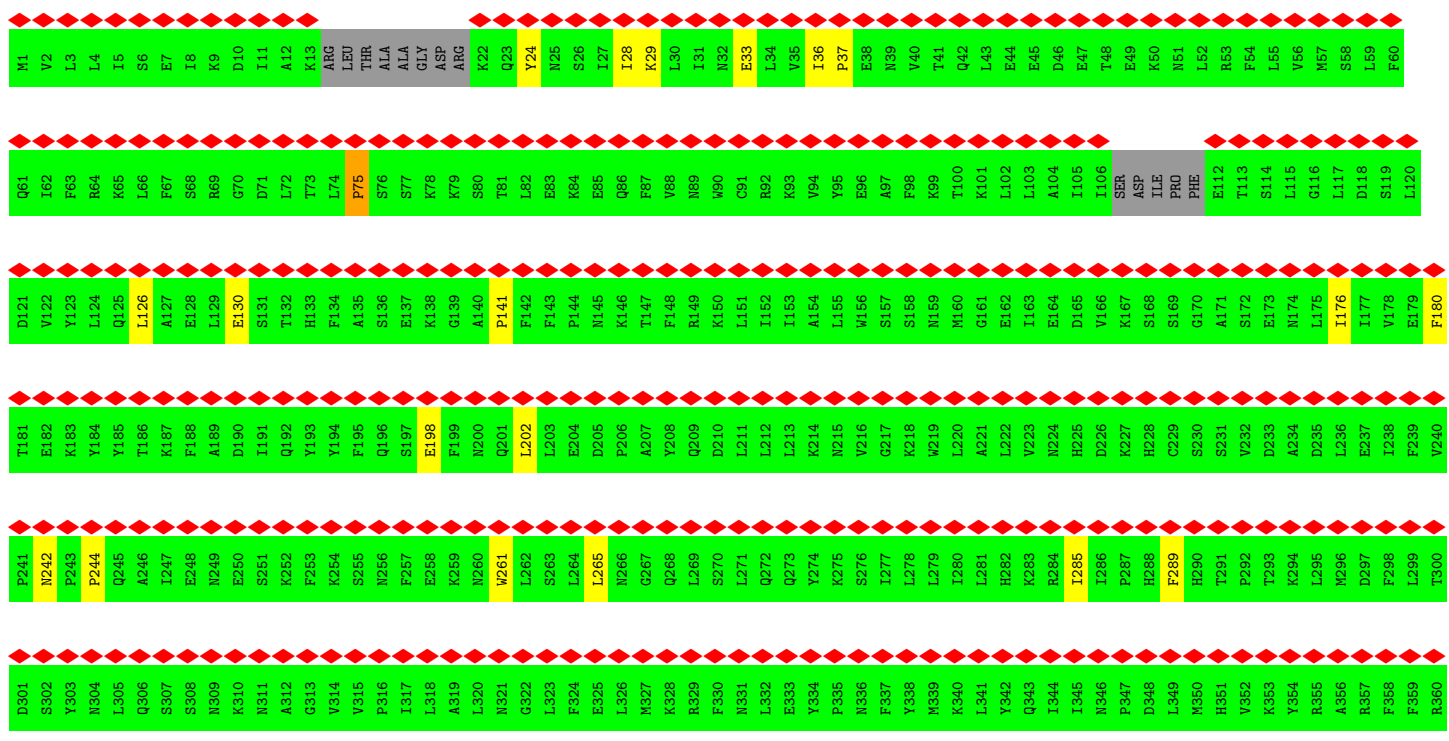
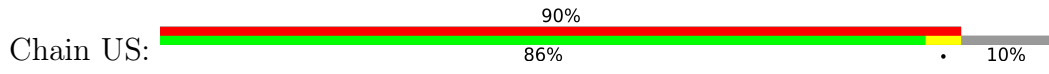


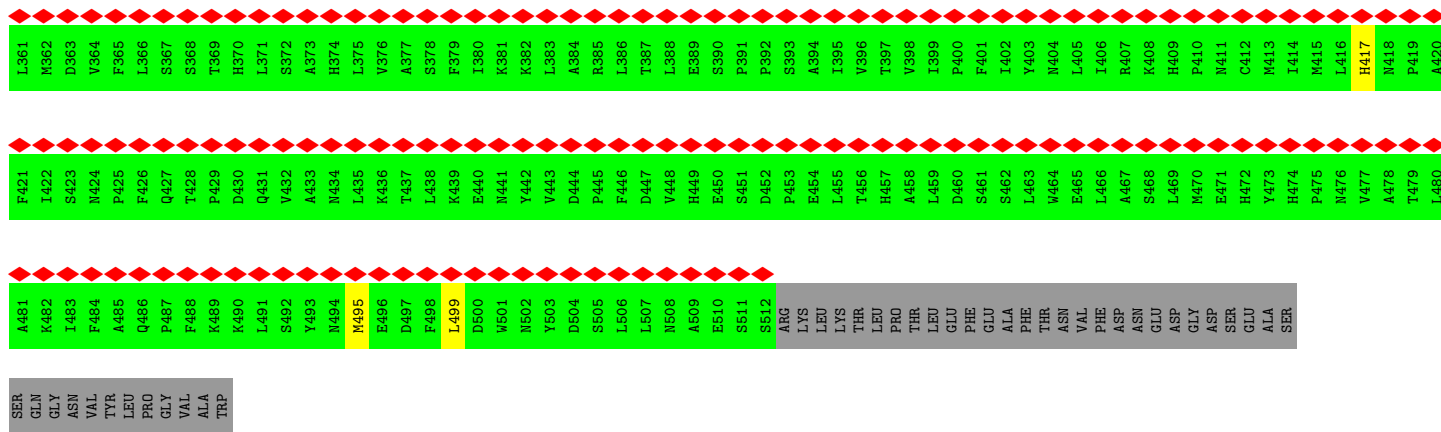
- Molecule 2: Nucleolar complex protein 14



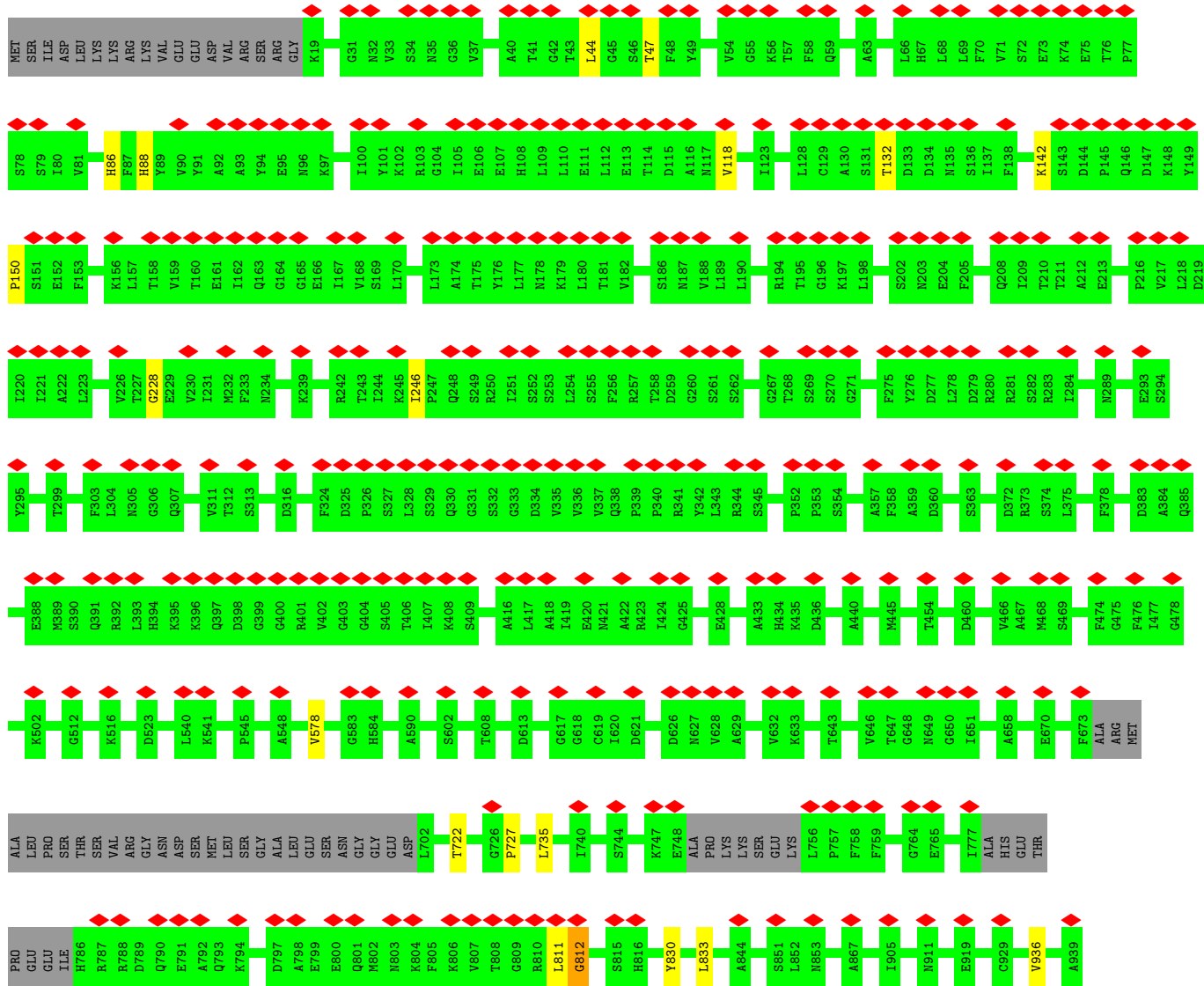


• Molecule 6: Nucleolar complex protein 4





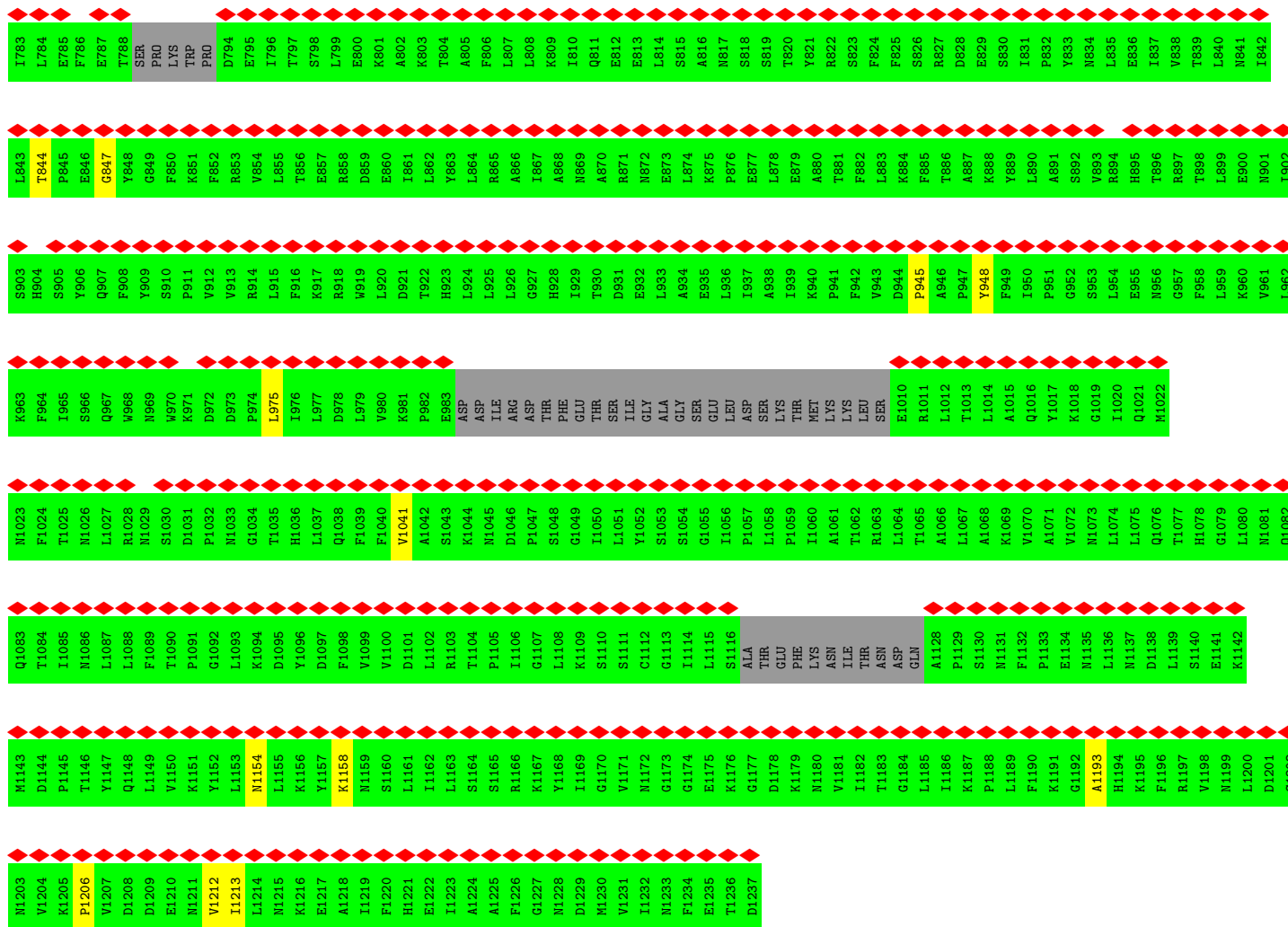
• Molecule 7: U3 small nucleolar RNA-associated protein 21



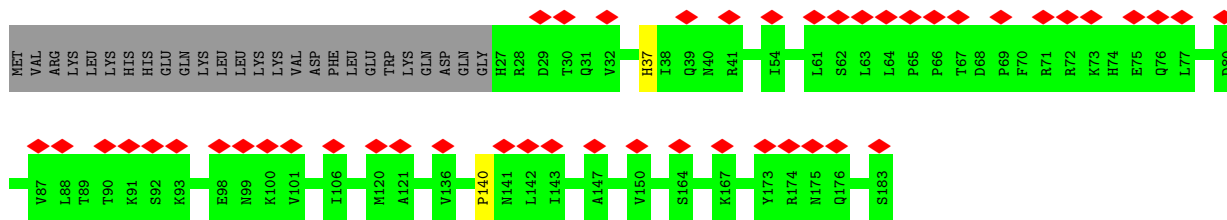
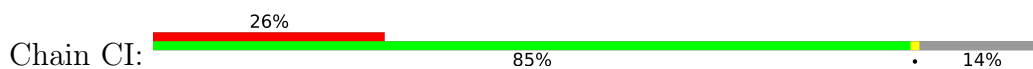
• Molecule 8: U3 small nucleolar RNA-associated protein 22



MET	ALA	THR	SER	VAL	LYS	ARG	LYS	ALA	ALA	SER	GLU	THR	THR	ALA	ALA	THR	ASP	GLN	HIS	ASN	ILE	VAL	LYS	VAL	GLN	LYS	LYS	HIS	SER	THR	GLN	ASP	SER	GLY	LYS	LYS	ASN	ASN	GLY	SER	LYS	ASN	ASP	ALA	ILE	ASN	GLU	ARG	THR	VAL	PRO	GLU	GLN	GLU	ASN	ASN	ASP	GLU	SER	ASP	THR
SER	PRO	GLU	SER	ASN	GLU	VAL	THR	ALA	ALA	THR	THR	THR	THR	ALA	ALA	THR	ASP	GLN	HIS	ASN	ILE	VAL	LYS	VAL	GLN	LYS	LYS	HIS	SER	THR	GLN	ASP	SER	GLY	LYS	LYS	ASN	ASN	GLY	SER	LYS	ASN	ASP	ALA	ILE	ASN	GLU	ARG	THR	VAL	PRO	GLU	GLN	GLU	ASN	ASN	ASP	GLU	SER	ASP	THR
V121	L122	K123	V124	E125	K126	F127	L128	H129	K130	L131	Y132	D133	L134	L135	Q136	E137	I138	P139	E140	W141	Y142	E143	K144	S145	L146	A147	E148	V149	D150	S151	E152	F153	K154	N155	K156	I157	V158	S159	V160	P161	F162	V163	D164	P165	K166	P167	I168	Q169	V170	M171	T172	N173	Y174	K175	F176	N177	Y178	K179	K180		
P181	D182	I183	S184	L185	I186	G187	S188	F189	A190	L191	K192	A193	G194	L195	Y196	P198	N199	G200	S201	S202	I203	D204	L205	T206	L207	T208	M209	P210	K211	E212	L213	F214	E215	K216	K217	D218	F219	L220	N221	F222	R223	C224	L225	H226	K227	R228	S229	V230	Y231	L232	A233	L234	L235	T236	H237	L239	L240				
I241	L242	L243	K244	K245	D246	K247	L248	L249	S250	F251	L252	Q253	L254	E255	Y256	S257	Y258	F259	D260	N261	D262	P263	L264	L265	P266	I267	L268	R269	I270	S271	C272	S273	K274	PRO	THR	GLY	ASP	SER	LEU	SER	D282	Y283	N284	F285	Y286	K287	T288	R289	F290	S291	I292	N293	L294	L295	I296	G297	F298	P299	Y300		
K301	V302	F303	E304	P305	K306	K307	L308	L309	P310	N311	R312	N313	C314	I315	R316	I317	ALA	GLU	SER	LYS	GLU	SER	L326	P327	A328	T329	P330	L331	Y332	N333	F334	S335	V336	L337	S338	S339	S340	T341	H342	E343	N344	Y345	L346	K347	Y348	L349	Y350	K351	T352	K353	T356	E357	S358	F359	V360	E361					
A362	T363	V364	L365	G366	R367	L368	V369	L370	Q371	Q372	R373	G374	S375	S376	S377	N378	M379	S380	H381	S382	G383	S384	L385	G386	G387	F388	G389	T390	F391	E392	F393	T394	I395	L396	M397	A398	A399	L400	L401	M402	G403	G404	G405	I406	M407	S408	M409	K410	L411	L412	L413	H414	G415	F416	S417	S418	Y419	Q420	L421		
F422	K423	G424	V425	L426	K427	Y428	L429	A430	T431	M432	D433	C435	H436	D437	G438	H439	L440	Q441	F442	H443	S444	M445	PRO	GLU	ASN	SER	SER	SER	SER	P453	A454	S455	K456	Y457	I458	D459	E460	G461	F462	Q463	T464	P465	D466	L467	F468	D469	K470	S471	T472	K473	V474	M475	I476	L477	T478	M480	T481	L482			
V482	S483	S484	Y485	Q486	L487	L488	K489	E490	Y491	A492	G493	E494	T495	L496	R497	M498	L499	N500	N501	V502	V503	Q504	D505	Q506	F507	S508	N509	I510	F511	L512	T513	N514	I515	S516	R517	F518	D519	N520	L521	K522	Y523	D524	L525	C526	V527	D528	V529	Q530	L531	P532	L533	G534	K535	Y536	N537	N538	L539	E540	T541		
S542	L543	A544	A545	T546	F547	G548	S549	R552	V553	K554	F555	L556	T557	L558	E559	N560	F561	L562	A563	H564	K565	L566	T567	N568	V569	A570	R571	Y572	A573	L574	G575	D576	R577	I578	K579	Y580	L581	Q582	L583	E584	N585	Y586	G587	Q588	K589	S590	D591	F592	P593	L594	T595	K596	R597	K598	V599	Y600	S601	N602			
T603	G604	G605	N606	H607	F608	N609	F610	D611	F612	N613	R614	V615	K616	L617	L618	V619	N620	P621	S622	E623	C624	D625	K626	L627	V628	T629	K630	G631	P632	A633	H634	S635	E636	T637	N638	S639	T640	E641	A642	A643	V644	F645	K646	N647	F648	M649	G650	L651	K652	S653	S654	L655	R656	L657	F658	K659	D660	G661	S662		
I663	T664	H665	C666	C667	V668	N669	S670	T671	S672	S673	S674	E675	P676	L677	L678	S679	S680	L681	V682	N683	F684	A685	L686	Q687	H688	H689	V690	S691	K692	K693	A694	Q695	L696	S697	N698	E699	T700	L701	K702	K703	F704	H705	N706	F707	F708	V709	L710	F711	N712	L713	P714	S715	S716	A717	F718	T719	S720	G721	L722		
M723	L724	S725	S726	F727	F728	N729	L730	K731	K732	S733	F734	D735	D736	L737	Y738	K739	L740	L741	F742	Q743	M744	K745	L746	F747	L748	S749	V750	K751	S752	L753	L754	P755	V756	G757	S758	A759	F760	R761	V762	T763	S764	L765	C766	Q767	F768	V769	F770	L771	M772	Y773	S774	D775	P776	D777	F778	F779	Q780	D781	V782		

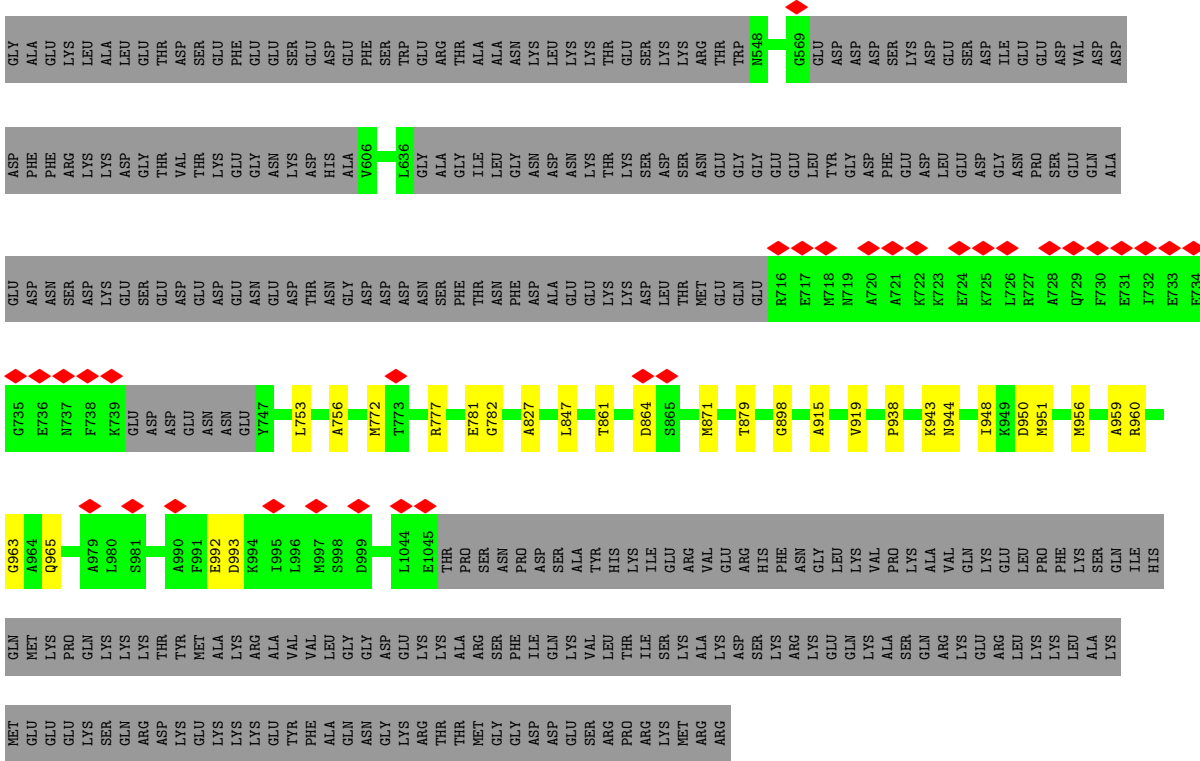


• Molecule 9: U3 small nucleolar ribonucleoprotein protein IMP3

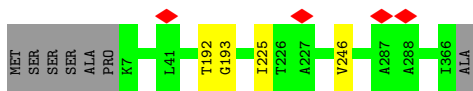


• Molecule 10: U3 small nucleolar ribonucleoprotein protein IMP4

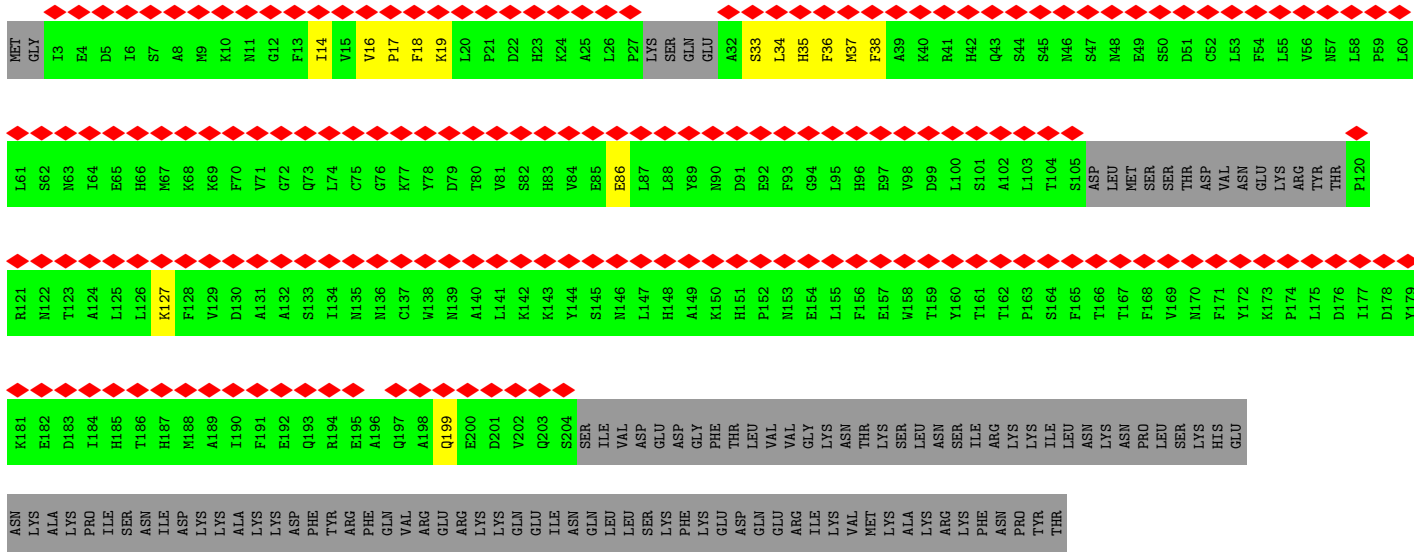




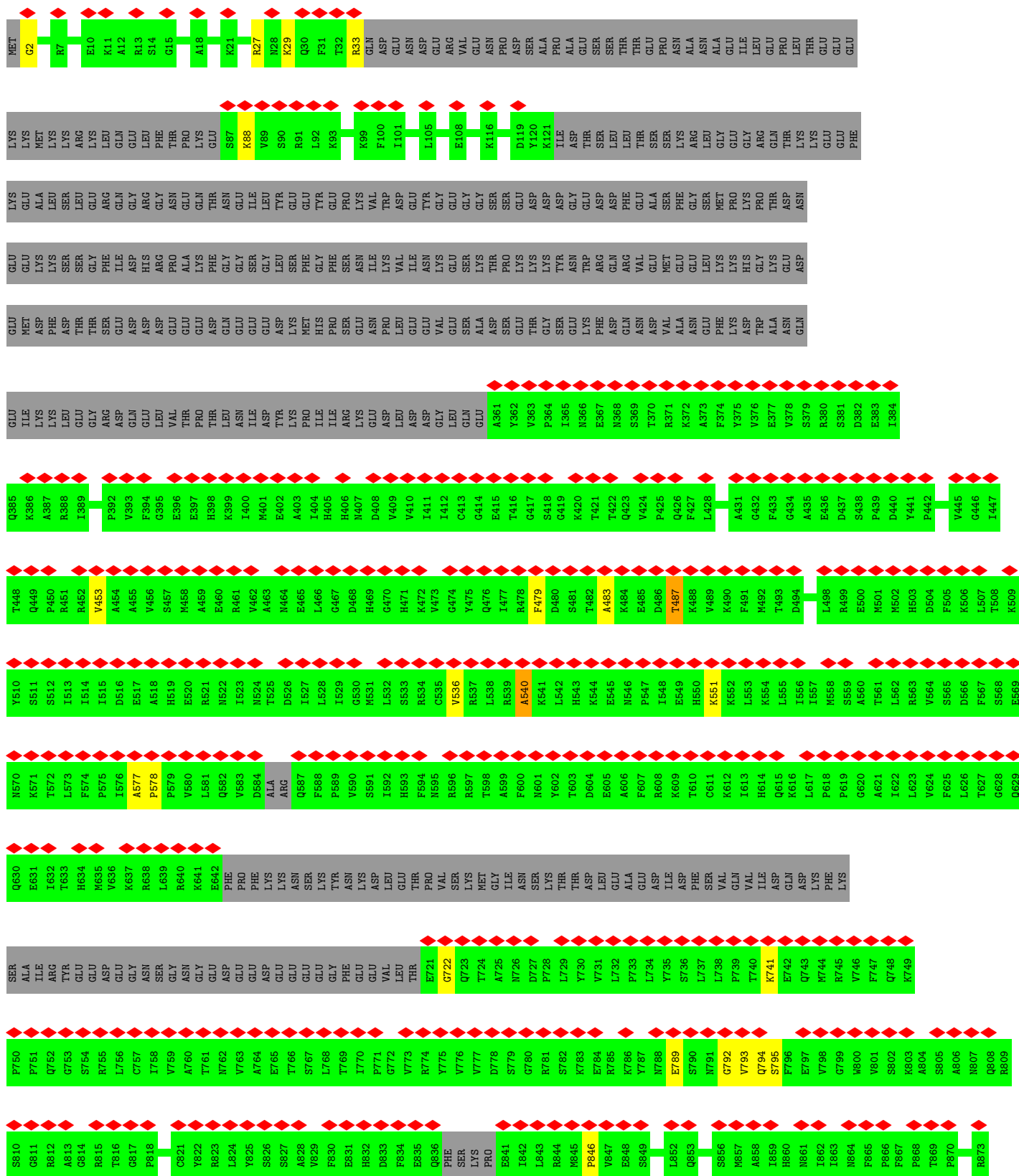
- Molecule 13: RNA 3'-terminal phosphate cyclase-like protein

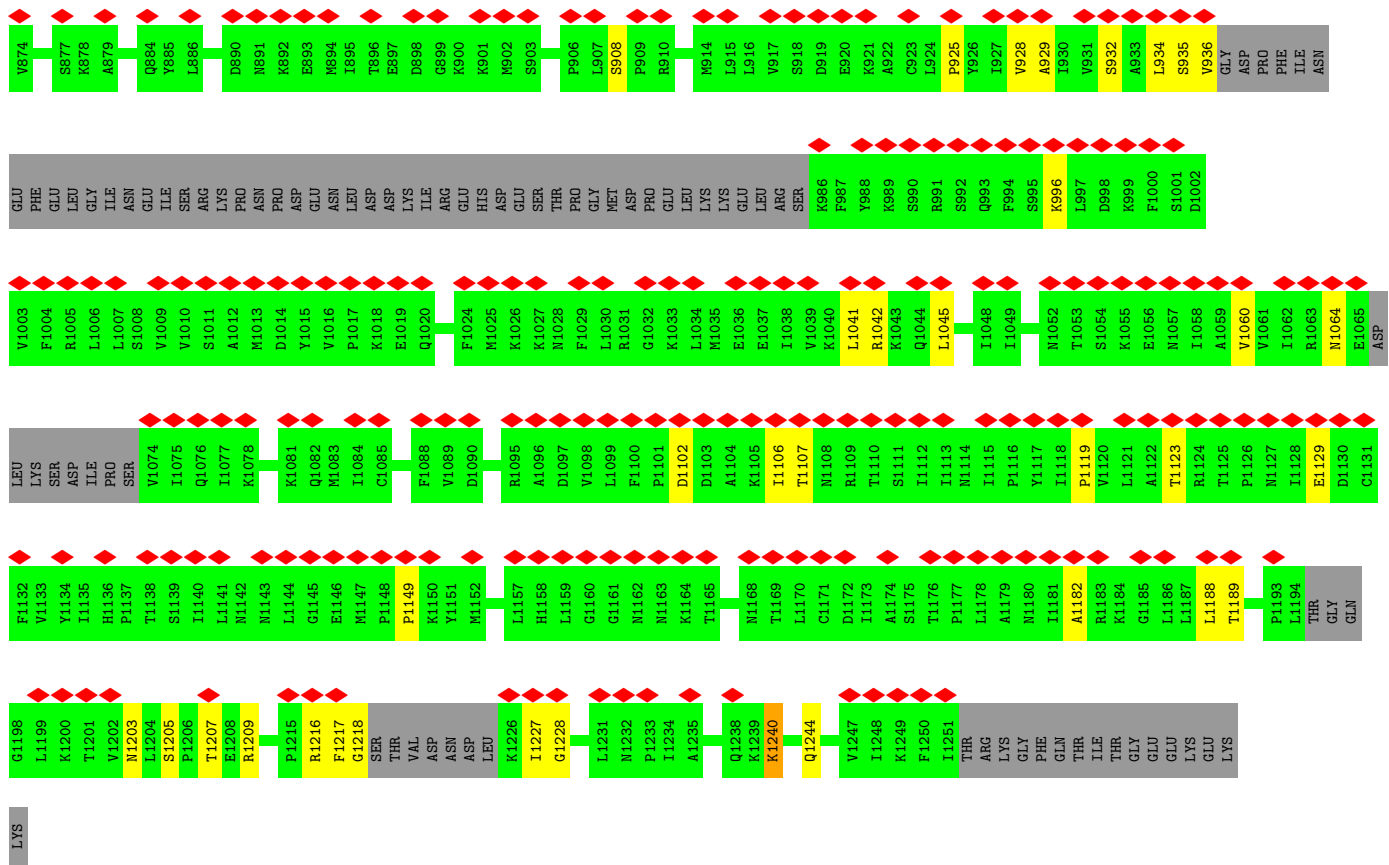


- Molecule 14: Ribosomal RNA-processing protein 7

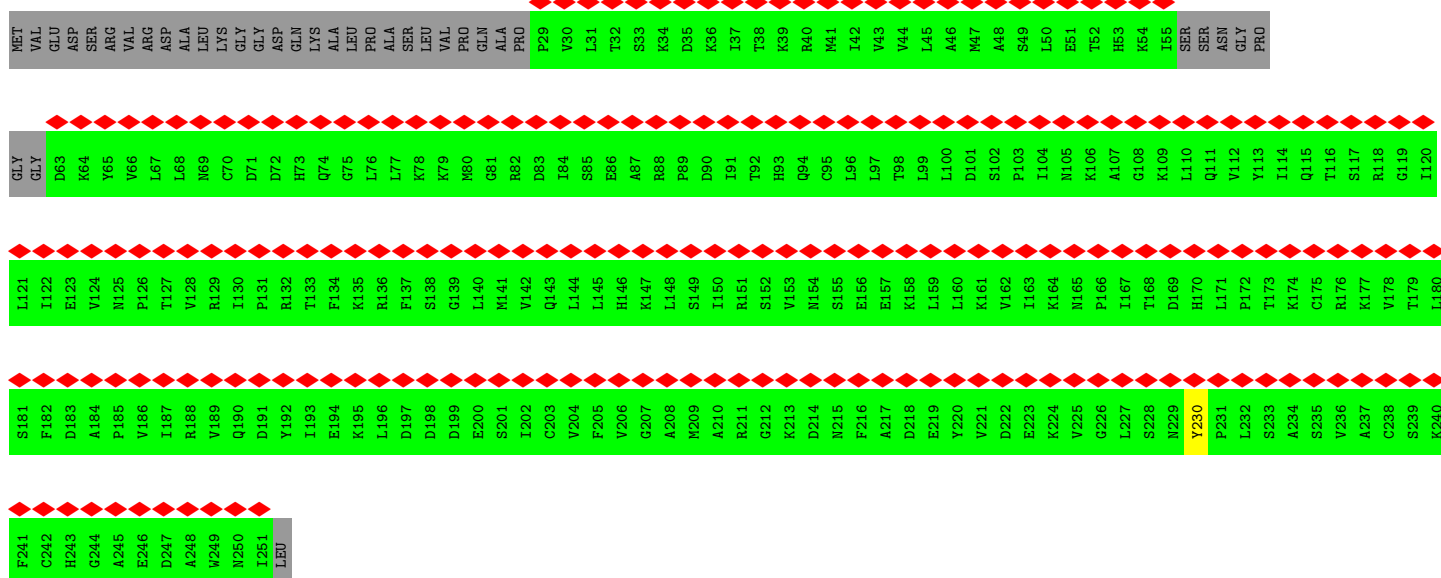
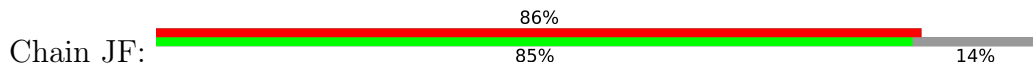


● Molecule 15: Probable ATP-dependent RNA helicase DHR1

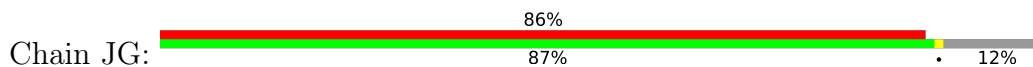




● Molecule 16: Ribosomal RNA small subunit methyltransferase NEP1

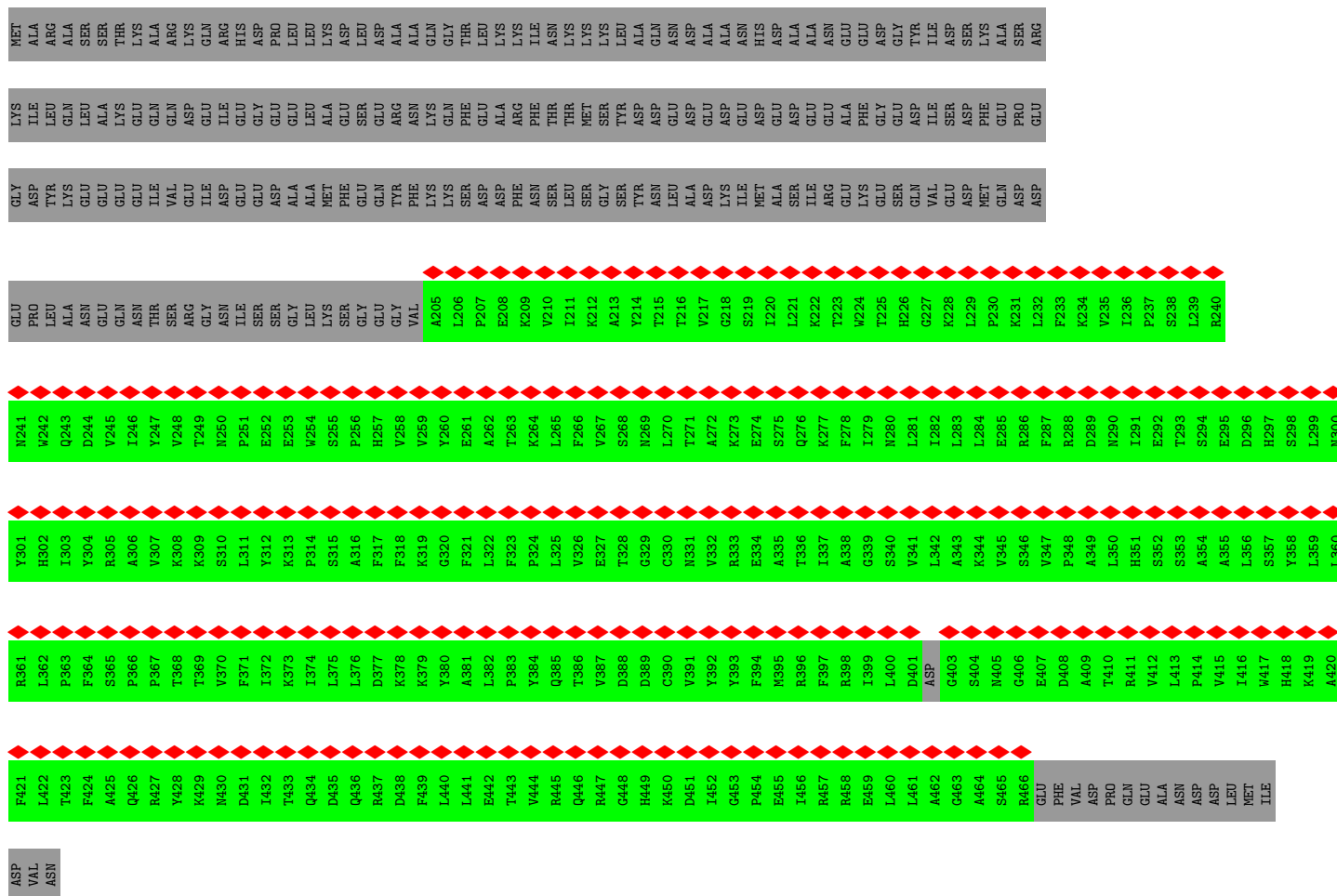


● Molecule 16: Ribosomal RNA small subunit methyltransferase NEP1

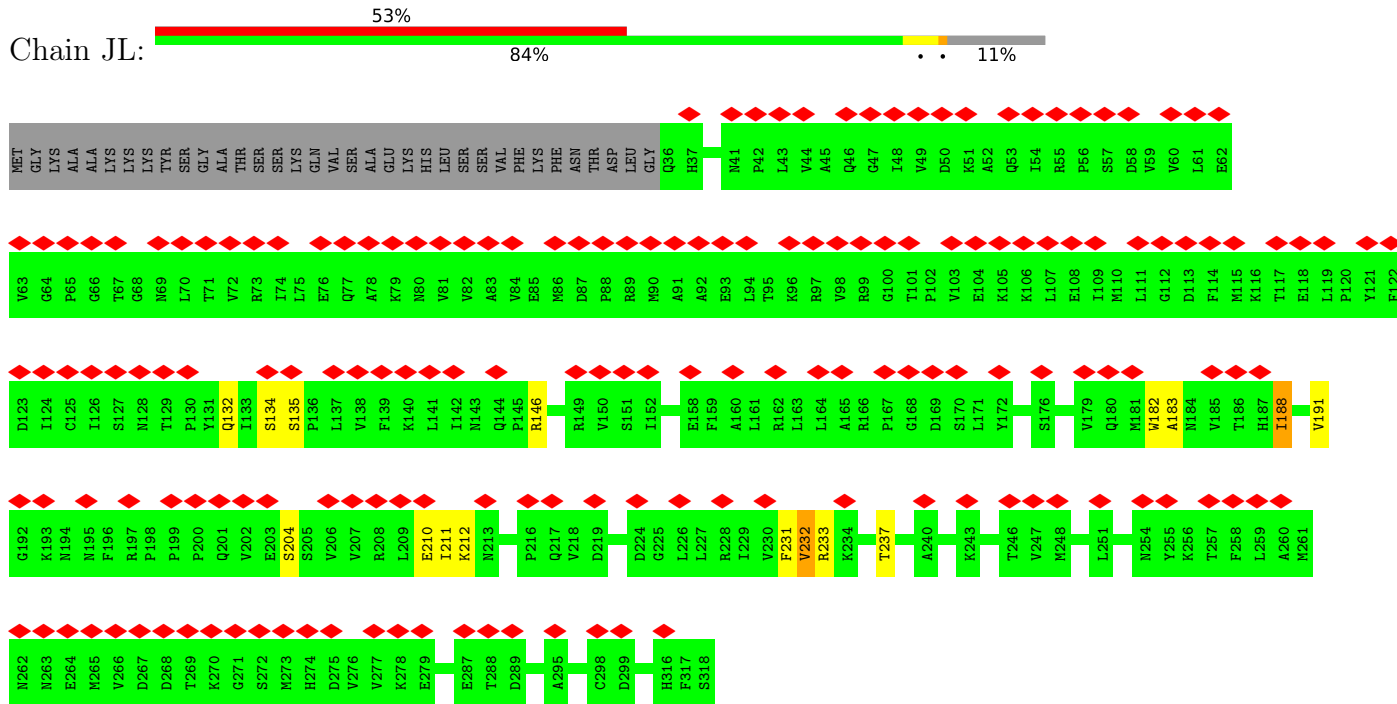




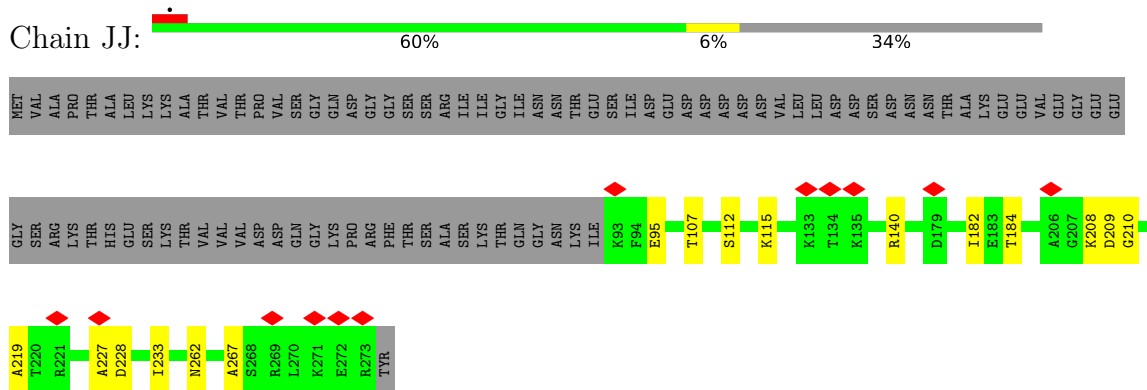
• Molecule 17: Essential nuclear protein 1



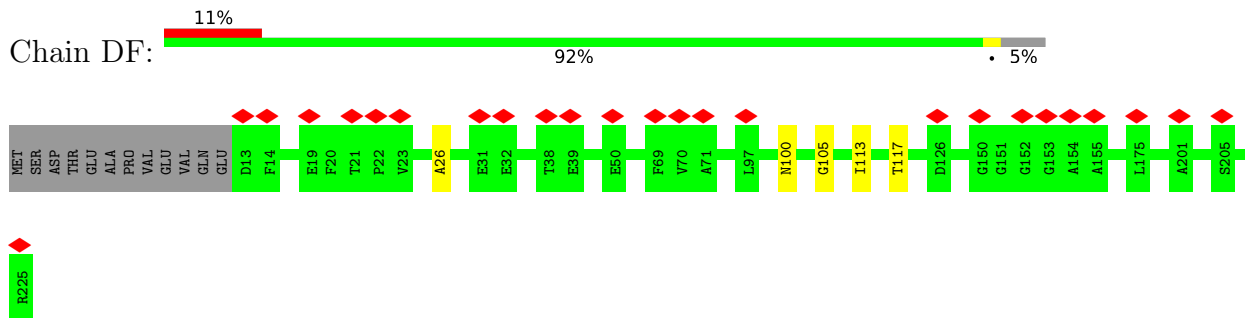
• Molecule 18: Dimethyladenosine transferase



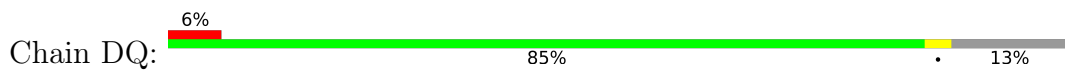
• Molecule 19: Pre-rRNA-processing protein PNO1

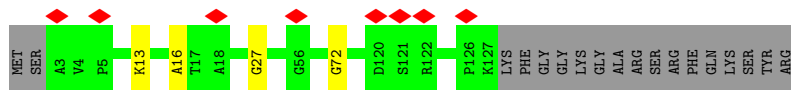


• Molecule 20: Rps5p

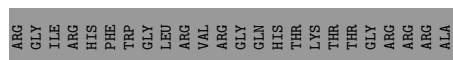
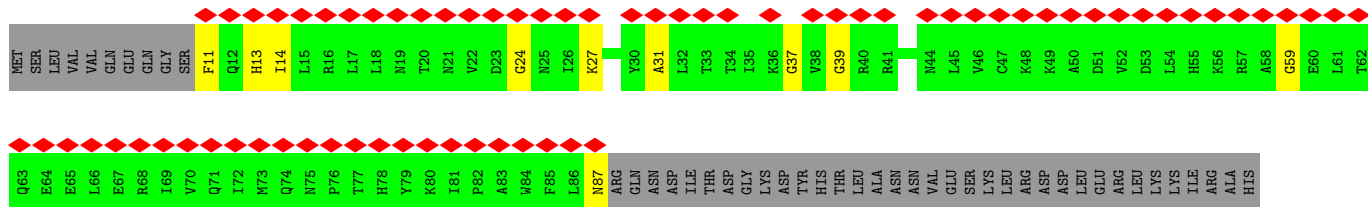


• Molecule 21: 40S ribosomal protein S16-A

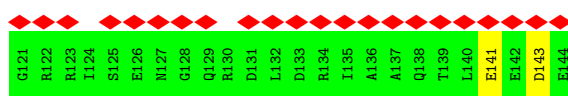
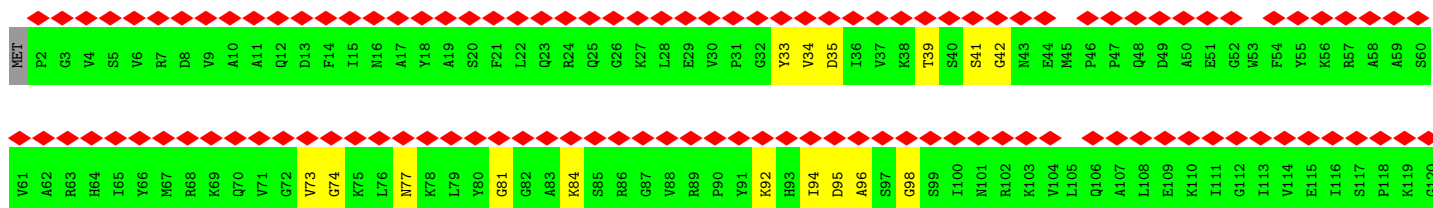
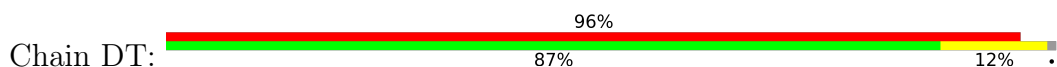




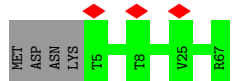
• Molecule 22: 40S ribosomal protein S18-A



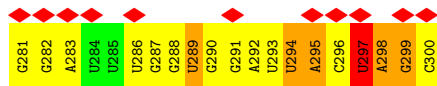
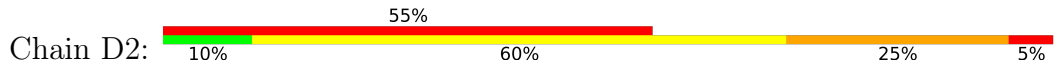
• Molecule 23: 40S ribosomal protein S19-A



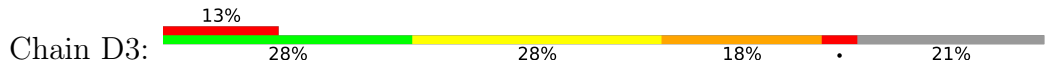
• Molecule 24: 40S ribosomal protein S28-A

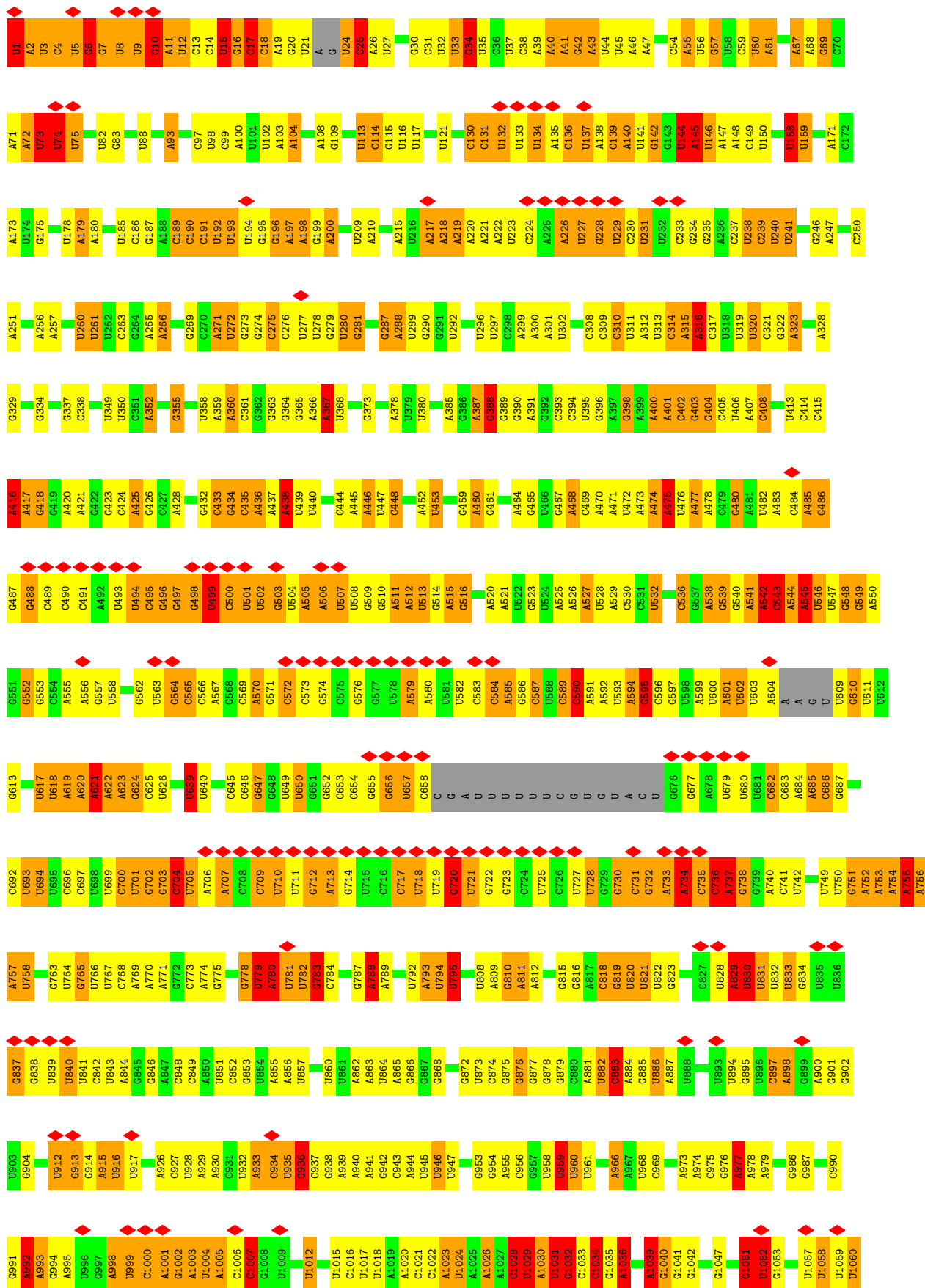


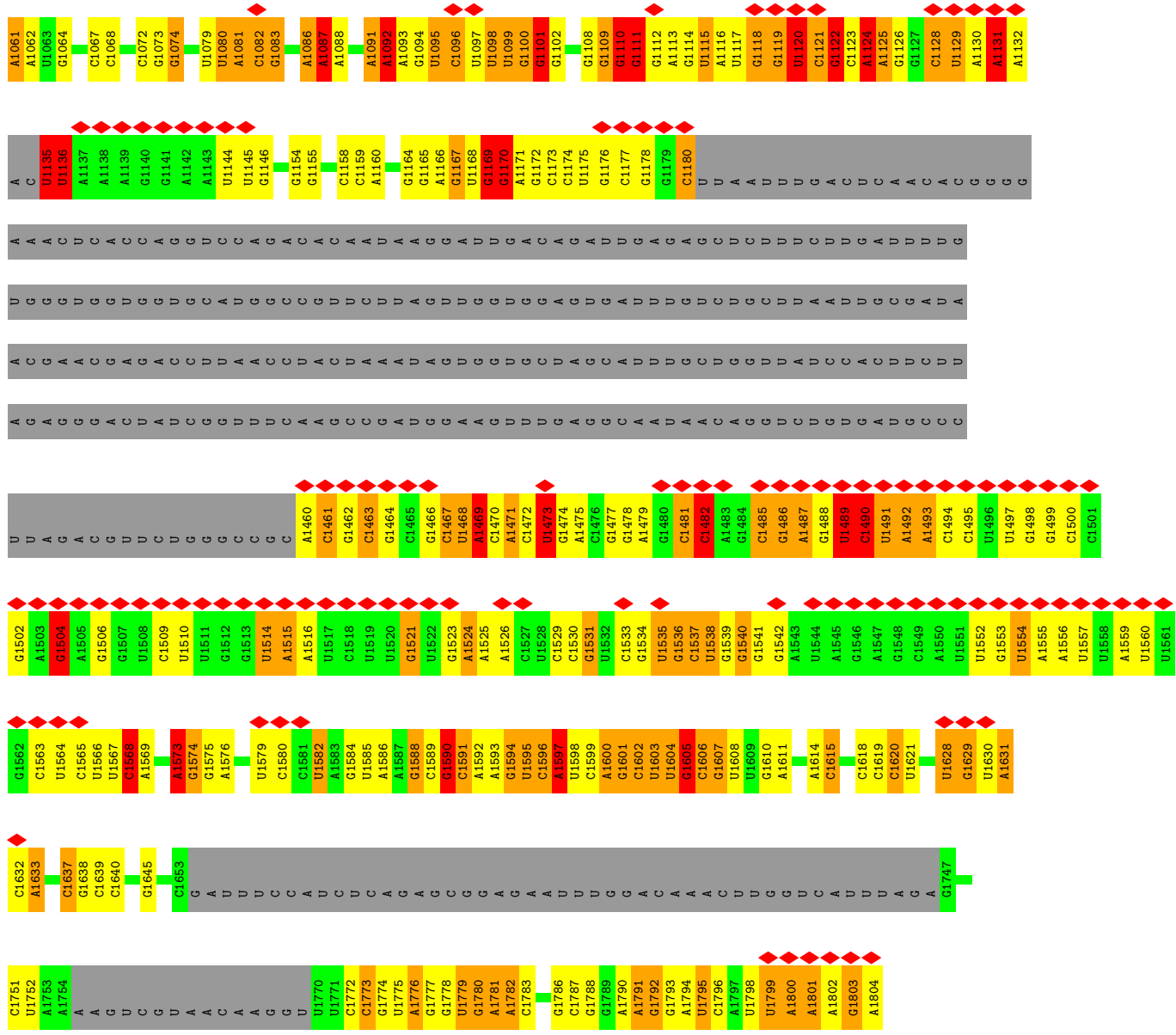
• Molecule 25: 5ETS RNA



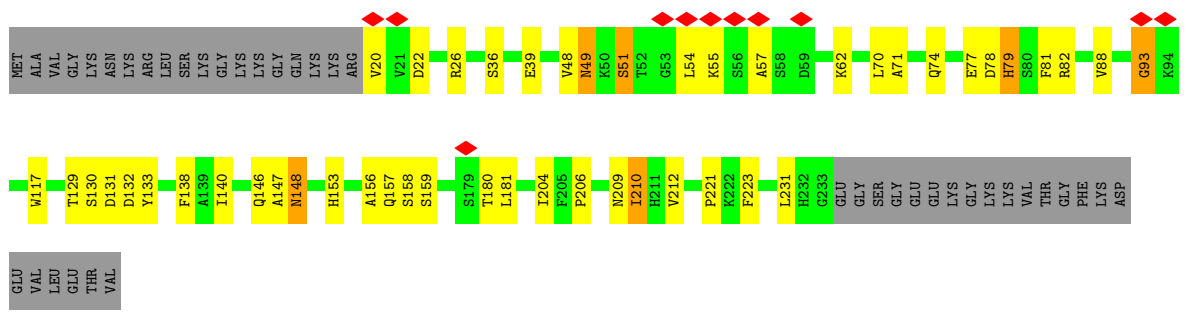
• Molecule 26: 18S rRNA



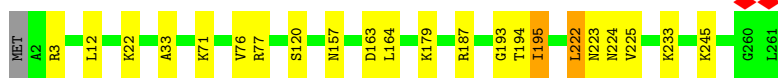




• Molecule 27: 40S ribosomal protein S1-A



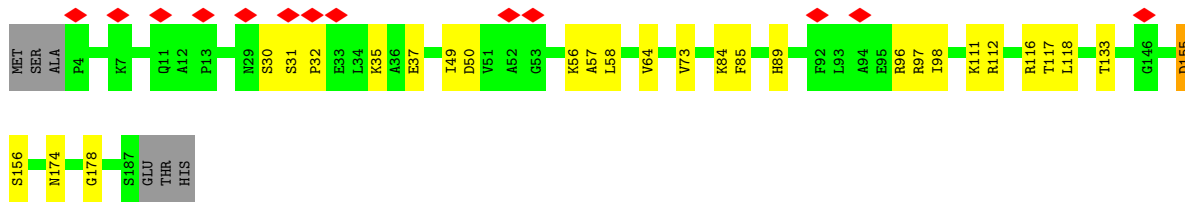
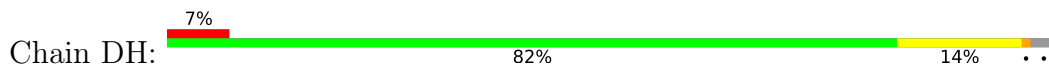
• Molecule 28: 40S ribosomal protein S4-A



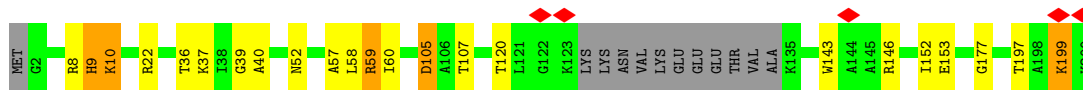
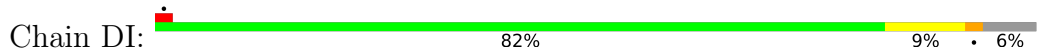
- Molecule 29: 40S ribosomal protein S6-A



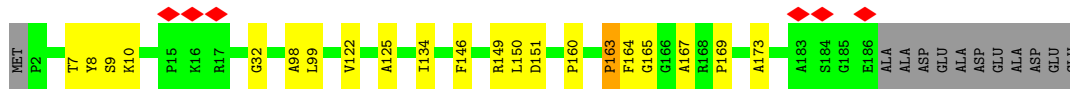
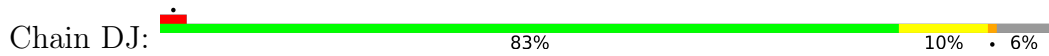
- Molecule 30: 40S ribosomal protein S7-A



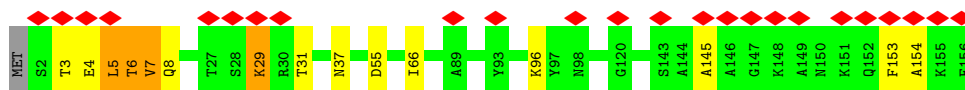
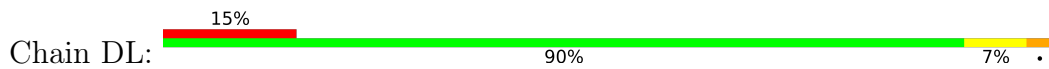
- Molecule 31: 40S ribosomal protein S8-A



- Molecule 32: 40S ribosomal protein S9-A

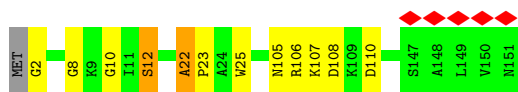


- Molecule 33: 40S ribosomal protein S11-A

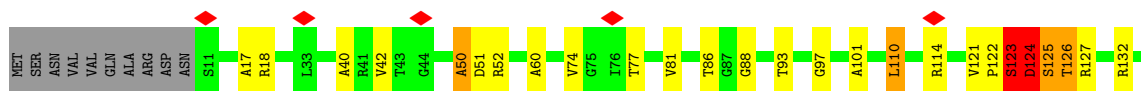
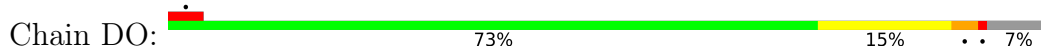


- Molecule 34: 40S ribosomal protein S13

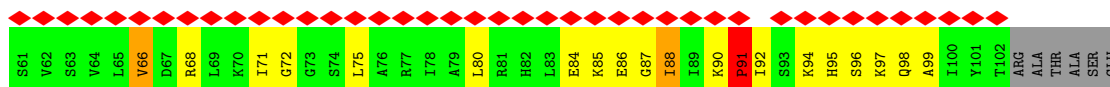
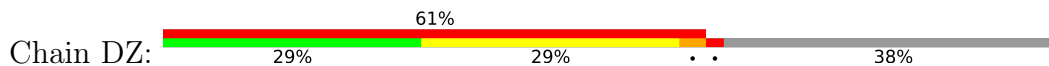




- Molecule 35: 40S ribosomal protein S14-A



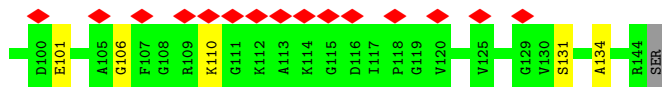
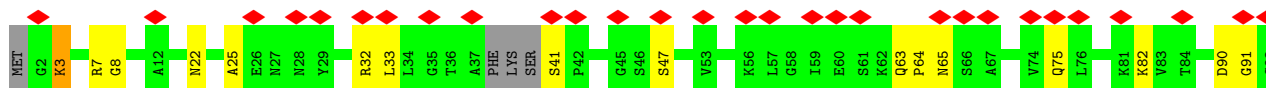
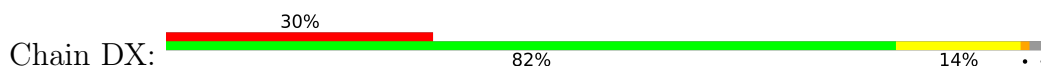
- Molecule 36: 40S ribosomal protein S25-A



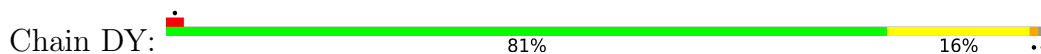
- Molecule 37: 40S ribosomal protein S22-A



- Molecule 38: 40S ribosomal protein S23-A

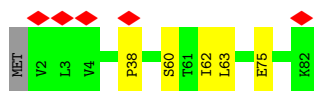


- Molecule 39: 40S ribosomal protein S24-A

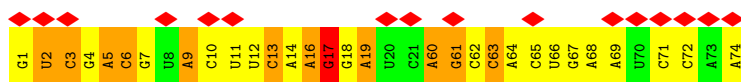
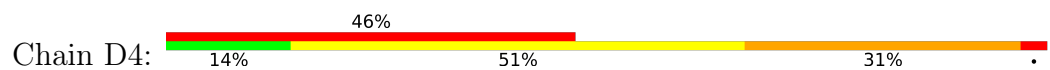




- Molecule 40: 40S ribosomal protein S27-A



- Molecule 41: U3 snoRNA



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	16654	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 ($e^-/\text{\AA}^2$)	44	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.053	Depositor
Minimum map value	-0.024	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.002	Depositor
Recommended contour level	0.01	Depositor
Map size (Å)	508.32, 508.32, 508.32	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.059, 1.059, 1.059	Depositor

5 Model quality i

5.1 Standard geometry i

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

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	UA	0.66	0/3913	0.69	0/5447
2	UB	0.29	0/1841	0.49	2/2568 (0.1%)
3	UC	0.33	0/232	0.47	0/322
4	UL	0.30	0/3834	0.57	0/5330
5	UM	0.66	0/3756	0.89	3/5219 (0.1%)
6	US	0.31	0/2483	0.50	2/3466 (0.1%)
7	UU	0.44	0/4324	0.59	0/6010
8	UV	0.28	0/5410	0.47	0/7534
9	CI	0.36	0/780	0.56	0/1088
10	CJ	0.38	0/1082	0.65	0/1506
11	CK	0.55	0/1097	0.60	0/1527
12	CL	0.57	1/3427 (0.0%)	0.64	0/4764
13	CM	0.47	0/1766	0.59	0/2451
14	CN	0.27	0/913	0.47	0/1271
15	JD	0.60	1/3985 (0.0%)	1.00	3/5539 (0.1%)
16	JF	0.28	0/1069	0.49	0/1488
16	JG	0.31	0/1094	0.50	0/1523
17	JH	0.37	0/1293	0.50	0/1801
18	JL	0.71	1/1400 (0.1%)	0.91	2/1950 (0.1%)
19	JJ	0.56	0/892	0.57	0/1240
20	DF	0.34	0/1054	0.58	0/1468
21	DQ	0.38	0/615	0.62	0/854
22	DS	0.26	0/380	0.53	0/528
23	DT	0.28	0/699	0.61	0/968
24	Dc	0.33	0/309	0.56	0/428
25	D2	2.98	50/479 (10.4%)	1.85	19/745 (2.6%)
26	D3	0.69	8/33150 (0.0%)	1.27	250/51635 (0.5%)
27	DA	0.56	0/1060	0.67	0/1477
28	DE	0.48	0/1275	0.73	0/1769
29	DG	0.53	0/1112	0.66	0/1545
30	DH	0.43	0/912	0.66	0/1271
31	DI	0.53	0/922	0.73	0/1278

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
32	DJ	0.46	0/914	0.65	0/1272
33	DL	0.53	0/765	0.65	0/1064
34	DN	0.45	0/741	0.67	1/1031 (0.1%)
35	DO	0.51	0/619	0.67	0/856
36	DZ	0.41	0/331	0.69	2/460 (0.4%)
37	DW	0.48	0/633	0.71	0/878
38	DX	0.44	0/682	0.67	0/942
39	DY	0.41	0/660	0.61	0/917
40	Db	0.41	0/399	0.65	0/554
41	D4	1.91	37/828 (4.5%)	1.59	21/1282 (1.6%)
All	All	0.62	98/93130 (0.1%)	0.96	305/135266 (0.2%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
4	UL	0	2
5	UM	0	3
7	UU	0	1
10	CJ	0	3
12	CL	0	2
18	JL	0	1
21	DQ	0	1
22	DS	0	1
26	D3	0	4
35	DO	0	3
36	DZ	0	1
38	DX	0	1
All	All	0	23

The worst 5 of 98 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
25	D2	292	A	N9-C4	-10.81	1.31	1.37
18	JL	188	ILE	C-N	8.72	1.54	1.34
25	D2	298	A	N3-C4	-8.70	1.29	1.34
12	CL	56	VAL	C-N	8.35	1.50	1.34
25	D2	292	A	N3-C4	-8.21	1.29	1.34

The worst 5 of 305 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
26	D3	897	C	P-O3'-C3'	-27.03	87.27	119.70
26	D3	15	U	C4'-C3'-O3'	20.56	154.12	113.00
26	D3	1111	G	N9-C1'-C2'	-16.31	92.80	114.00
26	D3	16	G	O5'-P-OP2	-14.71	92.47	105.70
26	D3	897	C	O3'-P-O5'	-14.19	77.04	104.00

There are no chirality outliers.

5 of 23 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
4	UL	16	VAL	Peptide
4	UL	678	ASP	Peptide
5	UM	282	ASN	Peptide
5	UM	467	ILE	Peptide
5	UM	489	ALA	Peptide

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	UA	3916	0	1763	121	0
2	UB	1845	0	787	26	0
3	UC	233	0	103	29	0
4	UL	3841	0	1710	22	0
5	UM	3763	0	1686	112	0
6	US	2486	0	1067	13	0
7	UU	4328	0	1932	17	0
8	UV	5417	0	2327	16	0
9	CI	781	0	329	0	0
10	CJ	1083	0	477	62	0
11	CK	1101	0	482	42	0
12	CL	3433	0	1517	73	0
13	CM	1767	0	795	3	0
14	CN	916	0	401	17	0
15	JD	3995	0	1737	47	0
16	JF	1071	0	467	1	0
16	JG	1096	0	478	4	0
17	JH	1295	0	570	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
18	JL	1401	0	604	20	0
19	JJ	893	0	397	35	0
20	DF	1055	0	496	6	0
21	DQ	616	0	285	2	0
22	DS	381	0	167	15	0
23	DT	700	0	332	22	0
24	Dc	310	0	134	0	0
25	D2	429	0	213	23	0
26	D3	29645	0	14916	1497	0
27	DA	1061	0	473	21	0
28	DE	1276	0	576	13	0
29	DG	1113	0	510	5	0
30	DH	913	0	400	12	0
31	DI	924	0	452	10	0
32	DJ	915	0	422	18	0
33	DL	766	0	340	6	0
34	DN	742	0	345	17	0
35	DO	620	0	311	49	0
36	DZ	332	0	149	22	0
37	DW	634	0	289	25	0
38	DX	684	0	315	64	0
39	DY	661	0	310	40	0
40	Db	400	0	180	0	0
41	D4	743	0	381	39	0
42	Db	1	0	0	0	0
All	All	89582	0	41625	2049	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 16.

The worst 5 of 2049 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)
15:JD:88:LYS:CB	26:D3:1118:G:H22	1.07	1.68
26:D3:904:G:H4'	26:D3:1005:A:C2	1.32	1.63
26:D3:564:G:C4	26:D3:1596:C:C6	1.88	1.61
26:D3:564:G:C4	26:D3:1596:C:H6	1.15	1.59
26:D3:473:A:H4'	26:D3:768:C:C2	1.32	1.58

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	UA	786/923 (85%)	752 (96%)	32 (4%)	2 (0%)	41	76
2	UB	362/810 (45%)	347 (96%)	14 (4%)	1 (0%)	41	76
3	UC	45/610 (7%)	45 (100%)	0	0	100	100
4	UL	763/943 (81%)	712 (93%)	51 (7%)	0	100	100
5	UM	748/817 (92%)	698 (93%)	40 (5%)	10 (1%)	12	48
6	US	493/552 (89%)	470 (95%)	21 (4%)	2 (0%)	34	72
7	UU	870/939 (93%)	823 (95%)	45 (5%)	2 (0%)	47	81
8	UV	1079/1237 (87%)	1011 (94%)	68 (6%)	0	100	100
9	CI	155/183 (85%)	145 (94%)	8 (5%)	2 (1%)	12	48
10	CJ	217/290 (75%)	193 (89%)	24 (11%)	0	100	100
11	CK	213/593 (36%)	206 (97%)	4 (2%)	3 (1%)	11	46
12	CL	683/1183 (58%)	643 (94%)	36 (5%)	4 (1%)	25	65
13	CM	358/367 (98%)	344 (96%)	14 (4%)	0	100	100
14	CN	178/297 (60%)	169 (95%)	9 (5%)	0	100	100
15	JD	787/1267 (62%)	723 (92%)	52 (7%)	12 (2%)	10	46
16	JF	212/252 (84%)	208 (98%)	4 (2%)	0	100	100
16	JG	217/252 (86%)	211 (97%)	6 (3%)	0	100	100
17	JH	257/483 (53%)	252 (98%)	5 (2%)	0	100	100
18	JL	281/318 (88%)	267 (95%)	10 (4%)	4 (1%)	11	46
19	JJ	179/274 (65%)	167 (93%)	10 (6%)	2 (1%)	14	52
20	DF	211/225 (94%)	198 (94%)	13 (6%)	0	100	100
21	DQ	123/143 (86%)	111 (90%)	12 (10%)	0	100	100
22	DS	75/146 (51%)	68 (91%)	6 (8%)	1 (1%)	12	48
23	DT	141/144 (98%)	127 (90%)	13 (9%)	1 (1%)	22	62
24	Dc	61/67 (91%)	57 (93%)	4 (7%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
27	DA	212/255 (83%)	171 (81%)	18 (8%)	23 (11%)	0	8
28	DE	258/261 (99%)	223 (86%)	25 (10%)	10 (4%)	3	26
29	DG	224/236 (95%)	202 (90%)	16 (7%)	6 (3%)	5	33
30	DH	182/190 (96%)	147 (81%)	22 (12%)	13 (7%)	1	16
31	DI	184/200 (92%)	163 (89%)	10 (5%)	11 (6%)	1	19
32	DJ	183/197 (93%)	161 (88%)	15 (8%)	7 (4%)	3	26
33	DL	153/156 (98%)	126 (82%)	17 (11%)	10 (6%)	1	18
34	DN	148/151 (98%)	133 (90%)	12 (8%)	3 (2%)	7	39
35	DO	125/137 (91%)	95 (76%)	17 (14%)	13 (10%)	0	9
36	DZ	65/108 (60%)	28 (43%)	21 (32%)	16 (25%)	0	1
37	DW	127/130 (98%)	114 (90%)	12 (9%)	1 (1%)	19	60
38	DX	136/145 (94%)	120 (88%)	12 (9%)	4 (3%)	4	31
39	DY	132/135 (98%)	110 (83%)	14 (11%)	8 (6%)	1	18
40	Db	79/82 (96%)	62 (78%)	12 (15%)	5 (6%)	1	18
All	All	11702/15698 (74%)	10802 (92%)	724 (6%)	176 (2%)	14	46

5 of 176 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
5	UM	218	ASP
6	US	75	PRO
15	JD	1240	LYS
18	JL	232	VAL
23	DT	34	VAL

5.3.2 Protein sidechains [i](#)

There are no protein residues with a non-rotameric sidechain to report in this entry.

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
25	D2	19/20 (95%)	4 (21%)	0
26	D3	1387/1758 (78%)	489 (35%)	148 (10%)
41	D4	34/35 (97%)	8 (23%)	4 (11%)
All	All	1440/1813 (79%)	501 (34%)	152 (10%)

5 of 501 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
25	D2	289	U
25	D2	294	U
25	D2	295	A
25	D2	297	U
26	D3	2	A

5 of 152 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
26	D3	1115	U
26	D3	1780	G
26	D3	1130	A
26	D3	1568	C
41	D4	13	C

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 1 ligands modelled in this entry, 1 is monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues

The following chains have linkage breaks:

Mol	Chain	Number of breaks
41	D4	2

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	D4	21:C	O3'	60:A	P	58.94
1	D4	14:A	O3'	16:A	P	3.64

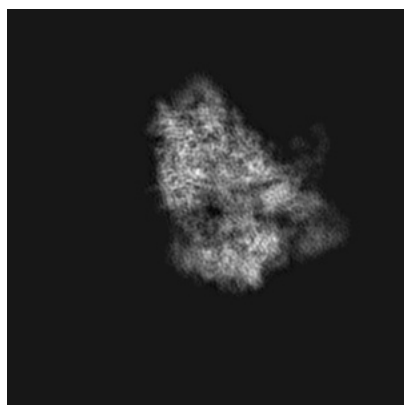
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-11362. These allow visual inspection of the internal detail of the map and identification of artifacts.

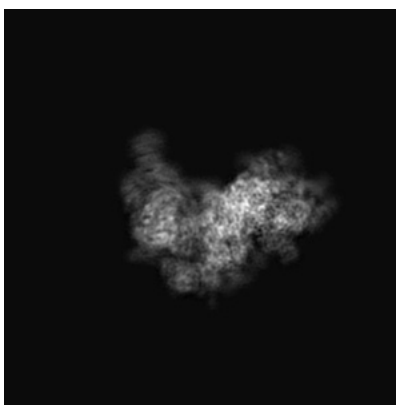
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

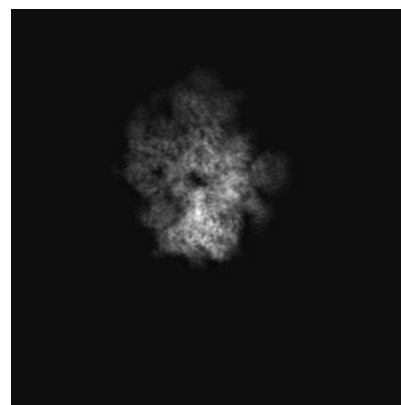
6.1.1 Primary map



X



Y

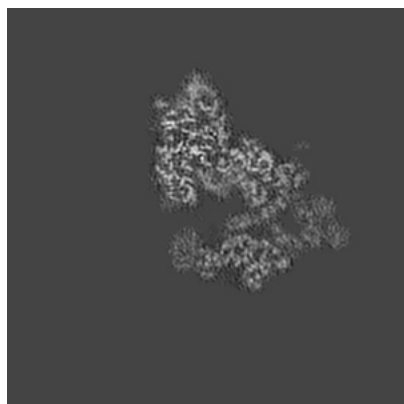


Z

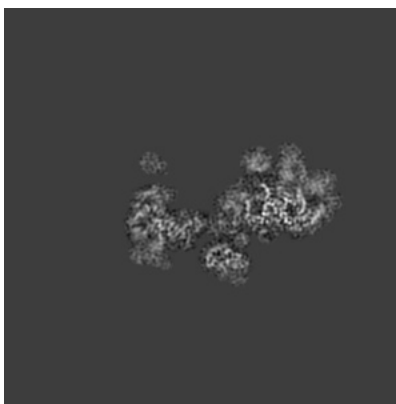
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

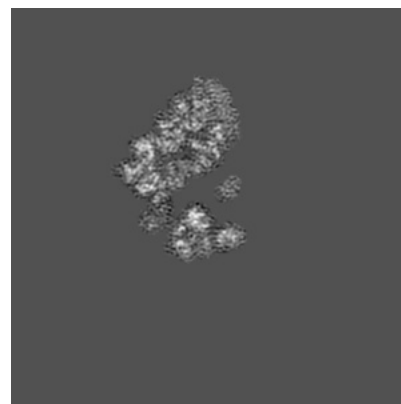
6.2.1 Primary map



X Index: 240



Y Index: 240

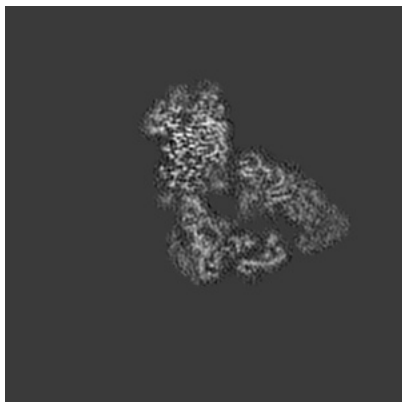


Z Index: 240

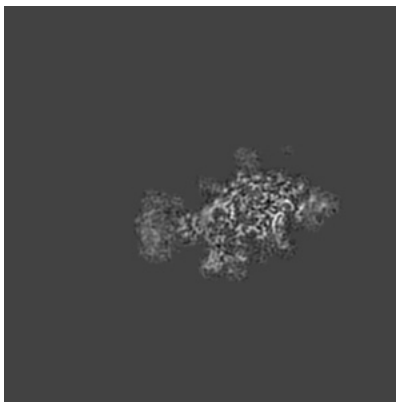
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

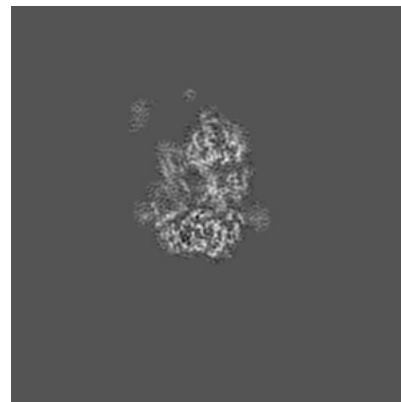
6.3.1 Primary map



X Index: 224



Y Index: 219

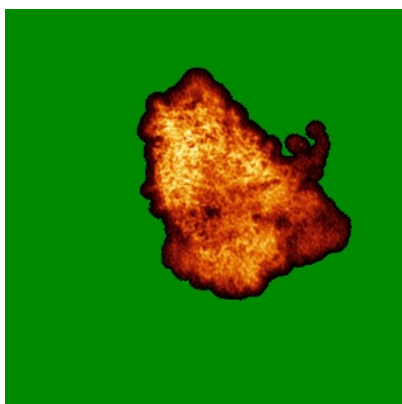


Z Index: 285

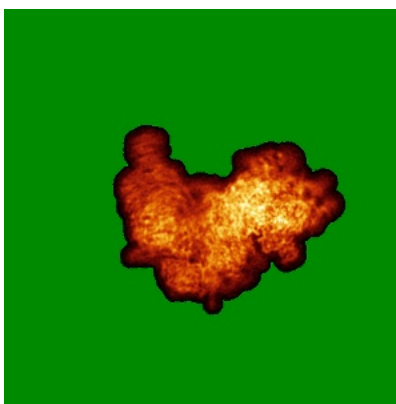
The images above show the largest variance slices of the map in three orthogonal directions.

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

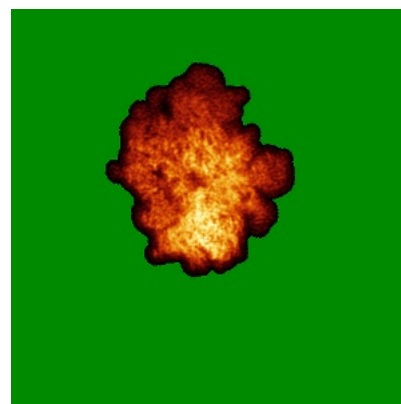
6.4.1 Primary map



X



Y

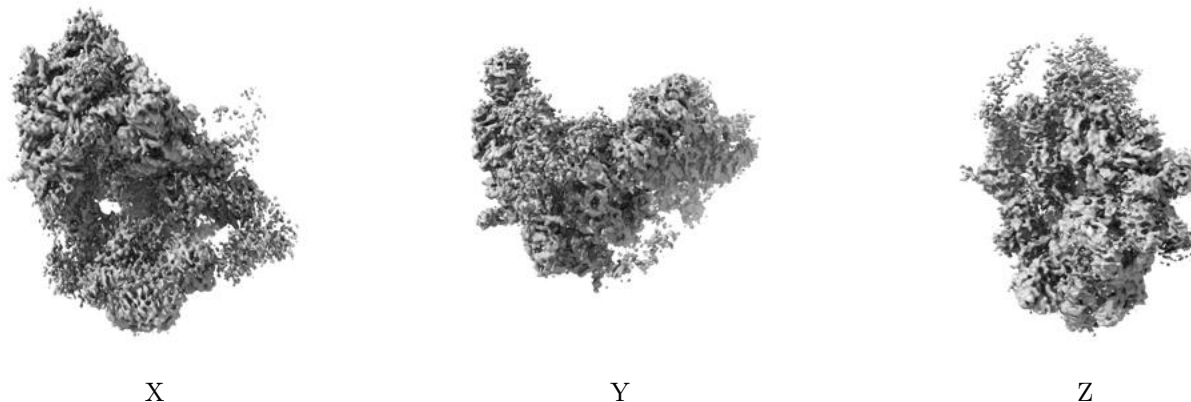


Z

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

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.01. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

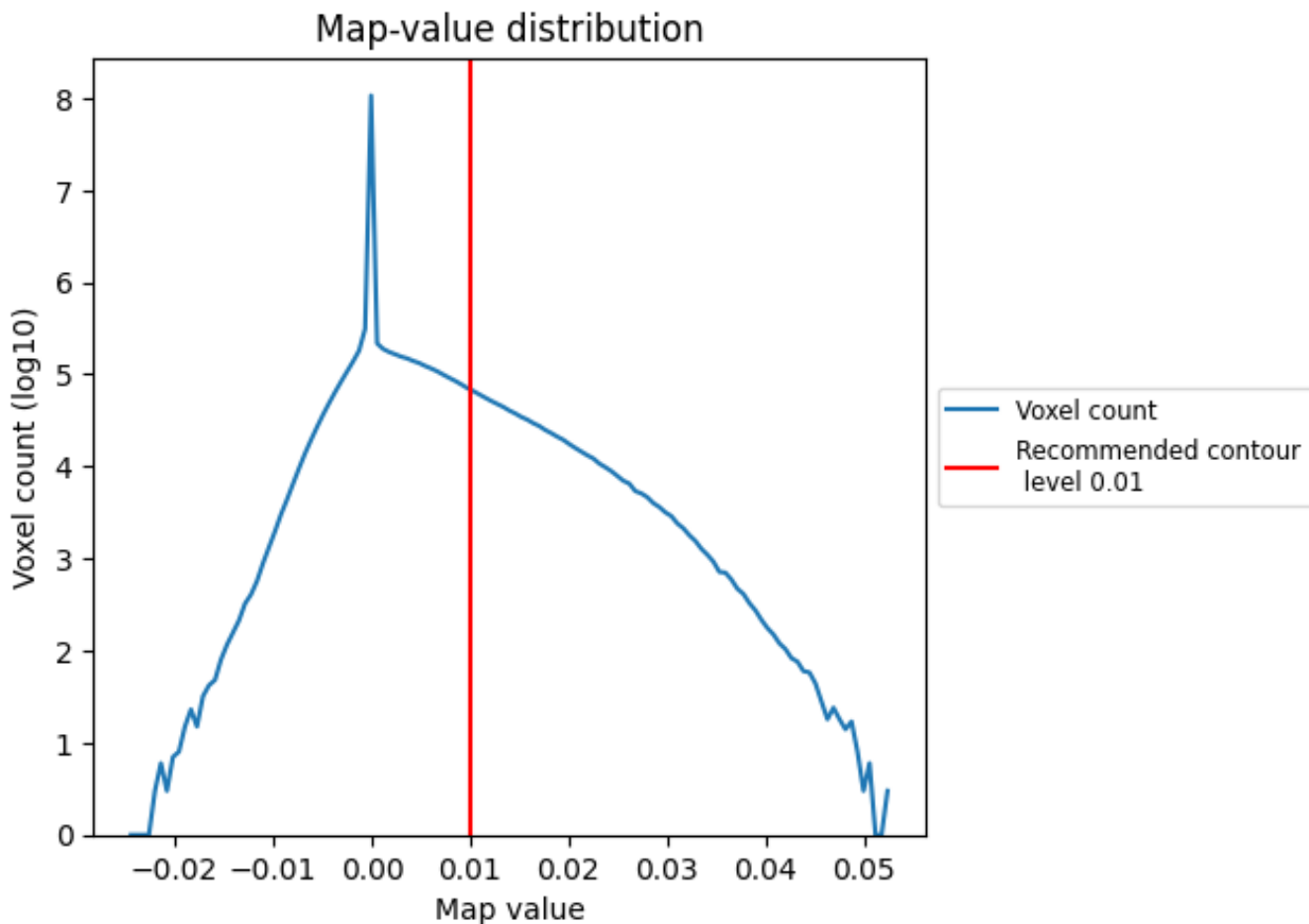
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

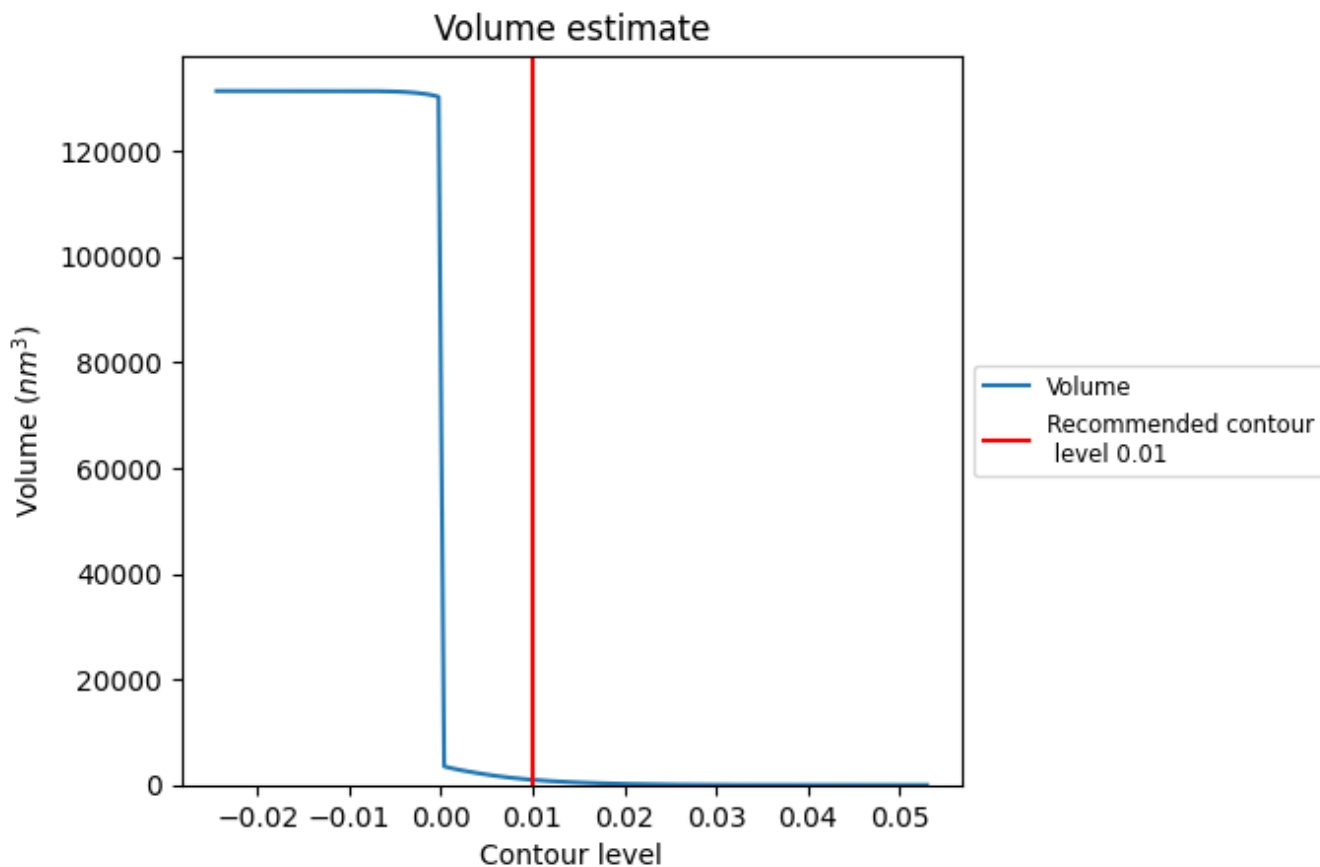
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

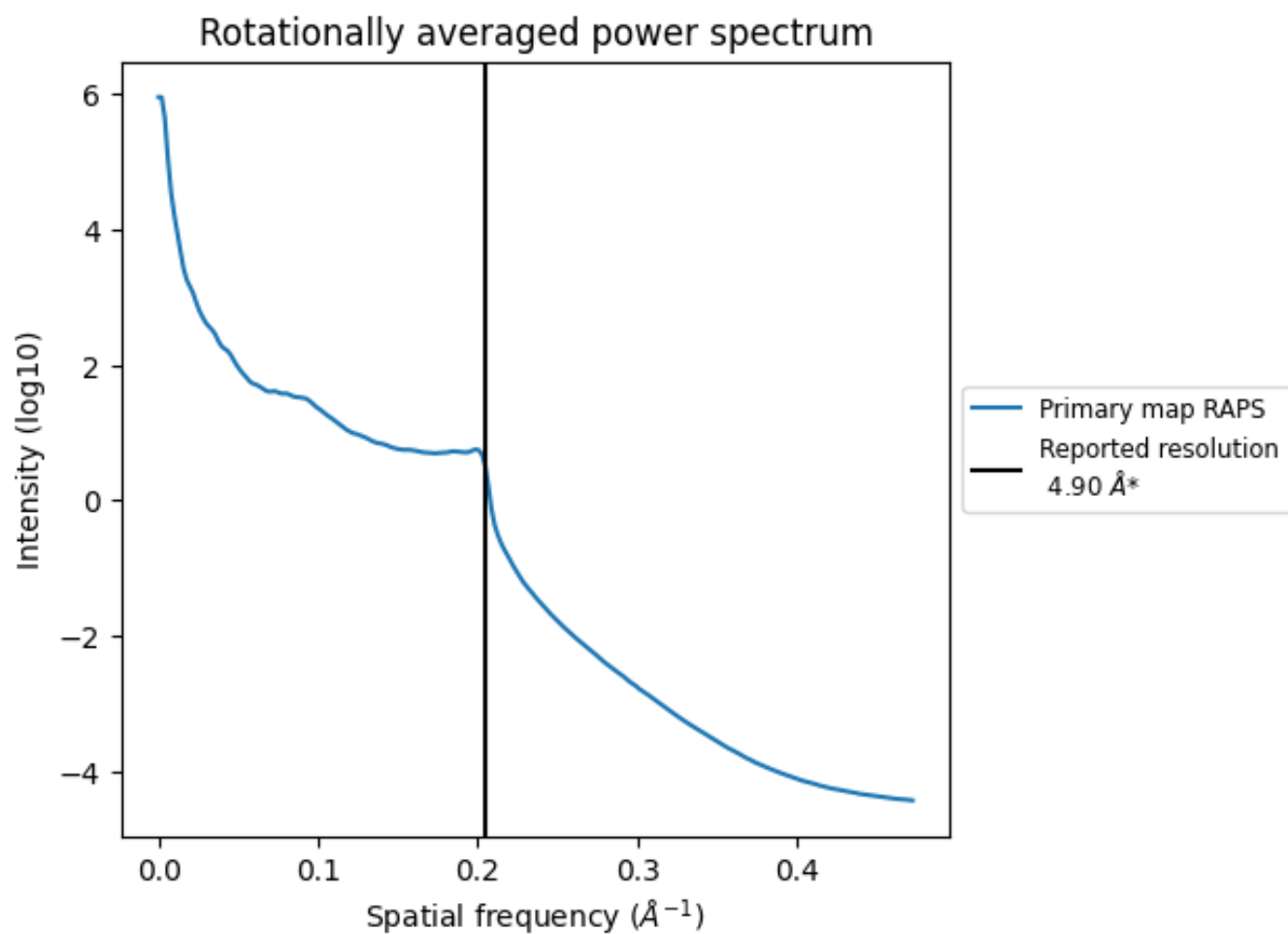
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 976 nm³; this corresponds to an approximate mass of 881 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum [i](#)

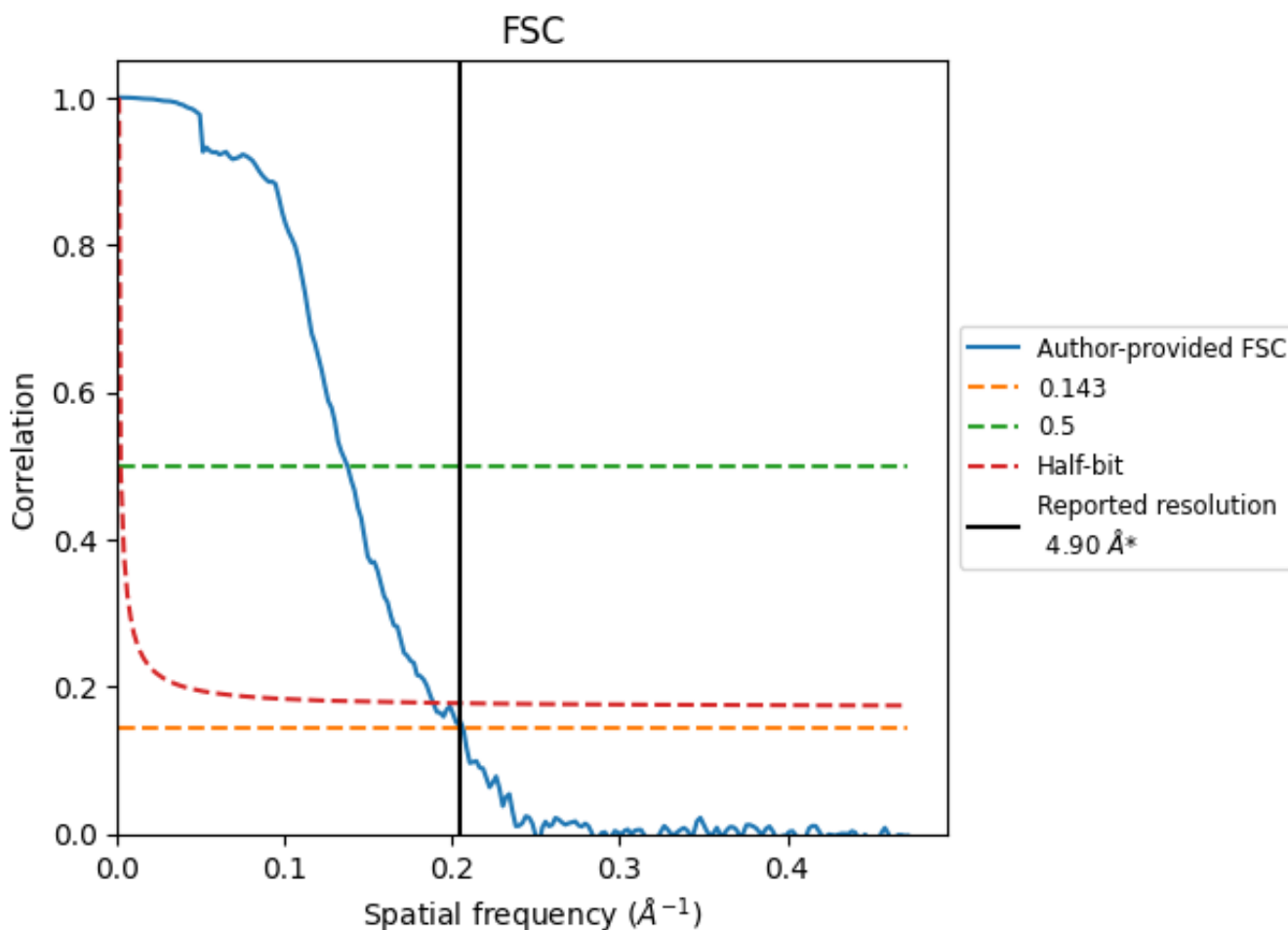


*Reported resolution corresponds to spatial frequency of 0.204\AA^{-1}

8 Fourier-Shell correlation [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 0.204 Å⁻¹

8.2 Resolution estimates [i](#)

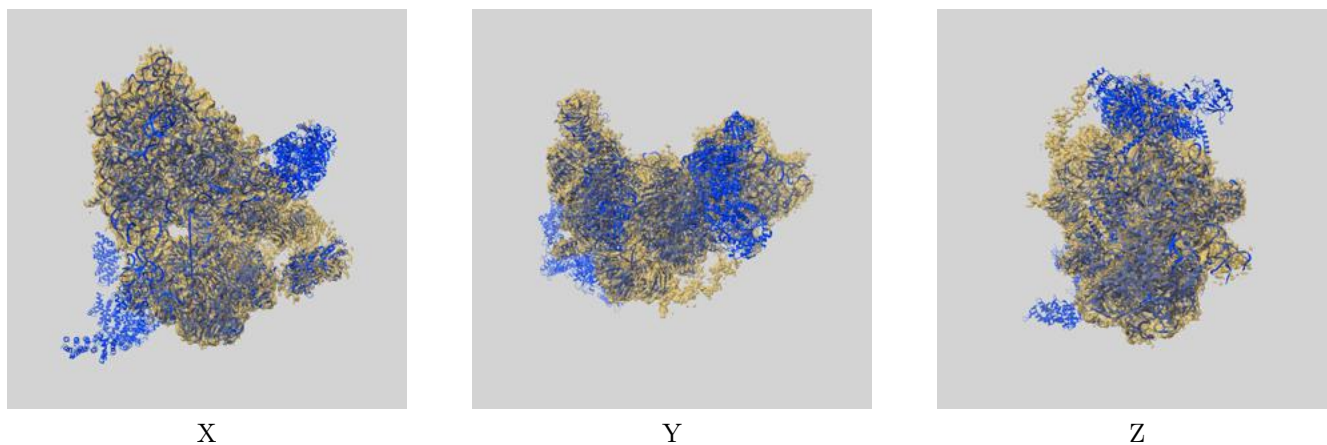
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.90	-	-
Author-provided FSC curve	4.84	7.28	5.30
Unmasked-calculated*	-	-	-

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

9 Map-model fit [i](#)

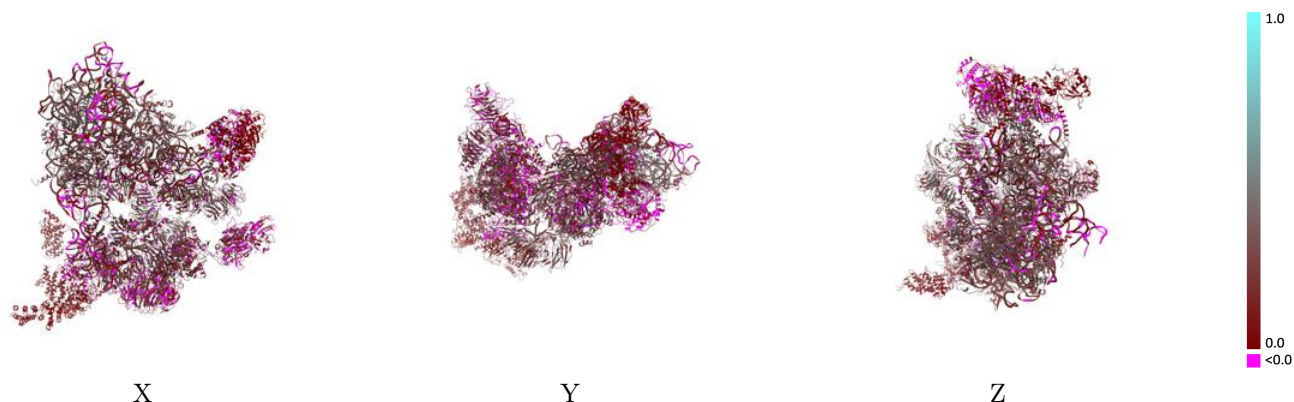
This section contains information regarding the fit between EMDB map EMD-11362 and PDB model 6ZQF. Per-residue inclusion information can be found in section 3 on page 12.

9.1 Map-model overlay [i](#)



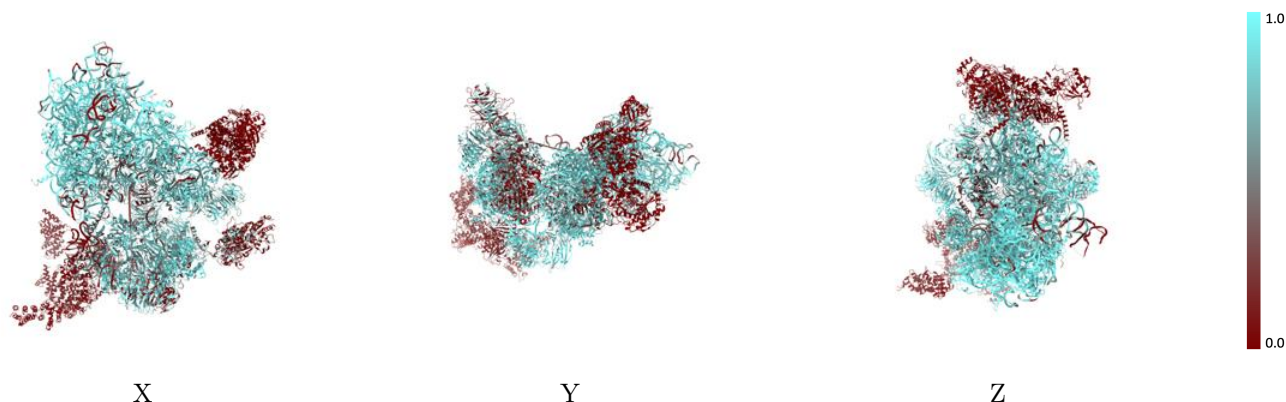
The images above show the 3D surface view of the map at the recommended contour level 0.01 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



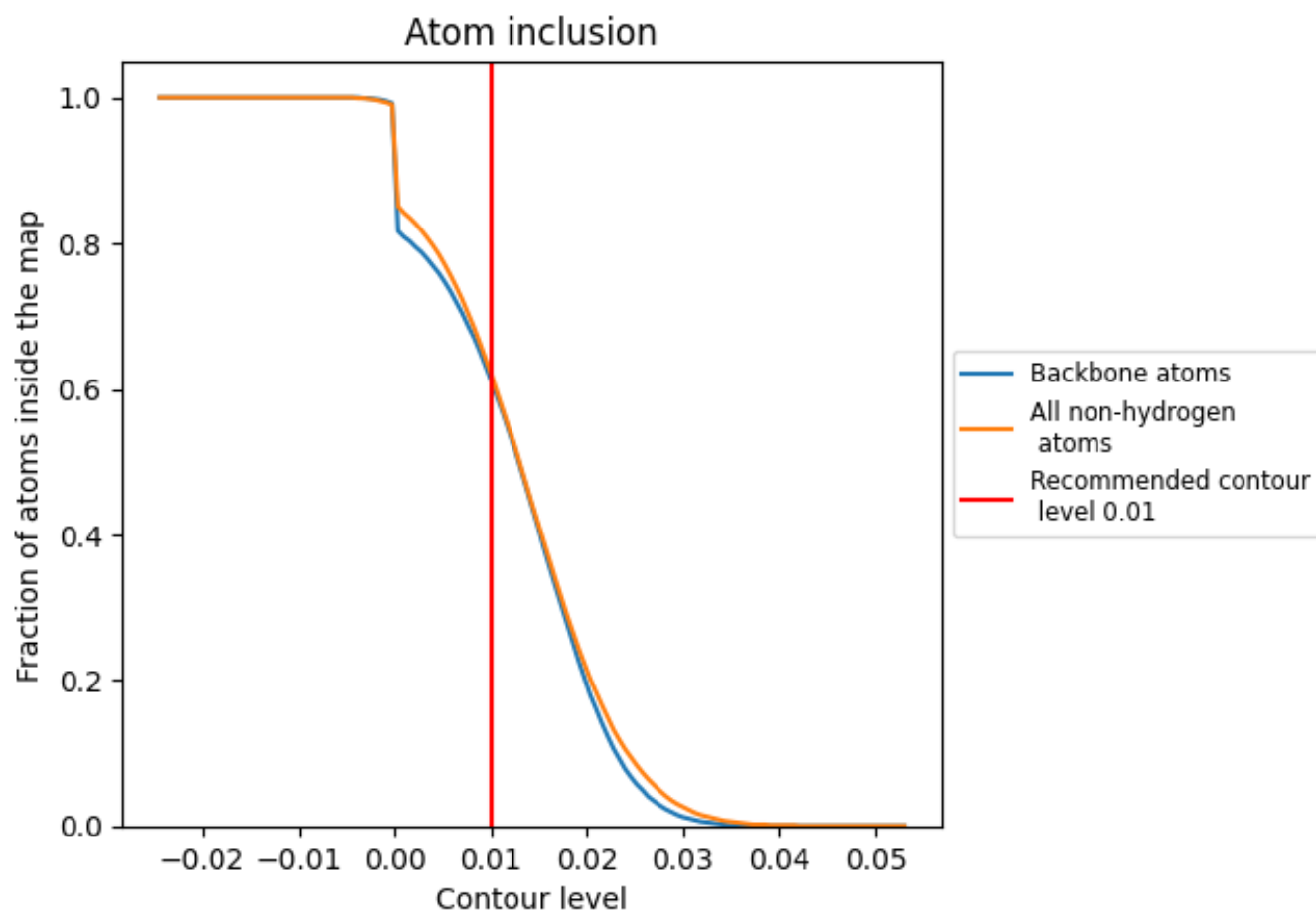
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.01).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 61% 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 (0.01) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.6210	 0.1920
CI	 0.6320	 0.2070
CJ	 0.8130	 0.3020
CK	 0.7440	 0.2380
CL	 0.8810	 0.3100
CM	 0.9290	 0.3380
CN	 0.0090	 0.0120
D2	 0.4200	 0.1080
D3	 0.7560	 0.2010
D4	 0.4360	 0.1260
DA	 0.8810	 0.3130
DE	 0.9400	 0.3670
DF	 0.8120	 0.2640
DG	 0.9220	 0.2900
DH	 0.8830	 0.2930
DI	 0.9240	 0.3140
DJ	 0.9140	 0.3090
DL	 0.8050	 0.2900
DN	 0.9150	 0.3320
DO	 0.8530	 0.2910
DQ	 0.8150	 0.2670
DS	 0.0790	 0.0220
DT	 0.0900	 0.0950
DW	 0.9240	 0.3390
DX	 0.6170	 0.1520
DY	 0.9350	 0.3400
DZ	 0.0240	 0.0330
Db	 0.8580	 0.3070
Dc	 0.8970	 0.3490
JD	 0.2520	 0.1100
JF	 0.0000	 -0.0010
JG	 0.0380	 -0.0220
JH	 0.0000	 0.0000
JJ	 0.8670	 0.2910
JL	 0.4230	 0.1400



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Chain	Atom inclusion	Q-score
UA	 0.7770	 0.2520
UB	 0.0020	 0.0060
UC	 0.6910	 0.1630
UL	 0.8820	 0.2890
UM	 0.7900	 0.2440
US	 0.0000	 -0.0000
UU	 0.5980	 0.1670
UV	 0.0210	 0.0100