wwPDB EM Validation Summary Report

Oct 20, 2024 – 09:35 AM EDT

PDB ID	:	6VYQ
EMDB ID	:	EMD-21468
Title	:	Escherichia coli transcription-translation complex A1 (TTC-A1) containing an 15 nt long mRNA spacer, NusG, and fMet-tRNAs at E-site and P-site
Authors	:	Molodtsov, V.; Wang, C.; Su, M.; Ebright, R.H.
Deposited on	:	2020-02-27
Resolution	:	3.70 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:

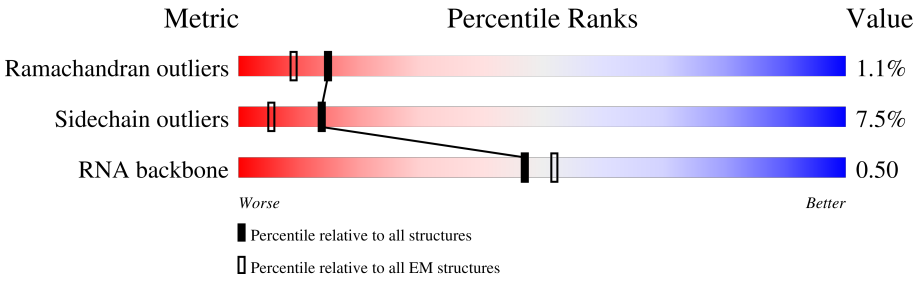
EMDB validation analysis	:	0.0.1.dev113
MolProbity	:	4.02b-467
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

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 3.70 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

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

Mol	Chain	Length	Quality of chain
1	0	103	7% 93% 7%
2	1	110	• 92% 8%
3	2	100	26% 89% 5% 6%
4	3	104	18% 91% 8% •
5	4	94	23% 96% •
6	5	36	64% 47% 17% 36%
7	6	36	75% 64% 11% 25%
8	7	32	97% 25% 72% •

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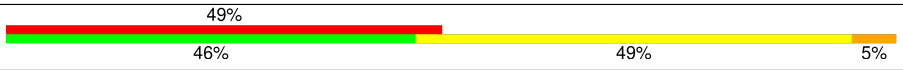
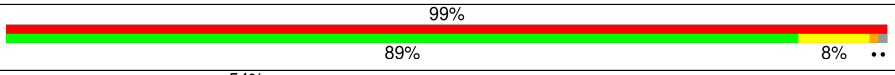
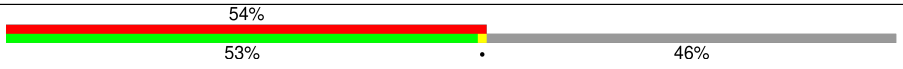
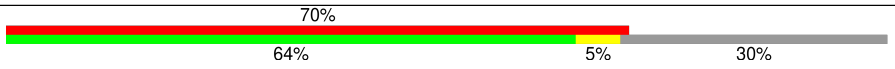
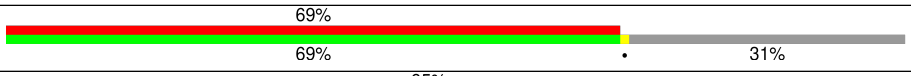
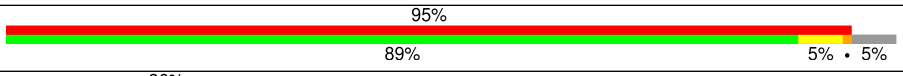
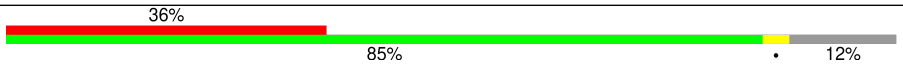
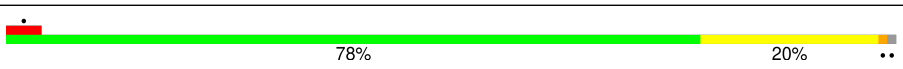
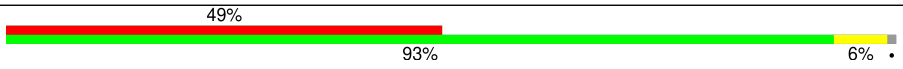
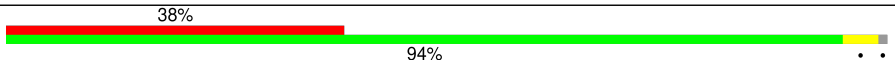
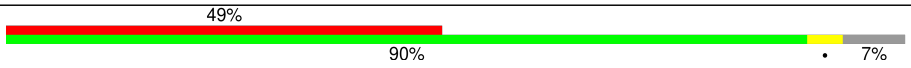
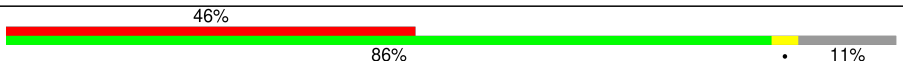
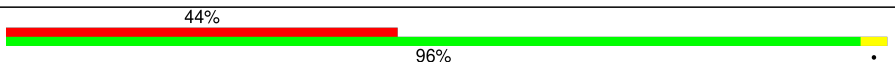
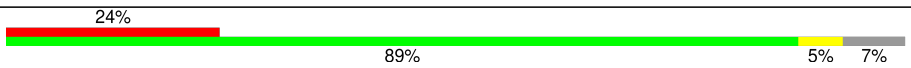
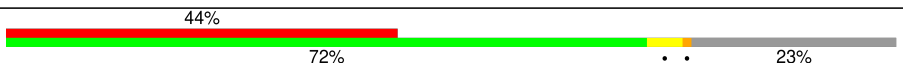
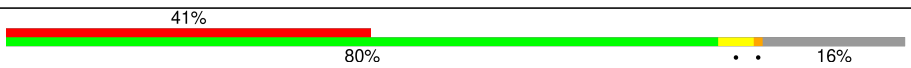
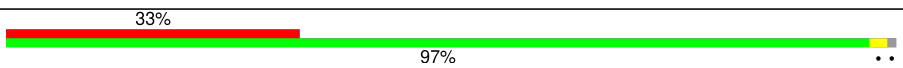
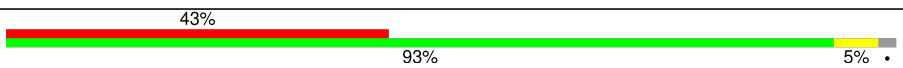
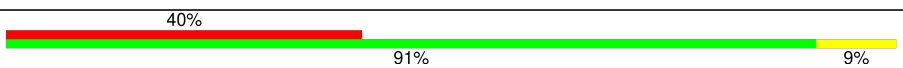
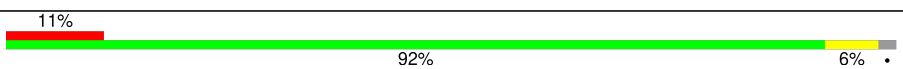
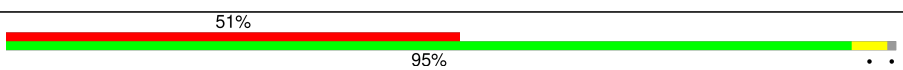
Mol	Chain	Length	Quality of chain
9	9	165	
10	A	76	
10	B	76	
11	AA	1341	
12	AB	181	
13	AC	329	
13	AD	329	
14	AE	1407	
15	C	75	
16	D	1542	
17	E	87	
18	F	71	
19	G	241	
20	H	557	
21	I	233	
22	J	206	
23	K	167	
24	L	135	
25	M	179	
26	N	130	
27	O	130	
28	P	99	
29	Q	129	
30	R	124	
31	S	101	

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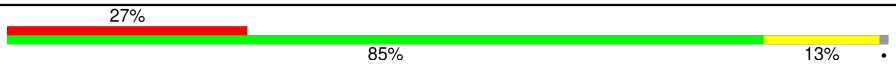
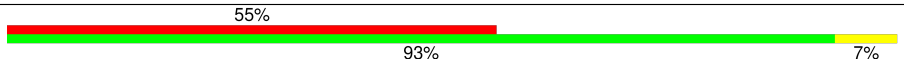
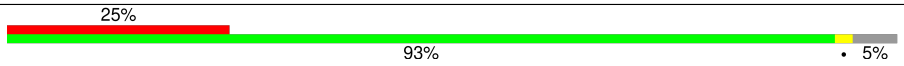
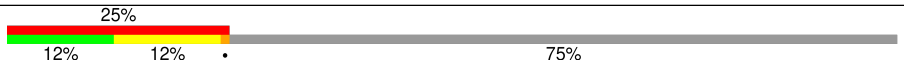
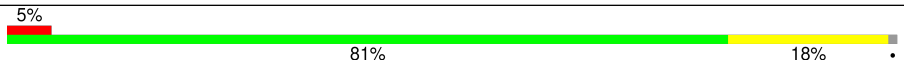
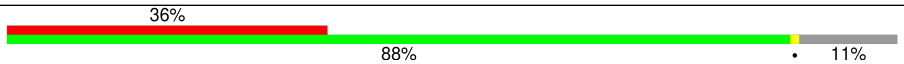
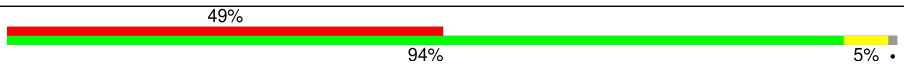
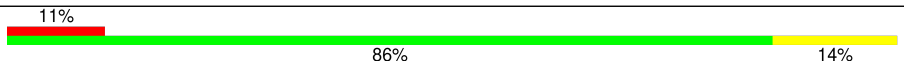
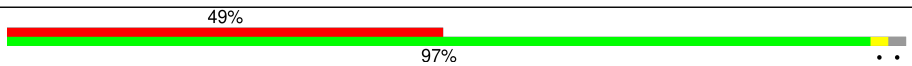
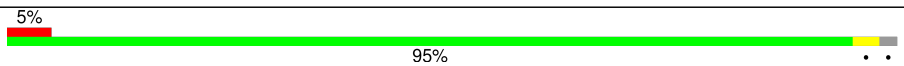
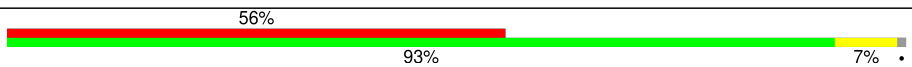
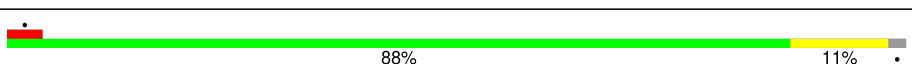
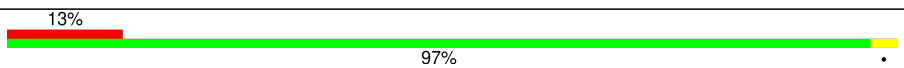
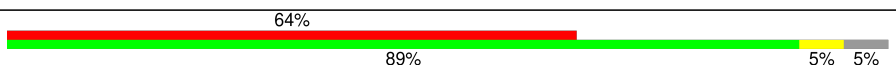
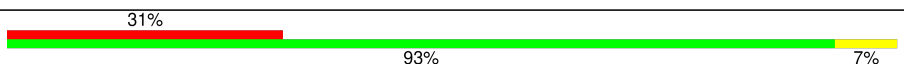
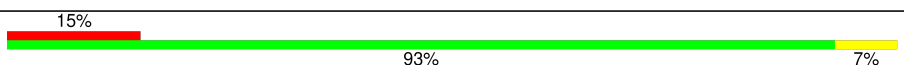
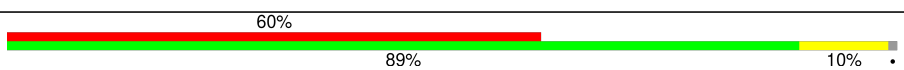
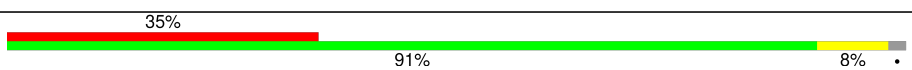
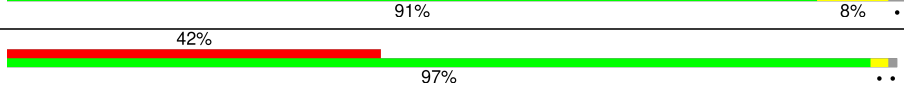
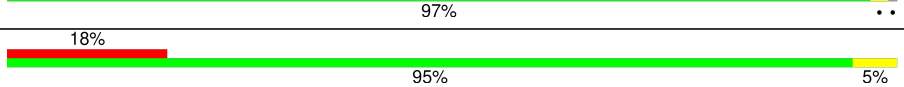
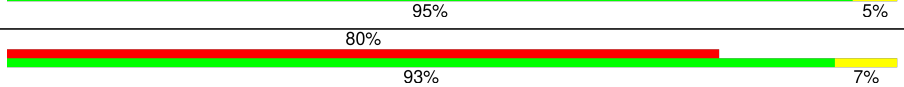
Mol	Chain	Length	Quality of chain
32	T	89	
33	U	82	
34	V	84	
35	W	92	
36	X	118	
37	Y	142	
38	Z	121	
39	a	2904	
40	b	85	
41	c	78	
42	d	120	
43	e	63	
44	f	59	
45	g	70	
46	h	273	
47	i	57	
48	j	209	
49	k	55	
50	l	201	
51	m	46	
52	n	179	
53	o	65	
54	p	177	
55	q	38	
56	r	149	

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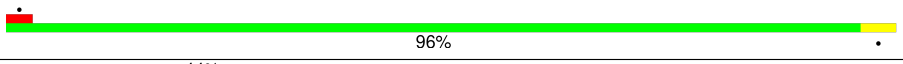
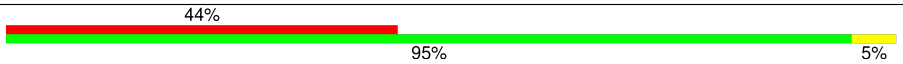
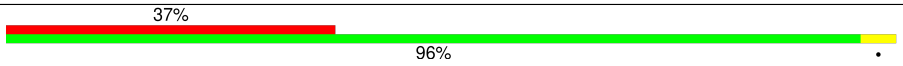
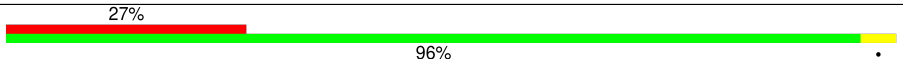
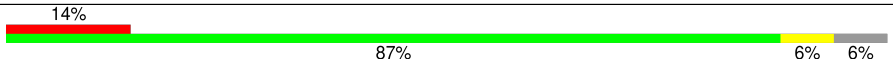
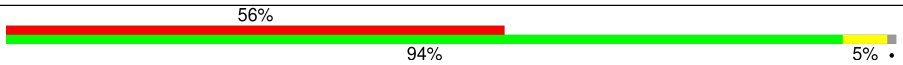
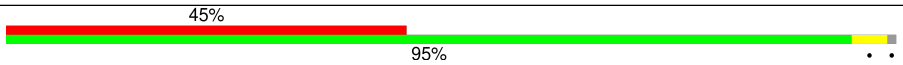
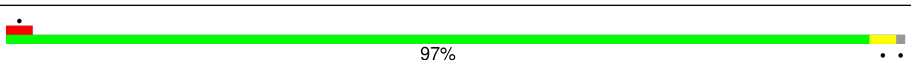
Mol	Chain	Length	Quality of chain
57	s	142	
58	t	123	
59	u	144	
60	v	136	
61	w	127	
62	x	117	
63	y	115	
64	z	118	

2 Entry composition (i)

There are 66 unique types of molecules in this entry. The entry contains 300668 atoms, of which 124723 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 50S ribosomal protein L21.

Mol	Chain	Residues	Atoms						AltConf	Trace
1	0	103	Total	C	H	N	O	S	0	0
			1655	516	839	153	145	2		

- Molecule 2 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms						AltConf	Trace
2	1	110	Total	C	H	N	O	S	0	0
			1779	532	922	166	156	3		

- Molecule 3 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms						AltConf	Trace
3	2	94	Total	C	H	N	O	S	0	0
			1557	470	811	140	134	2		

- Molecule 4 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	3	103	Total	C	H	N	O	0	0
			1632	498	844	148	142		

- Molecule 5 is a protein called 50S ribosomal protein L25.

Mol	Chain	Residues	Atoms						AltConf	Trace
5	4	94	Total	C	H	N	O	S	0	0
			1533	479	780	137	134	3		

- Molecule 6 is a DNA chain called NT DNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
6	5	23	Total	C	H	N	O	P	0	0
			732	225	260	87	137	23		

- Molecule 7 is a DNA chain called T DNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
7	6	27	Total	C	H	N	O	P	0	0
			847	259	305	89	167	27		

- Molecule 8 is a RNA chain called mRNA with 15 nt long spacer.

Mol	Chain	Residues	Atoms						AltConf	Trace
8	7	32	Total	C	H	N	O	P	0	0
			769	300	97	100	240	32		

- Molecule 9 is a protein called 50S ribosomal protein L10.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	9	148	Total	C	N	O	S	0	0
			1117	705	196	209	7		

- Molecule 10 is a RNA chain called E-site and P-site tRNA (fMet).

Mol	Chain	Residues	Atoms						AltConf	Trace
10	A	76	Total	C	H	N	O	P	0	0
			2446	723	826	295	527	75		
10	B	76	Total	C	H	N	O	P	0	0
			2433	723	813	295	527	75		

- Molecule 11 is a protein called DNA-directed RNA polymerase subunit beta.

Mol	Chain	Residues	Atoms						AltConf	Trace
11	AA	1322	Total	C	H	N	O	S	0	0
			20851	6539	10426	1817	2026	43		

- Molecule 12 is a protein called Transcription termination/antitermination protein NusG.

Mol	Chain	Residues	Atoms						AltConf	Trace
12	AB	98	Total	C	H	N	O	S	0	0
			1573	505	783	139	140	6		

- Molecule 13 is a protein called DNA-directed RNA polymerase subunit alpha.

Mol	Chain	Residues	Atoms						AltConf	Trace
13	AC	230	Total	C	H	N	O	S	0	0
			3599	1112	1813	317	351	6		

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Mol	Chain	Residues	Atoms						AltConf	Trace
13	AD	228	Total	C	H	N	O	S	0	0
			3556	1100	1789	312	349	6		

- Molecule 14 is a protein called DNA-directed RNA polymerase subunit beta'.

Mol	Chain	Residues	Atoms						AltConf	Trace
14	AE	1335	Total	C	H	N	O	S	0	0
			21000	6526	10612	1854	1958	50		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
AE	1384	VAL	MET	variant	UNP A0A4S1NBU2

- Molecule 15 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms						AltConf	Trace
15	C	66	Total	C	H	N	O	S	0	0
			1103	344	559	102	97	1		

- Molecule 16 is a RNA chain called 16S rRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
16	D	1524	Total	C	H	N	O	P	0	0
			49126	14585	16423	6003	10591	1524		

- Molecule 17 is a protein called 30S ribosomal protein S20.

Mol	Chain	Residues	Atoms						AltConf	Trace
17	E	86	Total	C	H	N	O	S	0	0
			1388	414	719	138	114	3		

- Molecule 18 is a protein called 30S ribosomal protein S21.

Mol	Chain	Residues	Atoms						AltConf	Trace
18	F	70	Total	C	H	N	O	S	0	0
			1218	366	629	125	97	1		

- Molecule 19 is a protein called 30S ribosomal protein S2.

Mol	Chain	Residues	Atoms						AltConf	Trace
19	G	225	Total	C	H	N	O	S	0	0
			3545	1113	1785	316	323	8		

- Molecule 20 is a protein called 30S ribosomal protein S1.

Mol	Chain	Residues	Atoms						AltConf	Trace
20	H	259	Total	C	H	N	O	S	0	0
			3184	1073	1454	305	349	3		

- Molecule 21 is a protein called 30S ribosomal protein S3.

Mol	Chain	Residues	Atoms						AltConf	Trace
21	I	208	Total	C	H	N	O	S	0	0
			3346	1036	1710	307	290	3		

- Molecule 22 is a protein called 30S ribosomal protein S4.

Mol	Chain	Residues	Atoms						AltConf	Trace
22	J	205	Total	C	H	N	O	S	0	0
			3350	1026	1707	315	298	4		

- Molecule 23 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms						AltConf	Trace
23	K	156	Total	C	H	N	O	S	0	0
			2348	717	1196	217	212	6		

- Molecule 24 is a protein called 30S ribosomal protein S6.

Mol	Chain	Residues	Atoms						AltConf	Trace
24	L	104	Total	C	H	N	O	S	0	0
			1694	536	846	153	152	7		

- Molecule 25 is a protein called 30S ribosomal protein S7.

Mol	Chain	Residues	Atoms						AltConf	Trace
25	M	151	Total	C	H	N	O	S	0	0
			2416	735	1235	227	215	4		

- Molecule 26 is a protein called 30S ribosomal protein S8.

Mol	Chain	Residues	Atoms						AltConf	Trace
26	N	129	Total	C	H	N	O	S	0	0
			2010	616	1031	173	184	6		

- Molecule 27 is a protein called 30S ribosomal protein S9.

Mol	Chain	Residues	Atoms						AltConf	Trace
27	O	127	Total	C	H	N	O	S	0	0
			2092	634	1070	206	179	3		

- Molecule 28 is a protein called 30S ribosomal protein S10.

Mol	Chain	Residues	Atoms						AltConf	Trace
28	P	99	Total	C	H	N	O	S	0	0
			1621	495	831	151	143	1		

- Molecule 29 is a protein called 30S ribosomal protein S11.

Mol	Chain	Residues	Atoms						AltConf	Trace
29	Q	117	Total	C	H	N	O	S	0	0
			1764	540	887	174	160	3		

- Molecule 30 is a protein called 30S ribosomal protein S12.

Mol	Chain	Residues	Atoms						AltConf	Trace
30	R	121	Total	C	H	N	O	S	0	0
			1940	580	1001	194	161	4		

- Molecule 31 is a protein called 30S ribosomal protein S14.

Mol	Chain	Residues	Atoms						AltConf	Trace
31	S	100	Total	C	H	N	O	S	0	0
			1649	499	844	164	139	3		

- Molecule 32 is a protein called 30S ribosomal protein S15.

Mol	Chain	Residues	Atoms						AltConf	Trace
32	T	88	Total	C	H	N	O	S	0	0
			1448	439	734	144	130	1		

- Molecule 33 is a protein called 30S ribosomal protein S16.

Mol	Chain	Residues	Atoms						AltConf	Trace
33	U	82	Total	C	H	N	O	S	0	0
			1315	406	666	128	114	1		

- Molecule 34 is a protein called 30S ribosomal protein S17.

Mol	Chain	Residues	Atoms						AltConf	Trace
34	V	80	Total	C	H	N	O	S	0	0
			1339	411	691	121	113	3		

- Molecule 35 is a protein called 30S ribosomal protein S19.

Mol	Chain	Residues	Atoms						AltConf	Trace
35	W	83	Total	C	H	N	O	S	0	0
			1351	424	688	126	111	2		

- Molecule 36 is a protein called 30S ribosomal protein S13.

Mol	Chain	Residues	Atoms						AltConf	Trace
36	X	116	Total	C	H	N	O	S	0	0
			1864	558	964	181	158	3		

- Molecule 37 is a protein called 50S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	Y	141	Total	C	N	O	S	0	0
			1032	651	179	196	6		

- Molecule 38 is a protein called 50S ribosomal protein L7/L12.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	Z	30	Total	C	N	O	S	0	0
			227	144	33	47	3		

- Molecule 39 is a RNA chain called 23S rRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
39	a	2880	Total	C	H	N	O	P	0	0
			92918	27587	31077	11398	19976	2880		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
a	887	A	U	variant	GB 937521852

- Molecule 40 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms						AltConf	Trace
40	b	76	Total	C	H	N	O	S	0	0
			1181	360	599	117	104	1		

- Molecule 41 is a protein called 50S ribosomal protein L28.

Mol	Chain	Residues	Atoms						AltConf	Trace
41	c	77	Total	C	H	N	O	S	0	0
			1277	388	652	129	106	2		

- Molecule 42 is a RNA chain called 5S rRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
42	d	120	Total	C	H	N	O	P	0	0
			3870	1144	1301	468	837	120		

- Molecule 43 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms						AltConf	Trace
43	e	62	Total	C	H	N	O	S	0	0
			1032	308	531	98	94	1		

- Molecule 44 is a protein called 50S ribosomal protein L30.

Mol	Chain	Residues	Atoms						AltConf	Trace
44	f	58	Total	C	H	N	O	S	0	0
			936	281	488	87	78	2		

- Molecule 45 is a protein called 50S ribosomal protein L31.

Mol	Chain	Residues	Atoms						AltConf	Trace
45	g	66	Total	C	H	N	O	S	0	0
			1042	323	520	99	94	6		

- Molecule 46 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms						AltConf	Trace
46	h	271	Total	C	H	N	O	S	0	0
			4236	1288	2154	423	364	7		

- Molecule 47 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms						AltConf	Trace
47	i	56	Total	C	H	N	O	S	0	0
			903	269	459	94	80	1		

- Molecule 48 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms						AltConf	Trace
48	j	209	Total	C	H	N	O	S	0	0
			3182	979	1617	288	294	4		

- Molecule 49 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	k	52	Total	C	H	N	O	0	0
			890	275	464	78	73		

- Molecule 50 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms						AltConf	Trace
50	l	201	Total	C	H	N	O	S	0	0
			3171	974	1619	283	290	5		

- Molecule 51 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms						AltConf	Trace
51	m	46	Total	C	H	N	O	S	0	0
			795	228	418	90	57	2		

- Molecule 52 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms						AltConf	Trace
52	n	177	Total	C	H	N	O	S	0	0
			2853	899	1443	249	256	6		

- Molecule 53 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms						AltConf	Trace
53	o	64	Total	C	H	N	O	S	0	0
			1076	323	572	105	74	2		

- Molecule 54 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms						AltConf	Trace
54	p	175	Total	C	H	N	O	S	0	0
			2671	826	1358	241	244	2		

- Molecule 55 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms						AltConf	Trace
55	q	38	Total	C	H	N	O	S	0	0
			645	185	343	65	48	4		

- Molecule 56 is a protein called 50S ribosomal protein L9.

Mol	Chain	Residues	Atoms						AltConf	Trace
56	r	149	Total	C	H	N	O	S	0	0
			2259	699	1148	197	214	1		

- Molecule 57 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms						AltConf	Trace
57	s	142	Total	C	H	N	O	S	0	0
			2291	714	1162	212	199	4		

- Molecule 58 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms						AltConf	Trace
58	t	123	Total	C	H	N	O	S	0	0
			1969	593	1023	181	166	6		

- Molecule 59 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms						AltConf	Trace
59	u	144	Total	C	H	N	O	S	0	0
			2182	654	1129	207	190	2		

- Molecule 60 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms						AltConf	Trace
60	v	136	Total	C	H	N	O	S	0	0
			2231	686	1157	205	177	6		

- Molecule 61 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms						AltConf	Trace
61	w	119	Total	C	H	N	O	S	0	0
			1945	588	994	195	163	5		

- Molecule 62 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
62	x	116	Total	C	H	N	O	0	0
			1815	552	923	178	162		

- Molecule 63 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms						AltConf	Trace
63	y	114	Total	C	H	N	O	S	0	0
			1879	574	962	179	163	1		

- Molecule 64 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms					AltConf	Trace
64	z	117	Total	C	H	N	O	0	0
			1967	604	1020	192	151		

- Molecule 65 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
65	AE	1	Total	Mg	0
			1	1	

- Molecule 66 is ZINC ION (three-letter code: ZN) (formula: Zn).

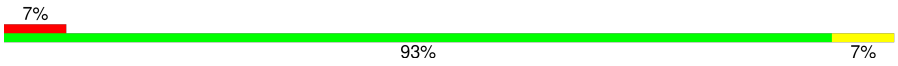
Mol	Chain	Residues	Atoms		AltConf
66	AE	2	Total	Zn	0
			2	2	

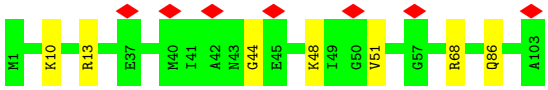
3 Residue-property plots (i)

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: 50S ribosomal protein L21

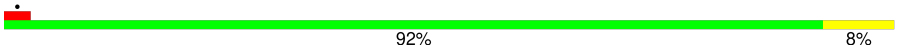
Chain 0:

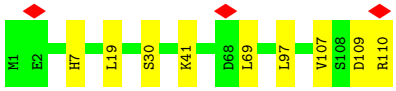




• Molecule 2: 50S ribosomal protein L22

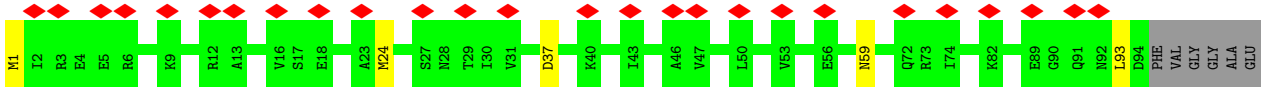
Chain 1:





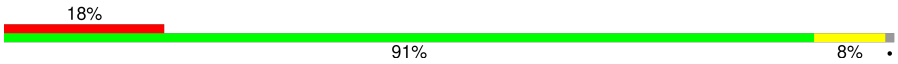
• Molecule 3: 50S ribosomal protein L23

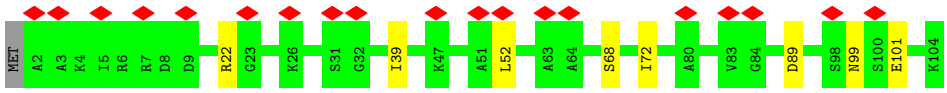
Chain 2:



• Molecule 4: 50S ribosomal protein L24

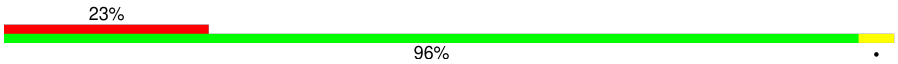
Chain 3:

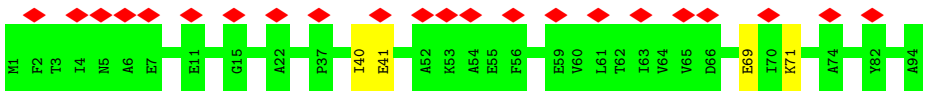




• Molecule 5: 50S ribosomal protein L25

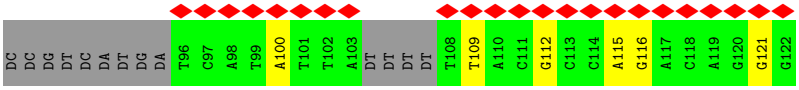
Chain 4:





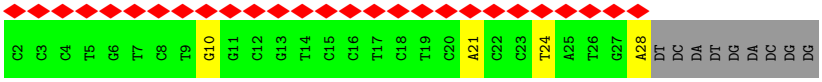
• Molecule 6: NT DNA

Chain 5:



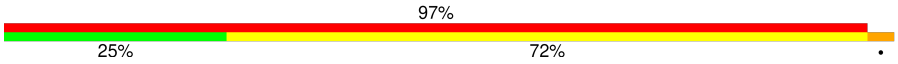
• Molecule 7: T DNA

Chain 6:



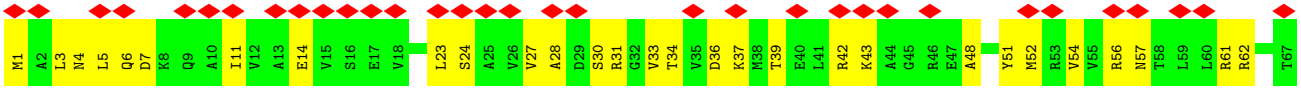
• Molecule 8: mRNA with 15 nt long spacer

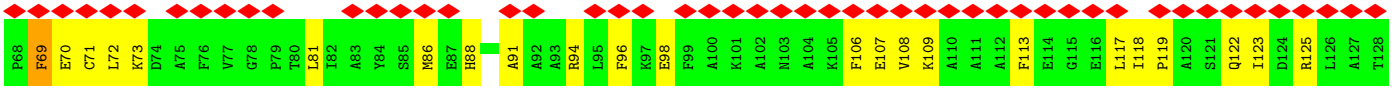
Chain 7:

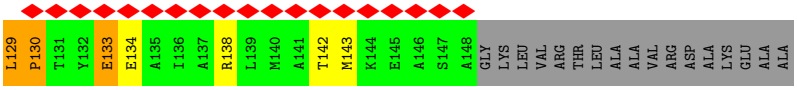


• Molecule 9: 50S ribosomal protein L10

Chain 9:

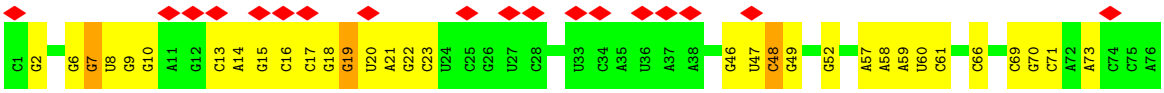






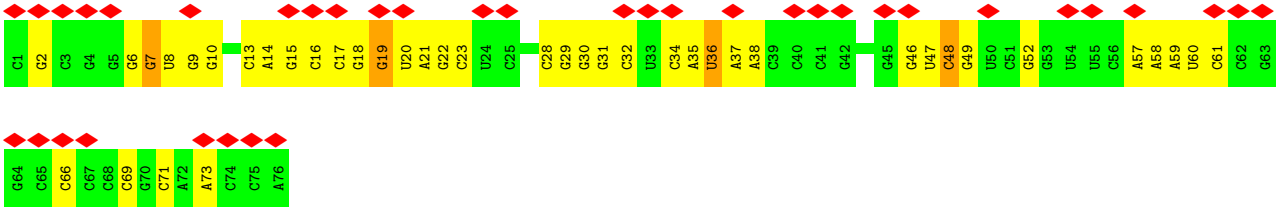
• Molecule 10: E-site and P-site tRNA (fMet)

Chain A:



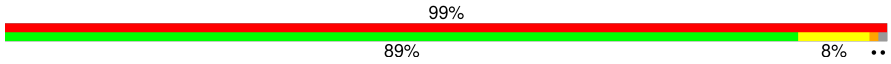
• Molecule 10: E-site and P-site tRNA (fMet)

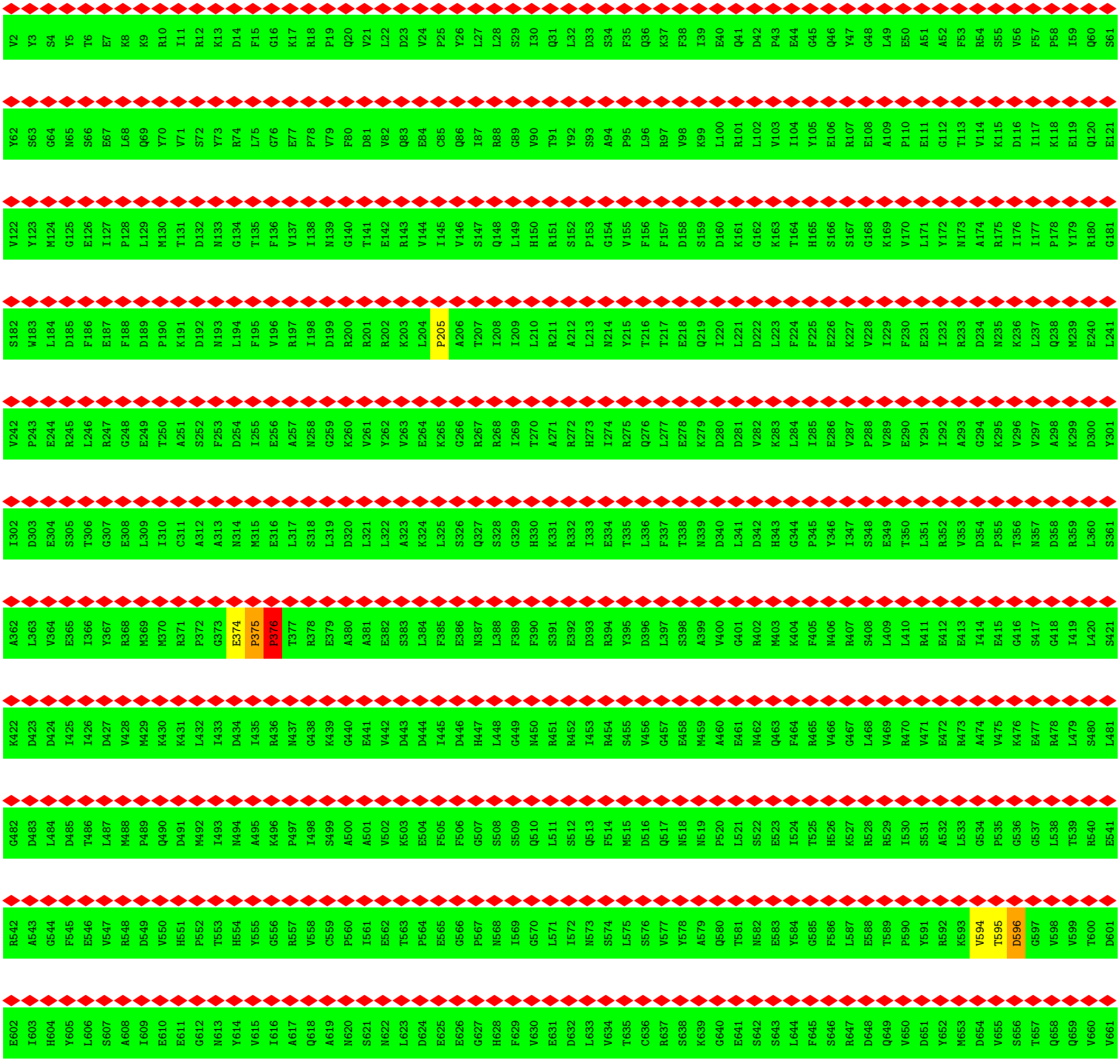
Chain B:



• Molecule 11: DNA-directed RNA polymerase subunit beta

Chain AA:





S662 V663 G664 A665 S666 L667 I668 P669 F670 L671 E672 H673 D674 D675 A676 N677 R678 A679 L680 M681 G682 A683 N684 M685 Q686 R687 Q688 A689 V690 P691 T692 L693 R694 A695 D696 K697 P698 L699 V700 G701 T702 G703 M704 E705 R706 A707 V708 A709 V710 D711 S712 G713 V714 T715 A716 V717 A718 K719 R720 G721

G722 V723 V724 Q725 Y726 V727 D728 A729 S730 R731 I732 V733 I734 K735 V736 N737 E738 D739 E740 M741 Y742 P743 G744 E745 A746 G747 I748 D749 I750 Y751 N752 L753 T754 K755 Y756 T757 R758 S759 N760 Q761 N762 T763 C764 I765 N766 Q767 M768 P769 C770 V771 S772 L773 G774 E775 P776 V777 E778 R779 G780 D781

V782 L783 A784 D785 G786 P787 S788 T789 D790 L791 G792 E793 L794 A795 L796 G797 Q798 N799 M800 R801 V802 A803 F804 M805 P806 W807 N808 G809 Y810 N811 F812 E813 D814 S815 I816 L817 V818 S819 E820 R821 V822 V823 Q824 E825 D826 R827 F828 T829 T830 I831 H832 I833 Q834 E835 L836 A837 C838 V839 S840 R841

D842 T843 K844 L845 G846 P847 E848 E849 I850 T851 A852 D853 I854 P855 N856 V857 G858 E859 A860 A861 L862 S863 K864 L865 D866 E867 S868 G869 I870 V871 Y872 I873 G874 A875 E876 V877 T878 G879 G880 D881 I882 L883 V884 G885 K886 V887 T888 P889 K890 G891 GLU THR GLN LEU THR PRO GLU GLU LYS LEU

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• Molecule 12: Transcription termination/antitermination protein NusG

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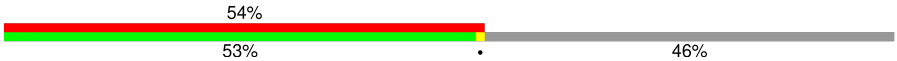
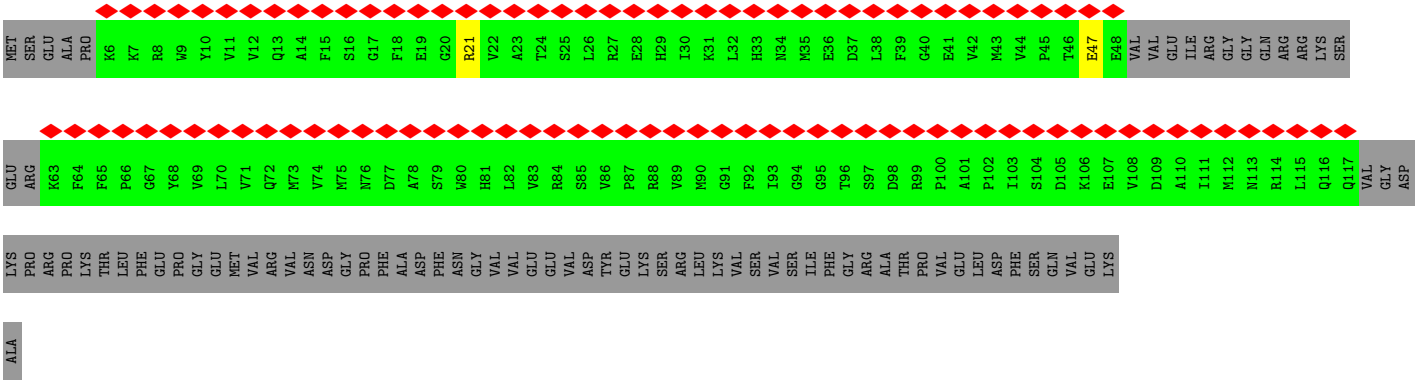
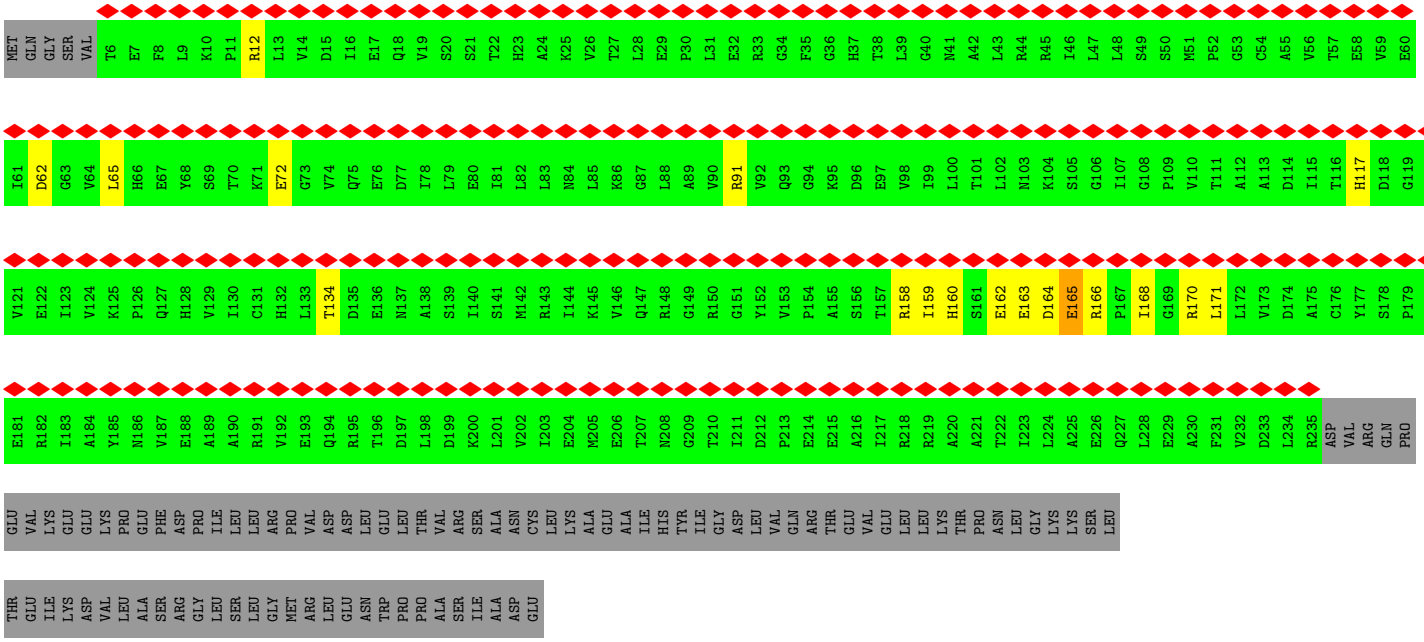




• Molecule 13: DNA-directed RNA polymerase subunit alpha

Chain AC:



• Molecule 13: DNA-directed RNA polymerase subunit alpha

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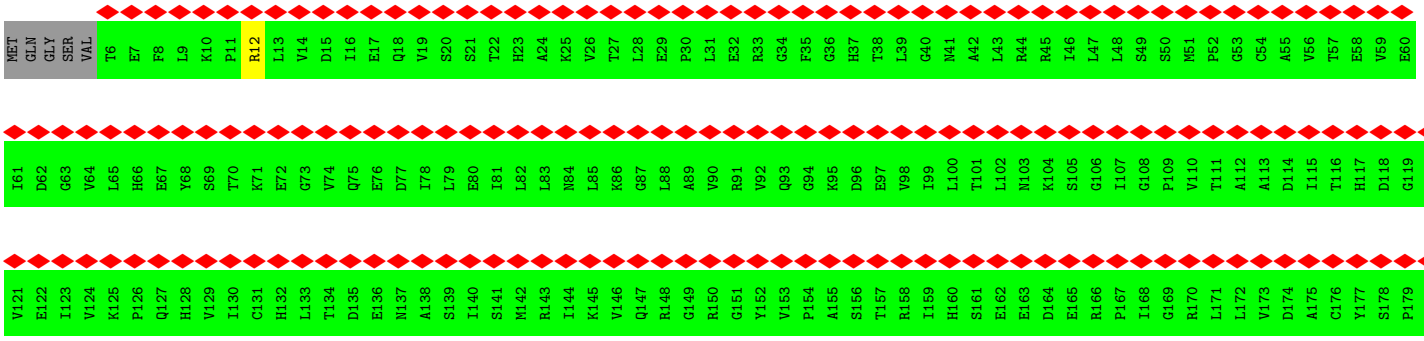
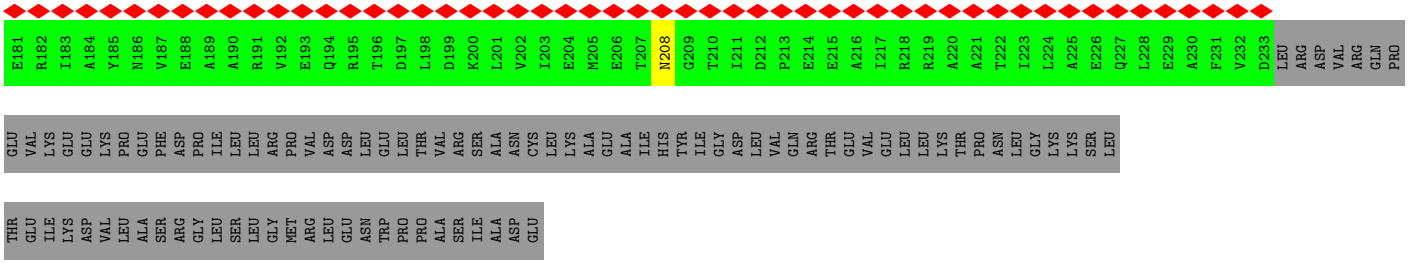
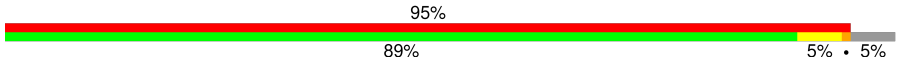
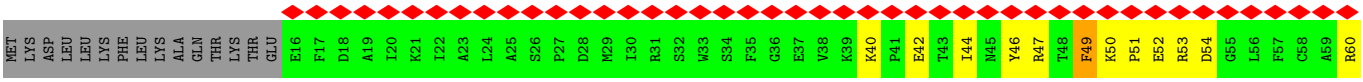


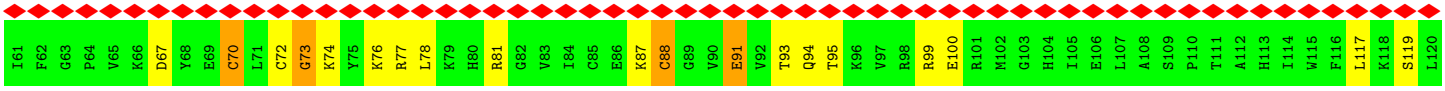


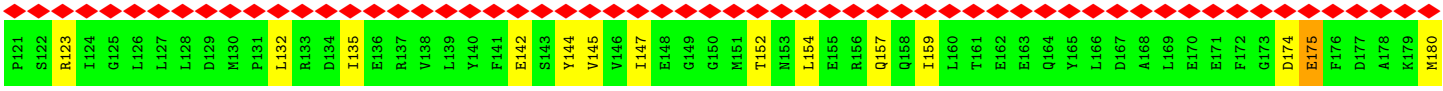
• Molecule 14: DNA-directed RNA polymerase subunit beta'

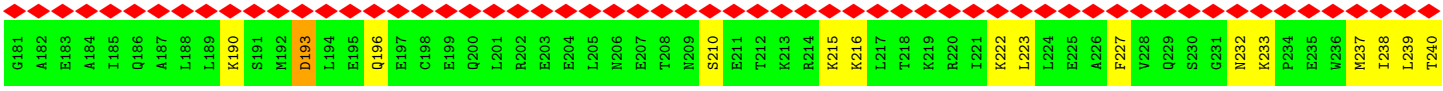
Chain AE:

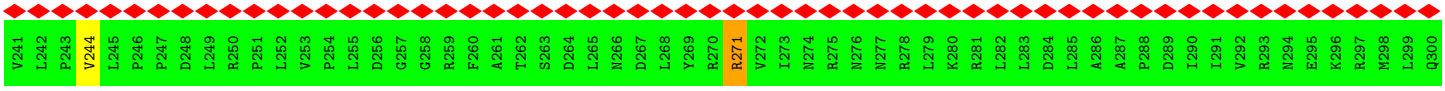


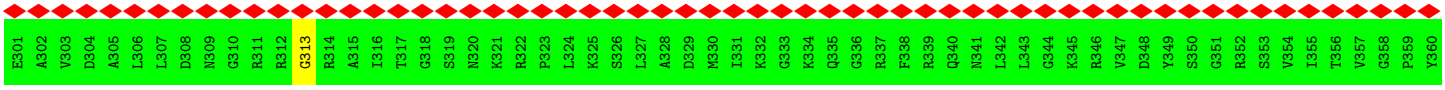


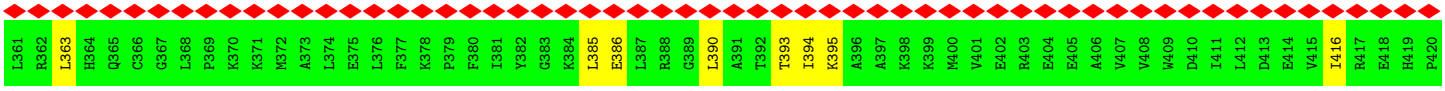


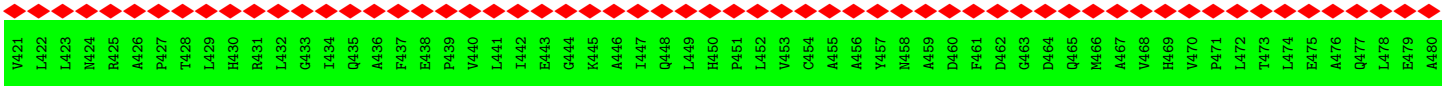


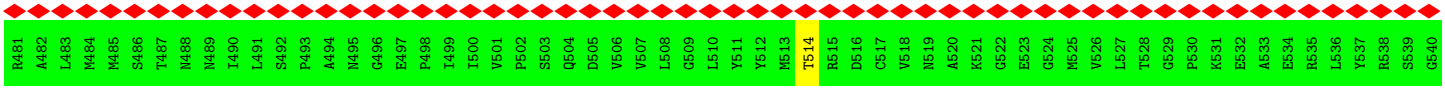


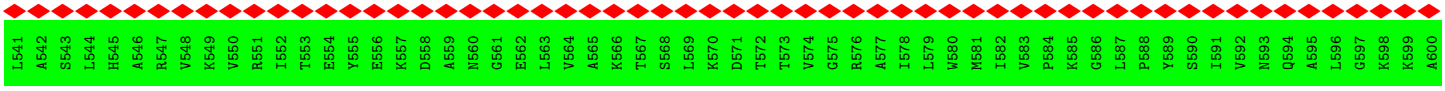


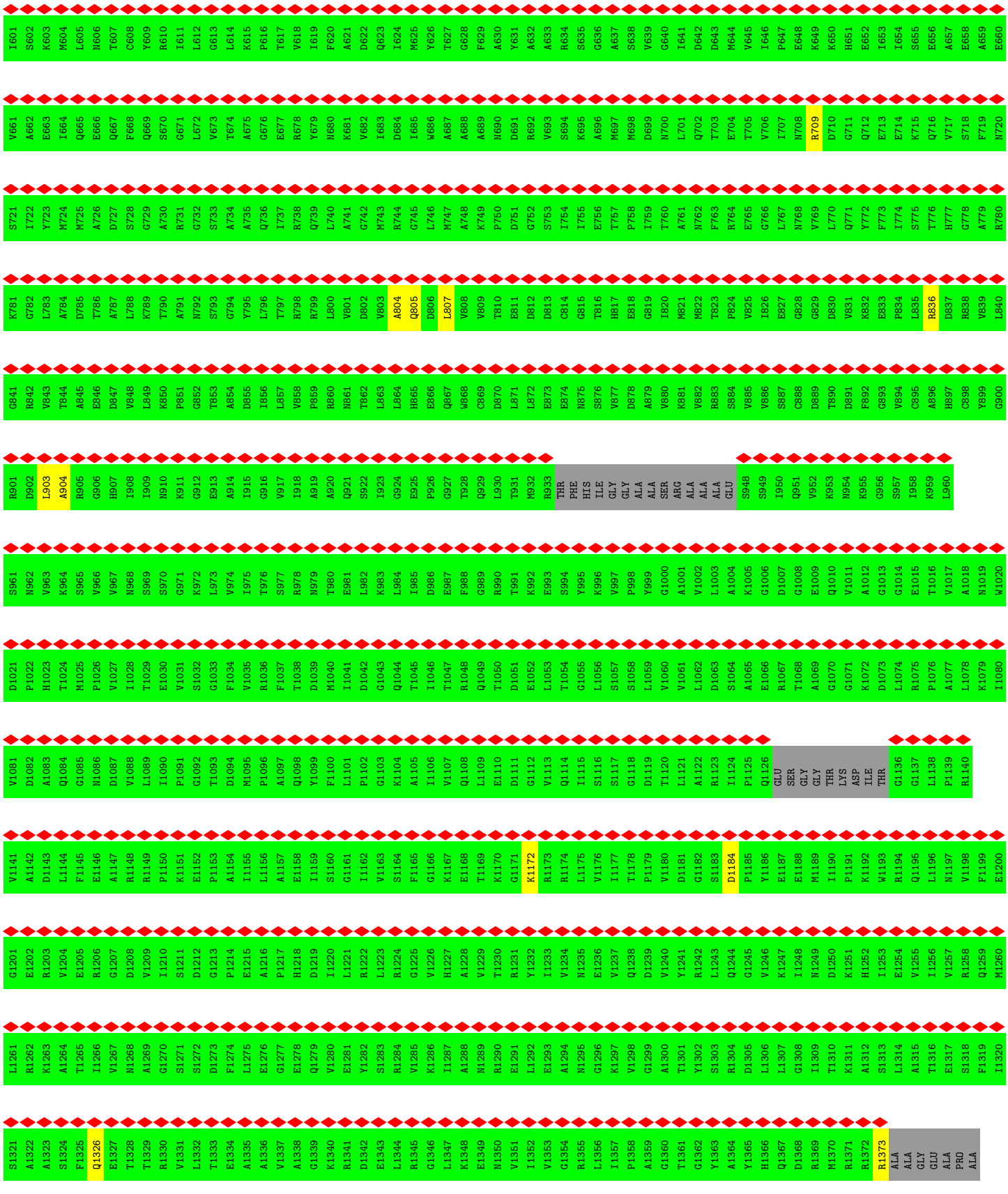








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G1201 E1202 R1203 V1204 E1205 R1206 G1207 D1208 V1209 I1210 S1211 D1212 G1213 P1214 E1215 A1216 P1217 H1218 D1219 I1220 L1221 R1222 L1223 R1224 G1225 V1226 H1227 A1228 V1229 T1230 R1231 Y1232 I1233 V1234 N1235 E1236 V1237 Q1238 D1239 V1240 Y1241 R1242 L1243 Q1244 G1245 V1246 K1247 I1248 N1249 D1250 K1251 H1252 I1253 E1254 V1255 I1256 V1257 R1258 Q1259 M1260
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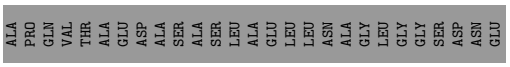
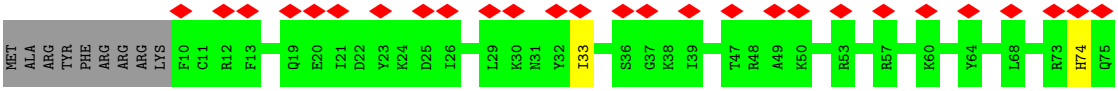


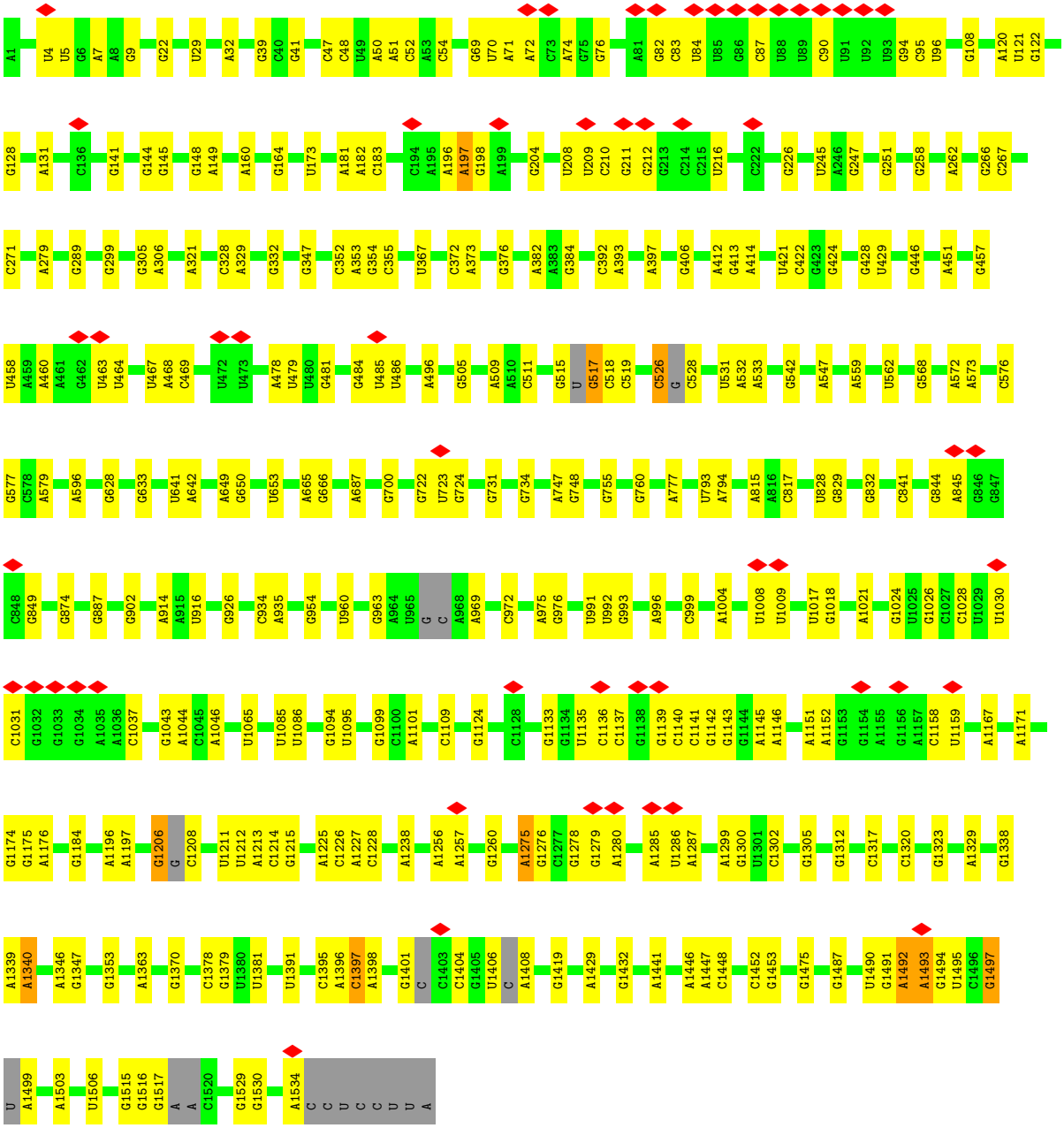
• Molecule 15: 30S ribosomal protein S18

Chain C:



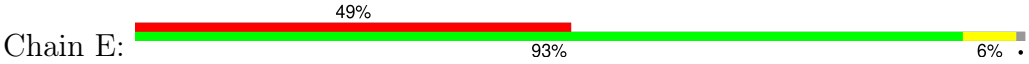
• Molecule 16: 16S rRNA

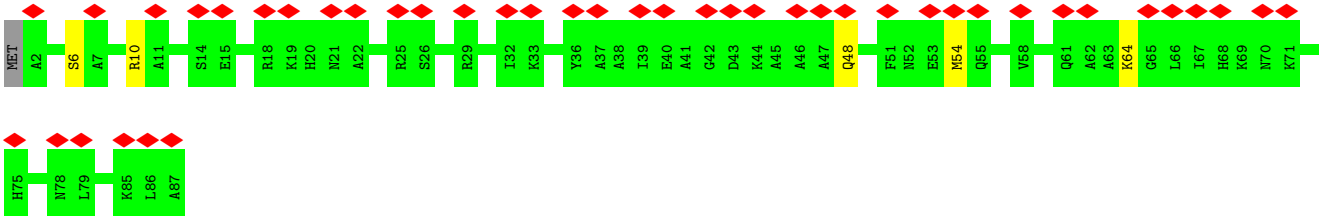
Chain D:



• Molecule 17: 30S ribosomal protein S20

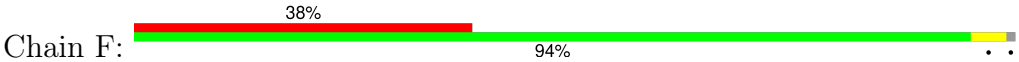
Chain E:

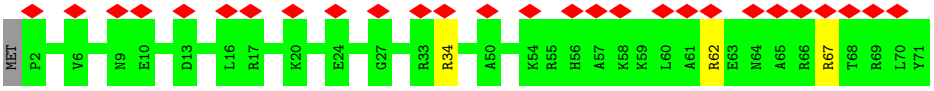




• Molecule 18: 30S ribosomal protein S21

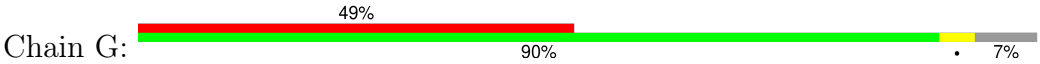
Chain F:

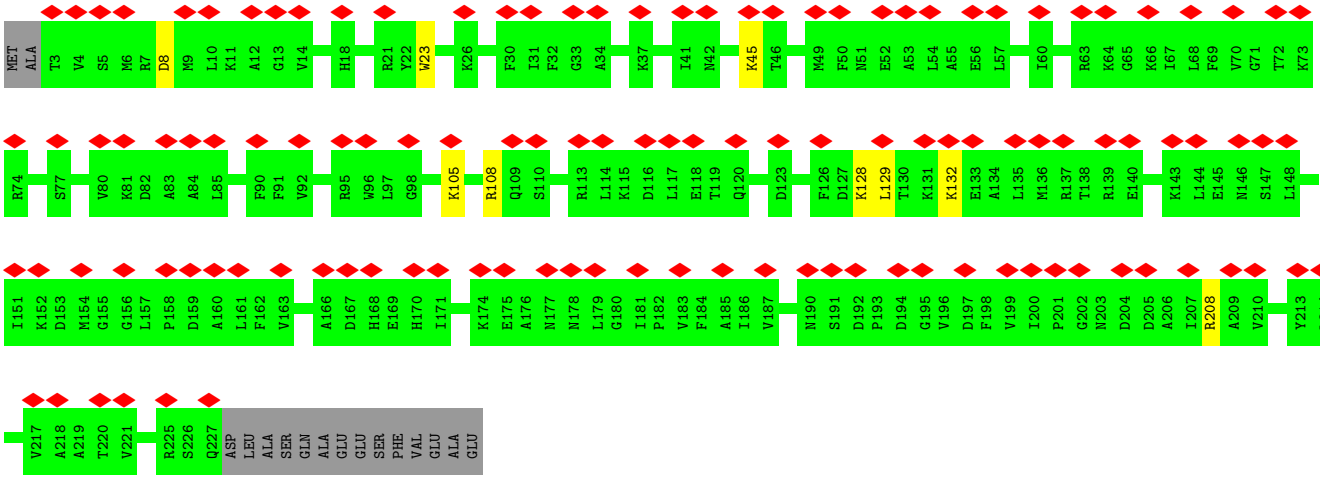




• Molecule 19: 30S ribosomal protein S2

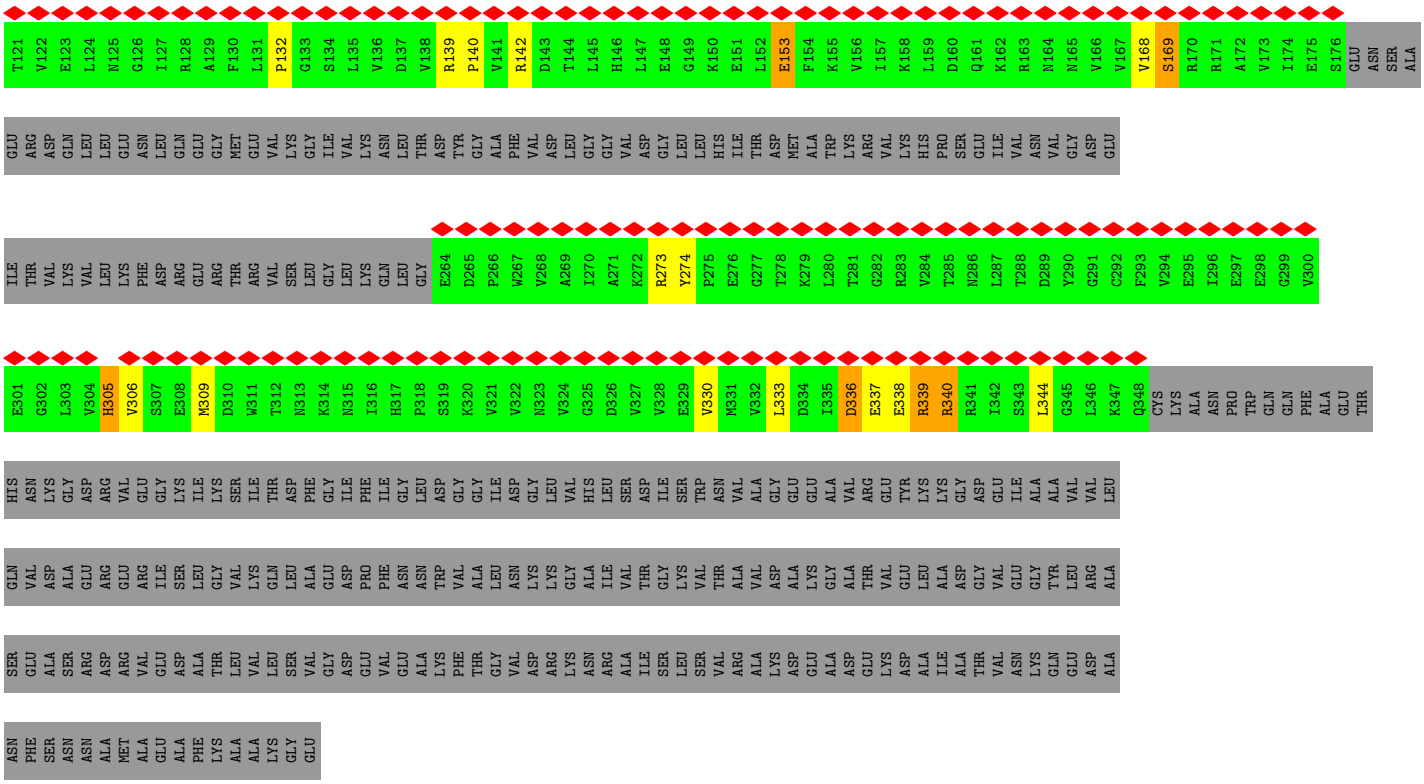
Chain G:





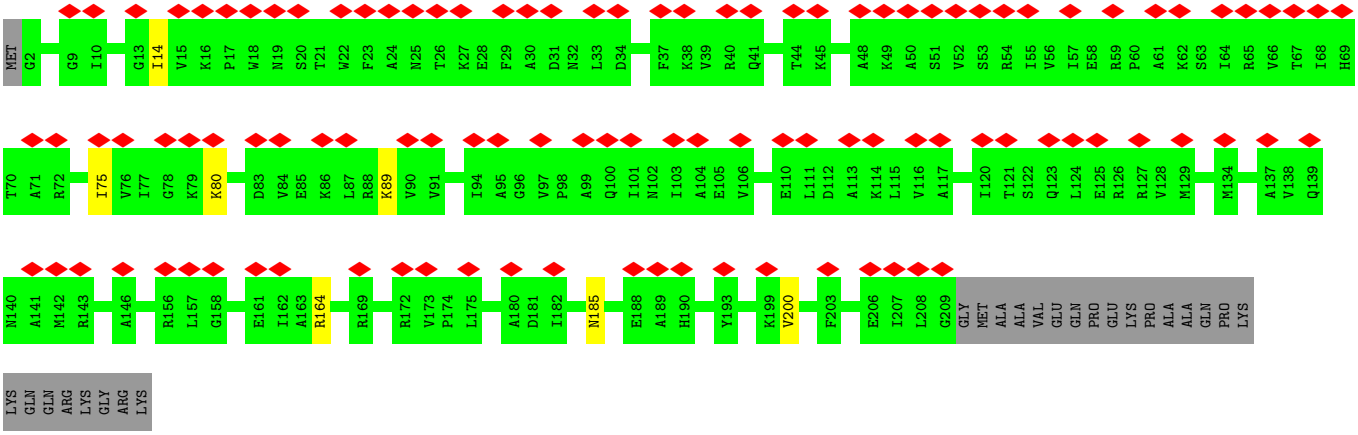
• Molecule 20: 30S ribosomal protein S1

Chain H:



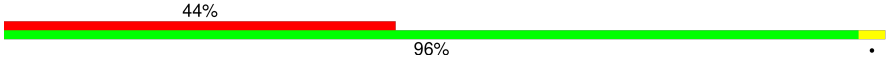
- Molecule 21: 30S ribosomal protein S3

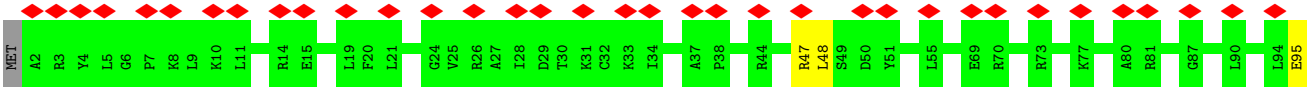
Chain I:

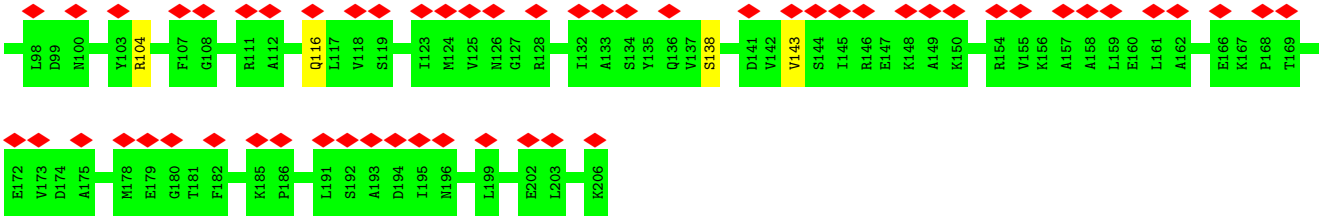


- Molecule 22: 30S ribosomal protein S4

Chain J:

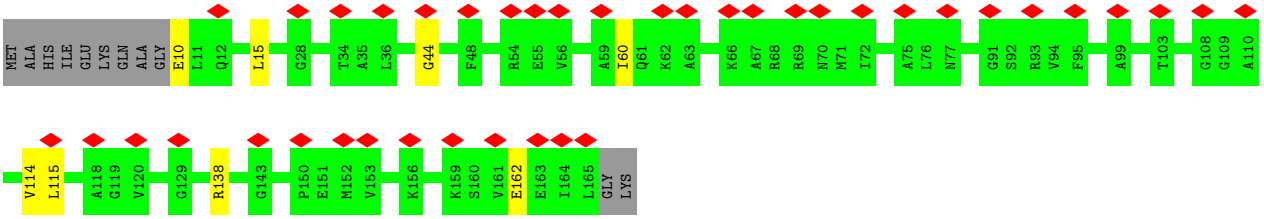






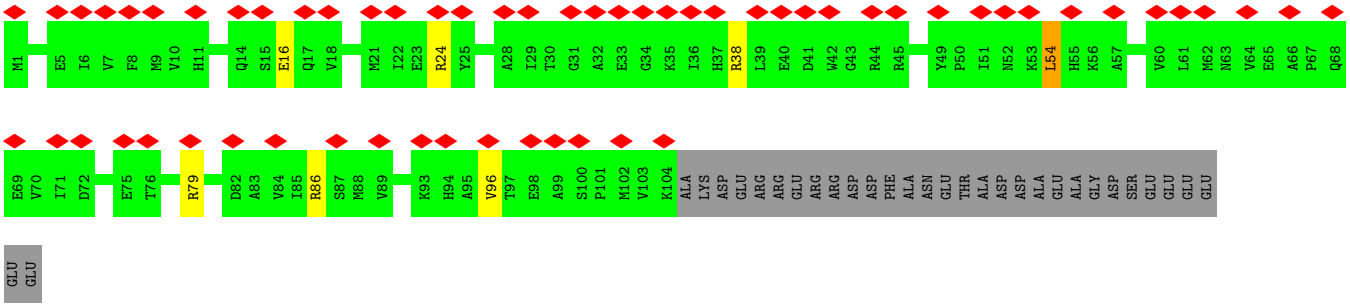
• Molecule 23: 30S ribosomal protein S5

Chain K:



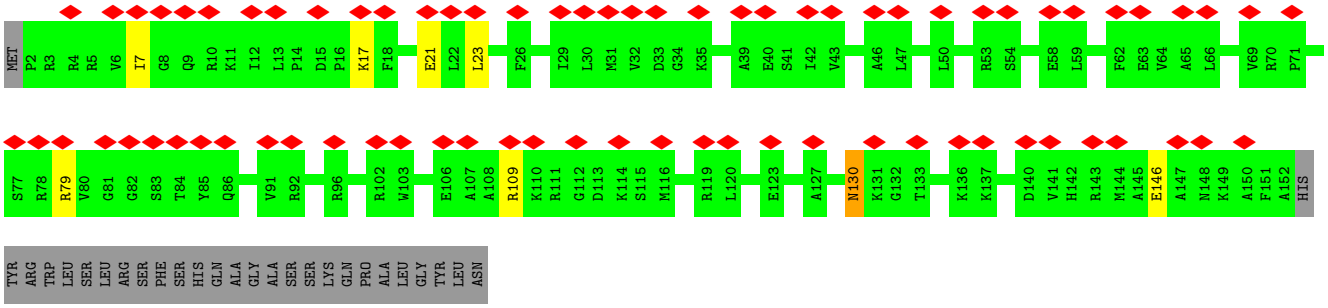
• Molecule 24: 30S ribosomal protein S6

Chain L:



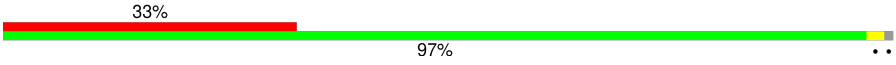
• Molecule 25: 30S ribosomal protein S7

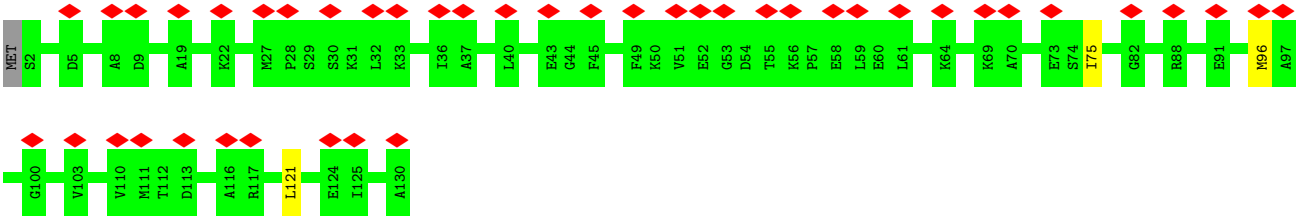
Chain M:



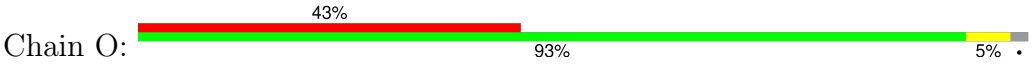
• Molecule 26: 30S ribosomal protein S8

Chain N:

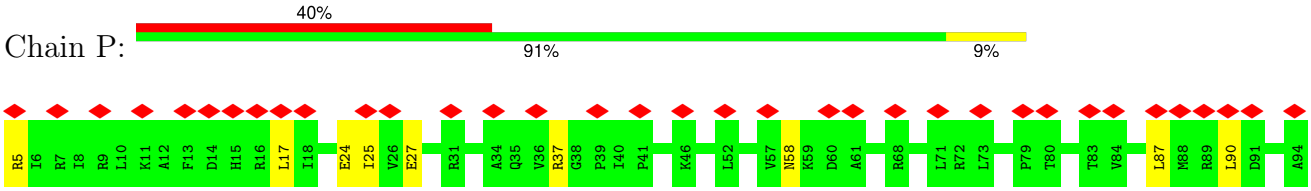




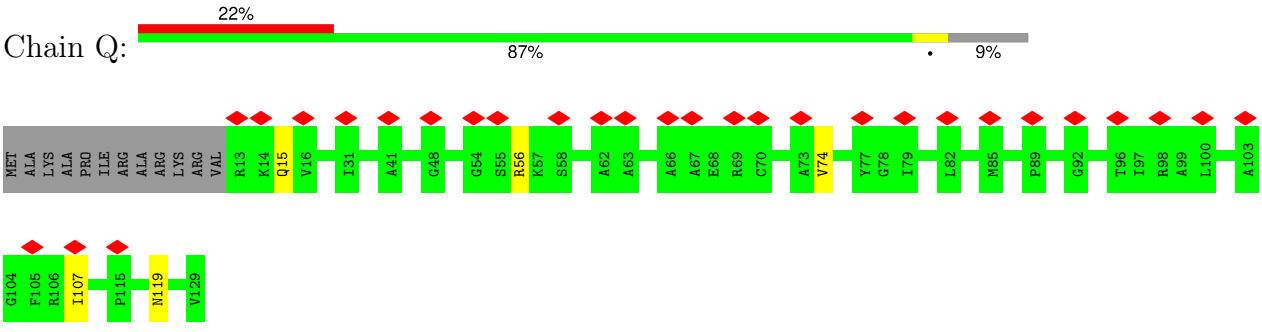
• Molecule 27: 30S ribosomal protein S9



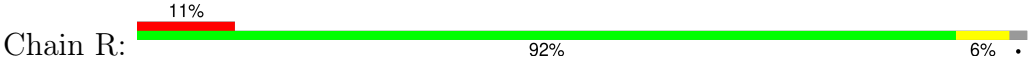
• Molecule 28: 30S ribosomal protein S10



• Molecule 29: 30S ribosomal protein S11

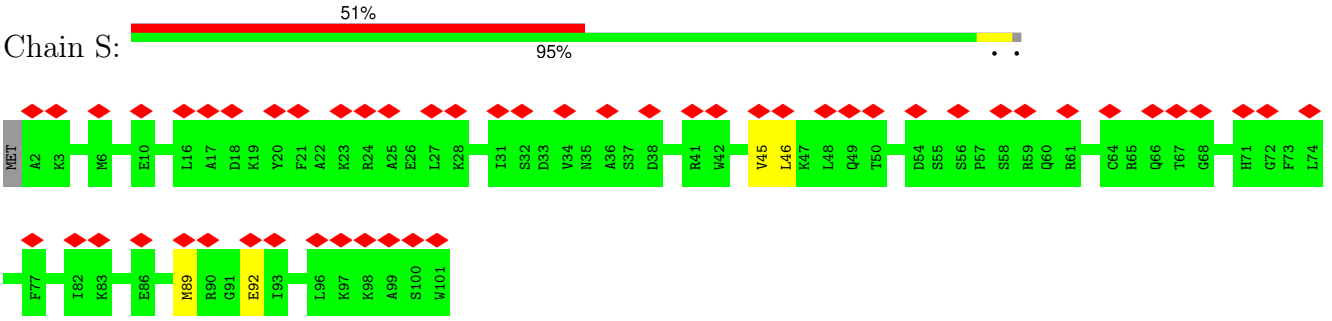


• Molecule 30: 30S ribosomal protein S12



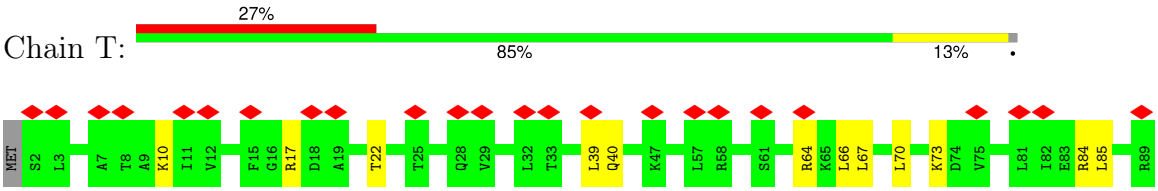
• Molecule 31: 30S ribosomal protein S14

Chain S:



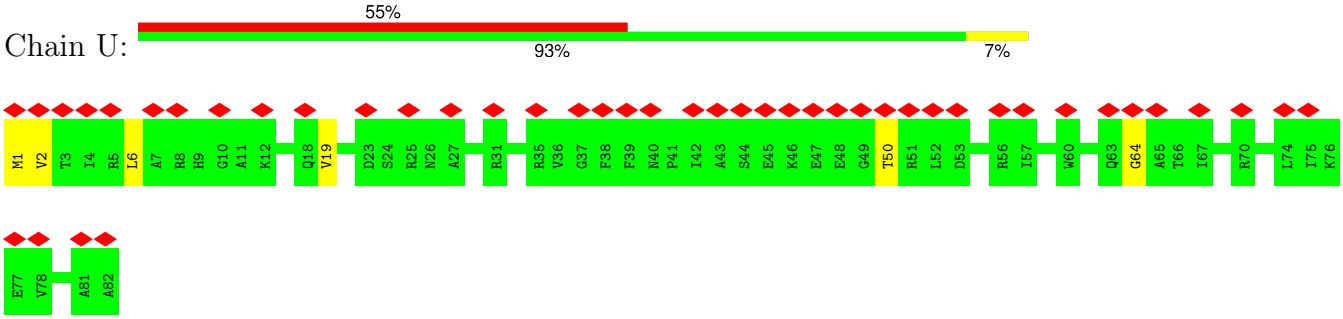
• Molecule 32: 30S ribosomal protein S15

Chain T:



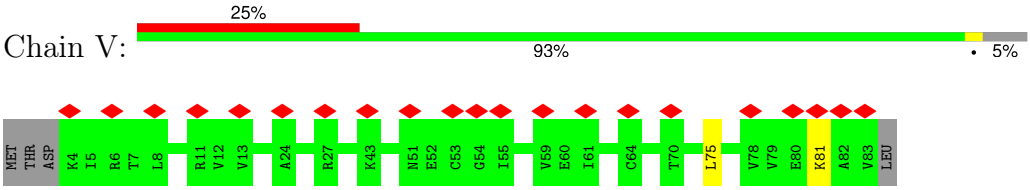
• Molecule 33: 30S ribosomal protein S16

Chain U:



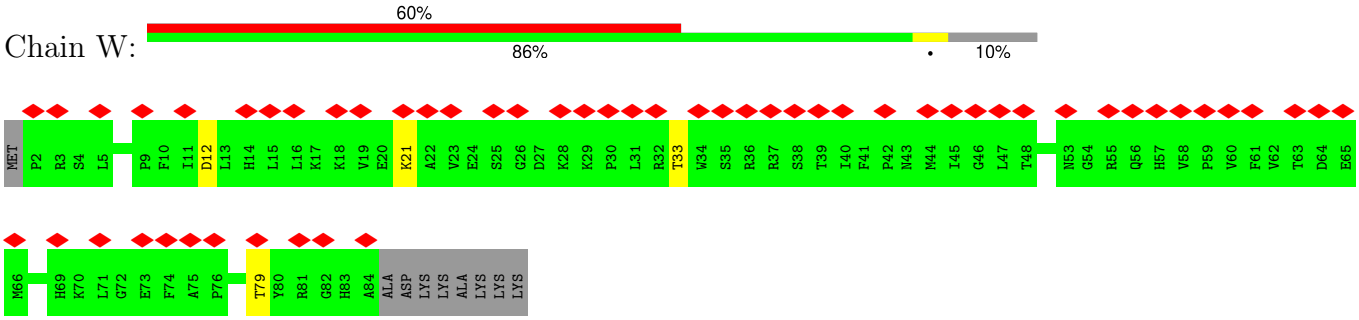
• Molecule 34: 30S ribosomal protein S17

Chain V:



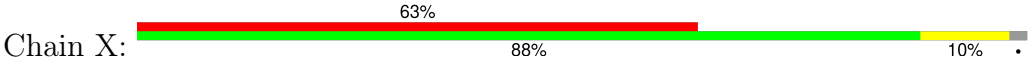
• Molecule 35: 30S ribosomal protein S19

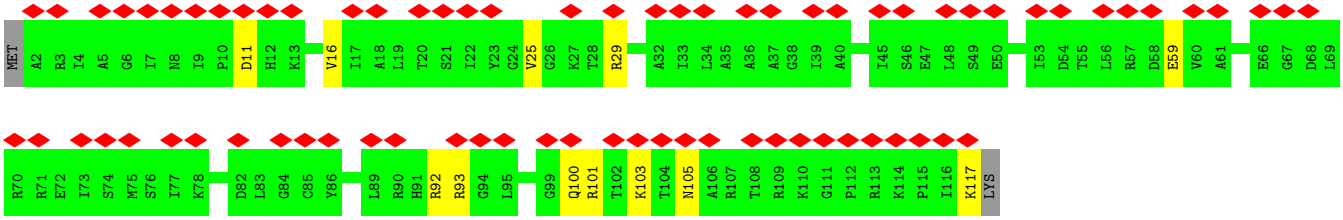
Chain W:



• Molecule 36: 30S ribosomal protein S13

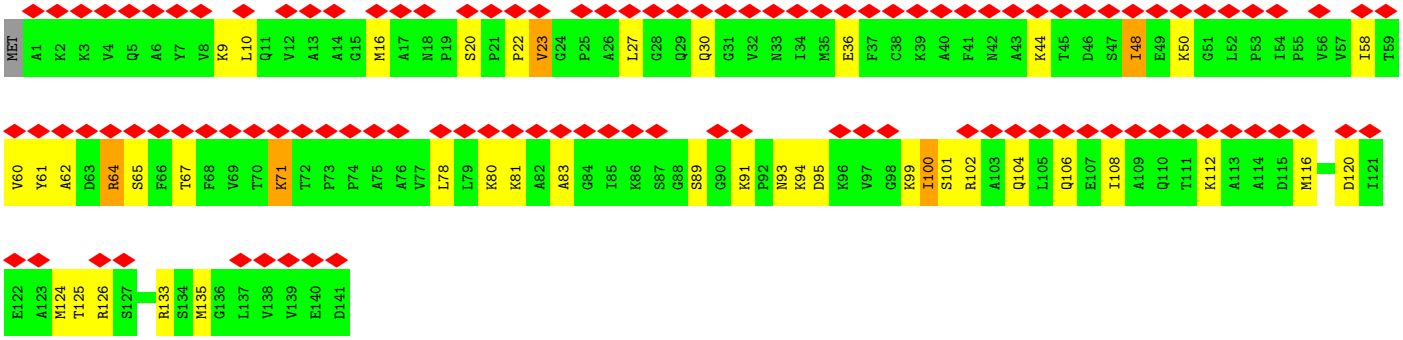
Chain X:





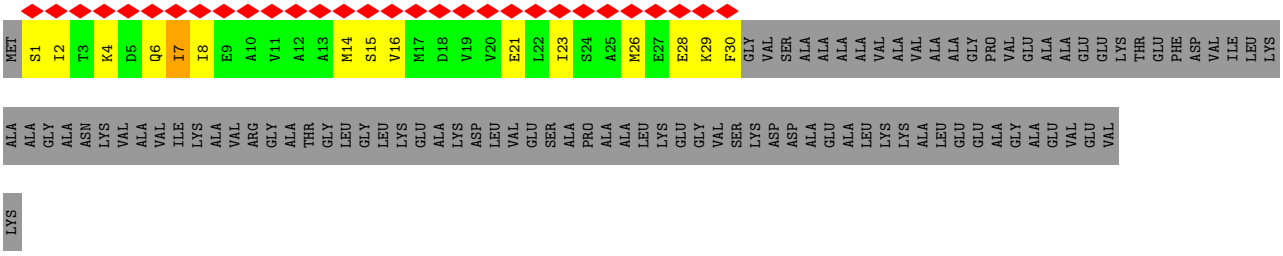
• Molecule 37: 50S ribosomal protein L11

Chain Y:



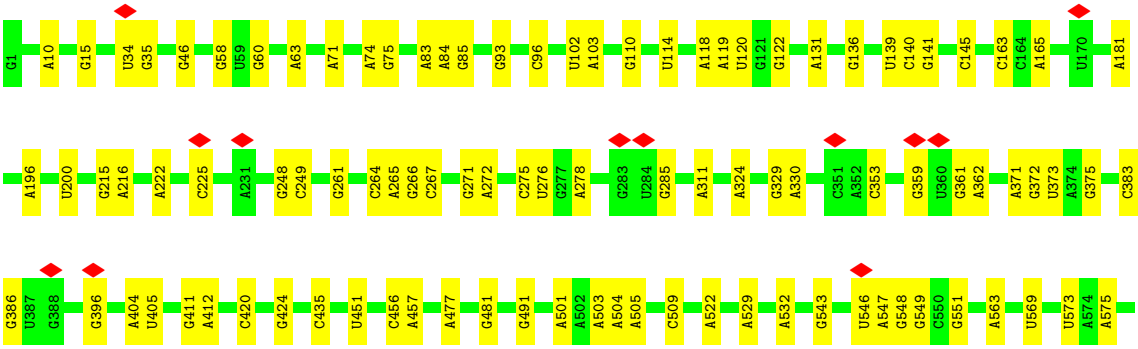
• Molecule 38: 50S ribosomal protein L7/L12

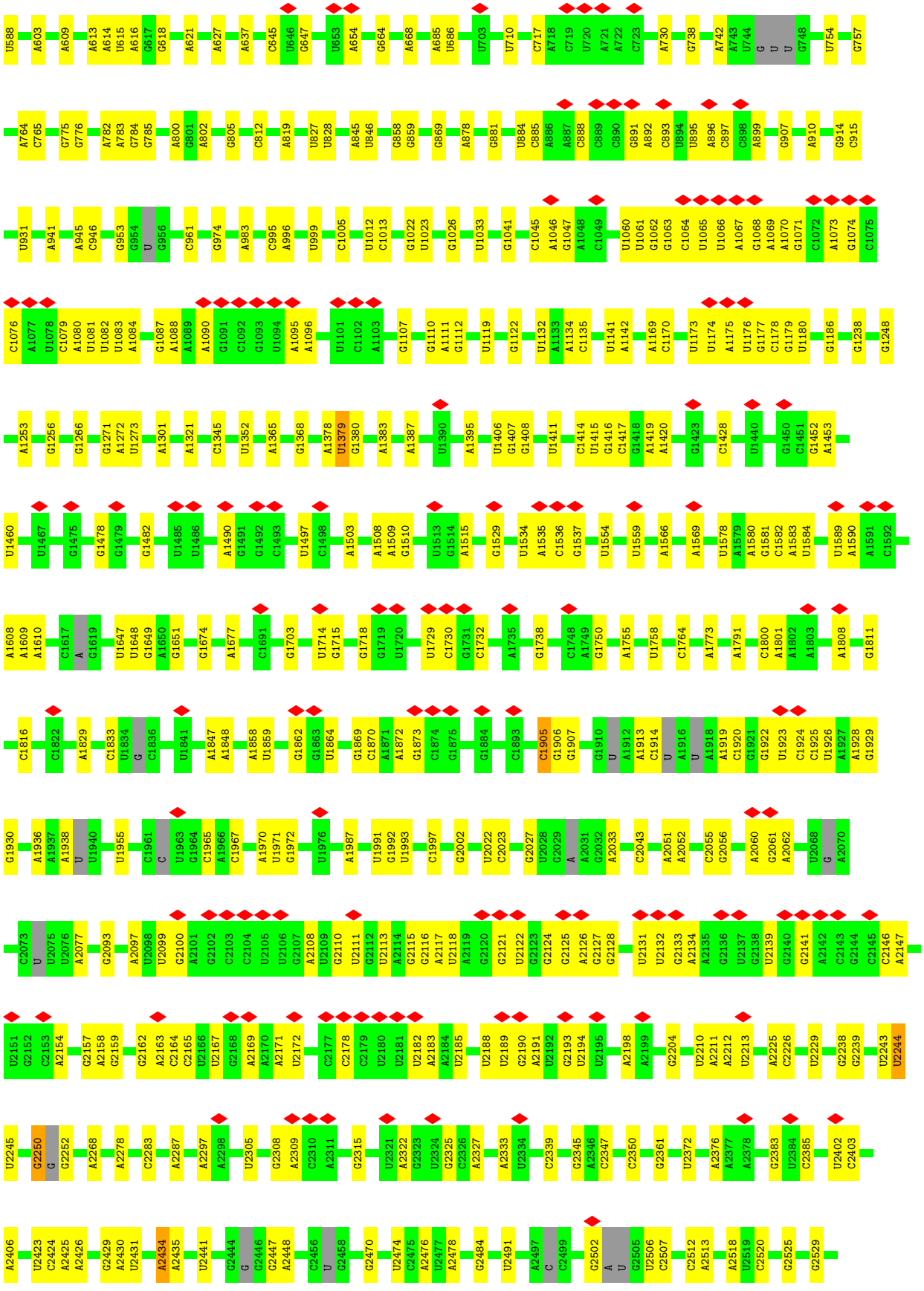
Chain Z:

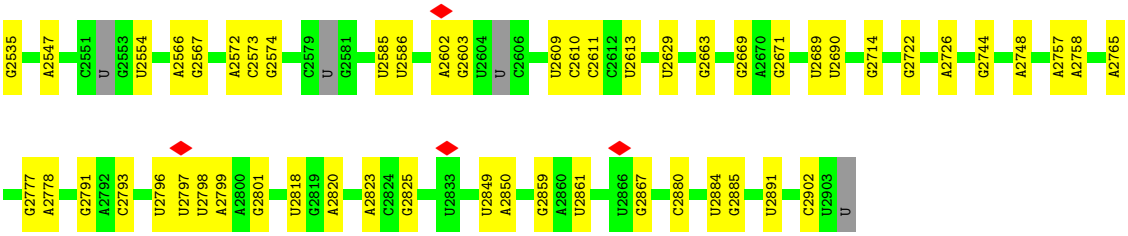


• Molecule 39: 23S rRNA

Chain a:

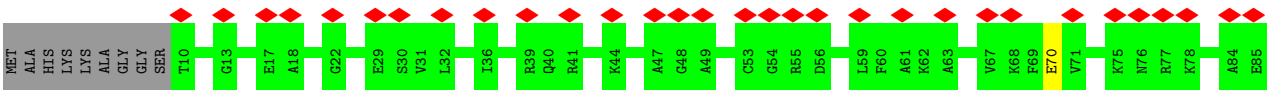






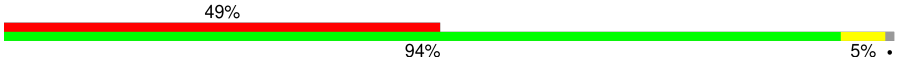
• Molecule 40: 50S ribosomal protein L27

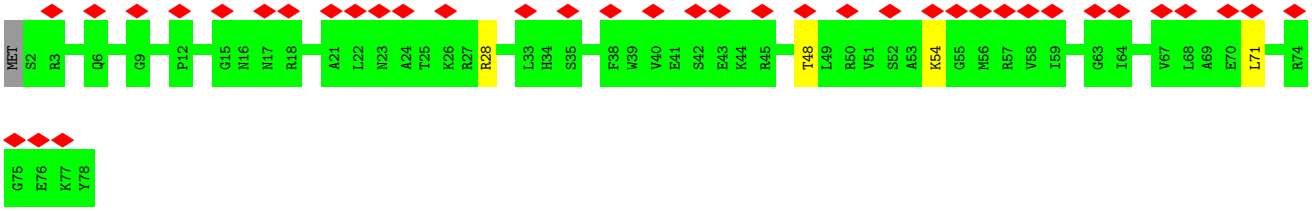
Chain b:



• Molecule 41: 50S ribosomal protein L28

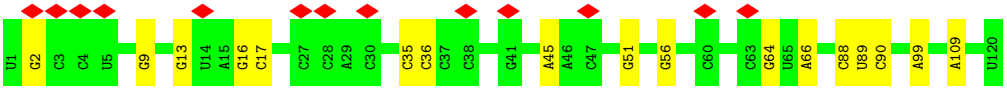
Chain c:





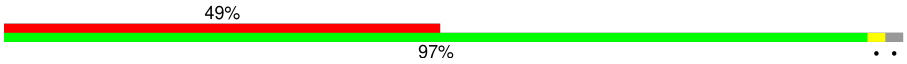
• Molecule 42: 5S rRNA

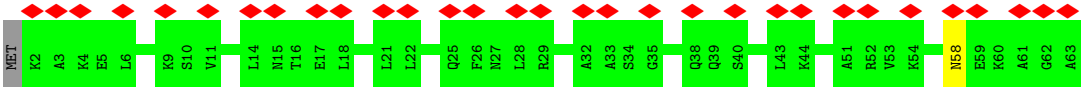
Chain d:



• Molecule 43: 50S ribosomal protein L29

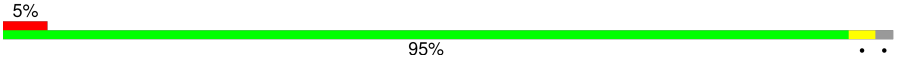
Chain e:

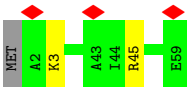




• Molecule 44: 50S ribosomal protein L30

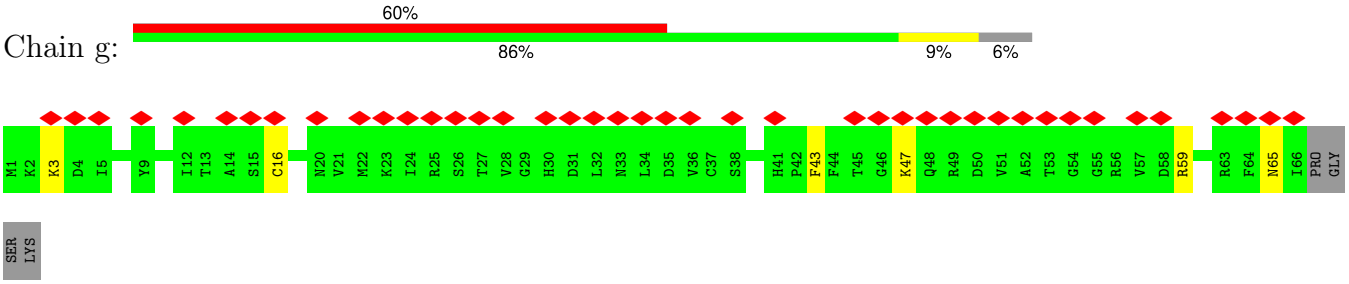
Chain f:





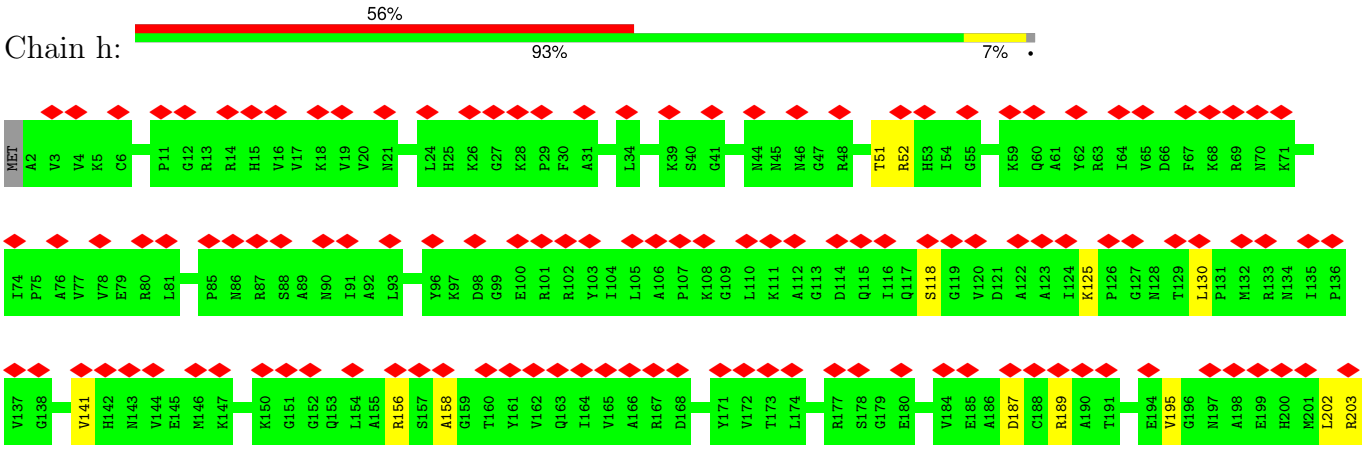
• Molecule 45: 50S ribosomal protein L31

Chain g:



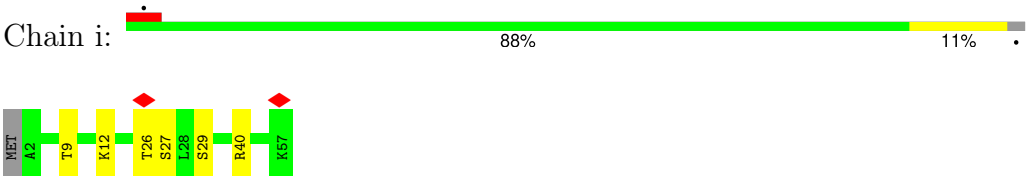
• Molecule 46: 50S ribosomal protein L2

Chain h:



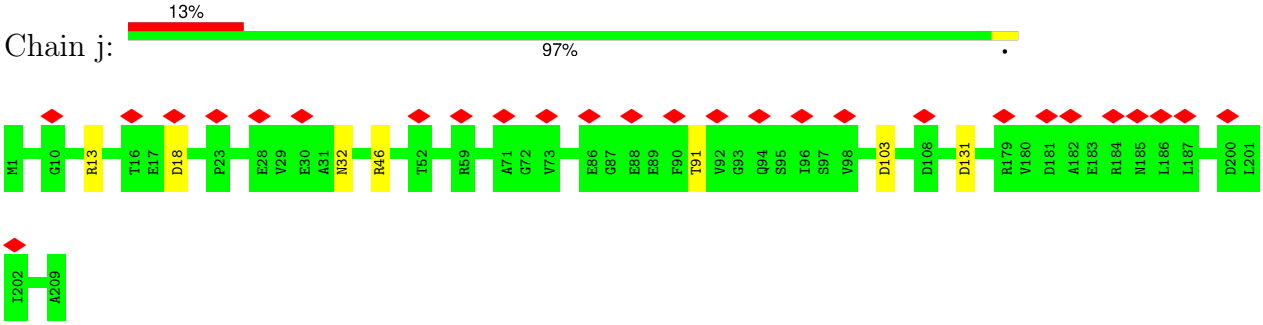
• Molecule 47: 50S ribosomal protein L32

Chain i:



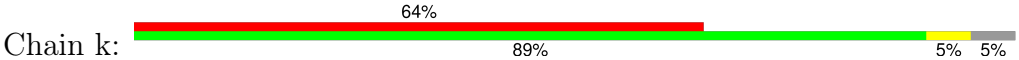
• Molecule 48: 50S ribosomal protein L3

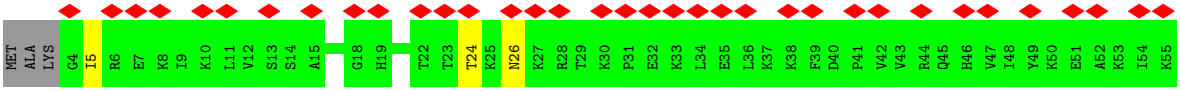
Chain j:



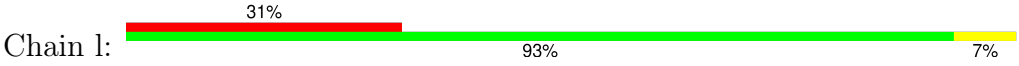
• Molecule 49: 50S ribosomal protein L33

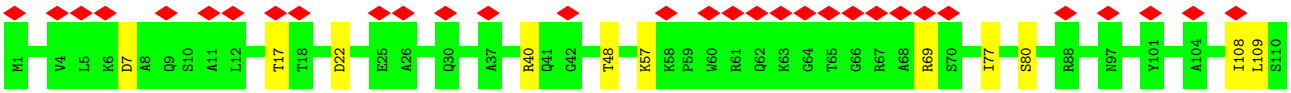
Chain k:

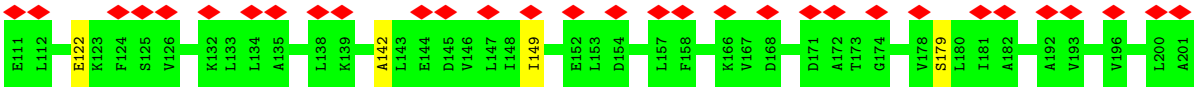




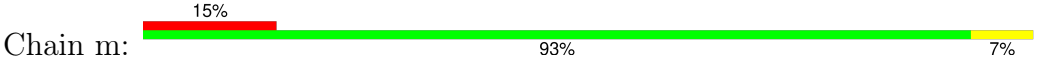
• Molecule 50: 50S ribosomal protein L4

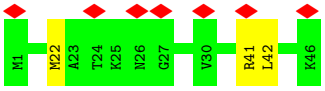




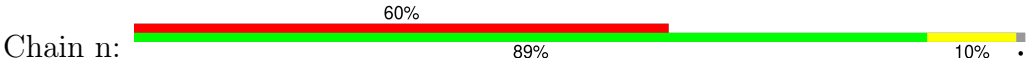


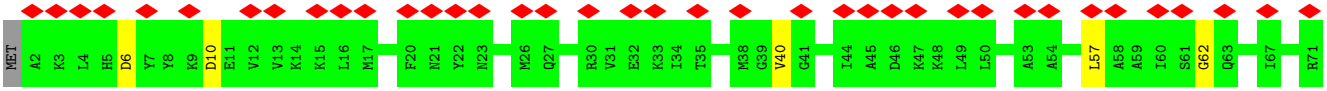
• Molecule 51: 50S ribosomal protein L34

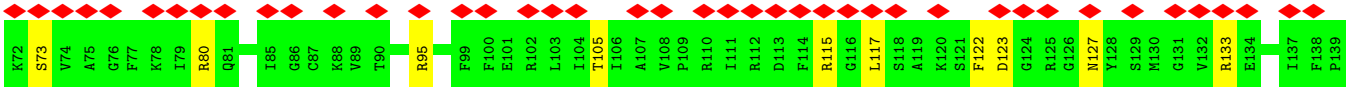


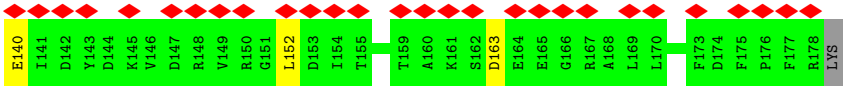


• Molecule 52: 50S ribosomal protein L5

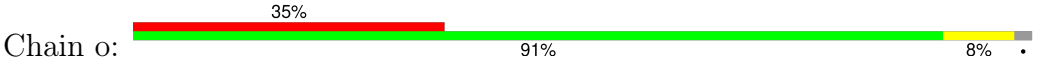


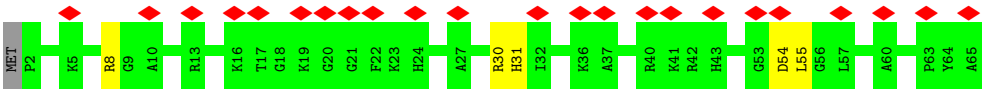




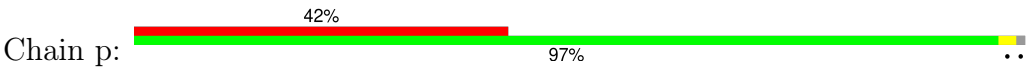


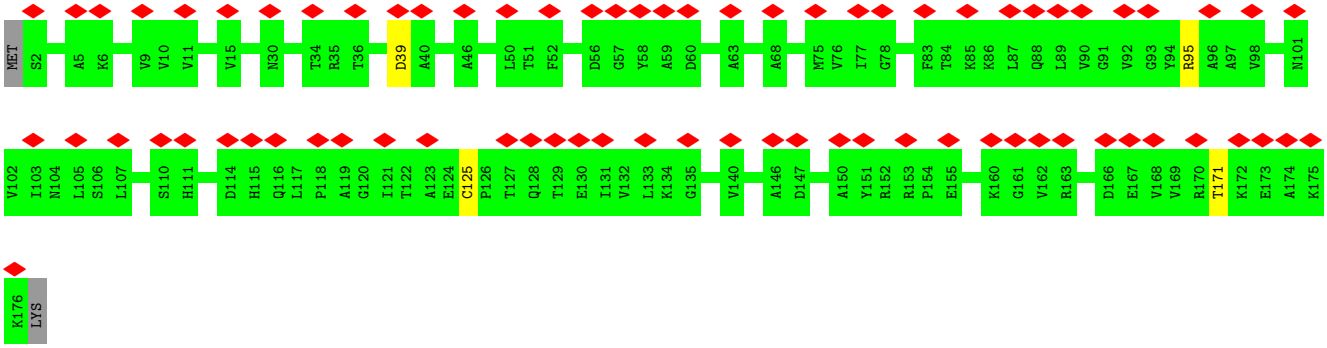
• Molecule 53: 50S ribosomal protein L35





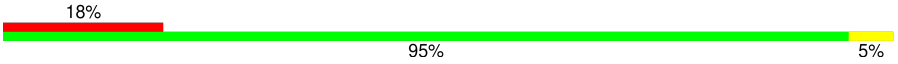
• Molecule 54: 50S ribosomal protein L6

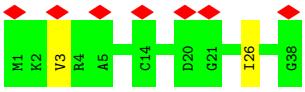




• Molecule 55: 50S ribosomal protein L36

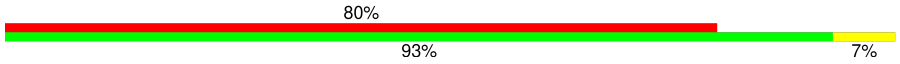
Chain q:

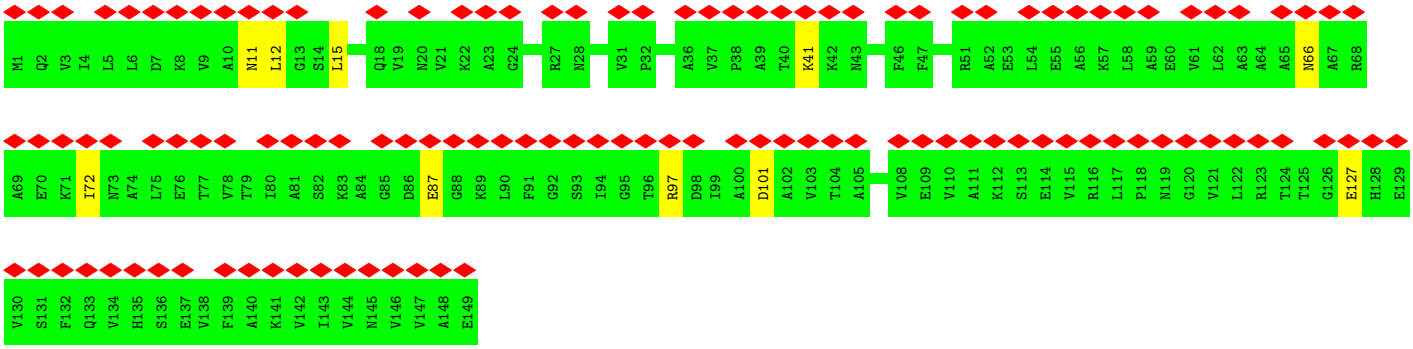




• Molecule 56: 50S ribosomal protein L9

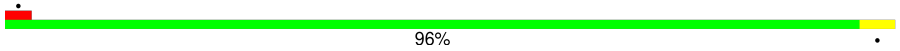
Chain r:

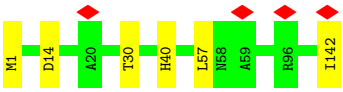




• Molecule 57: 50S ribosomal protein L13

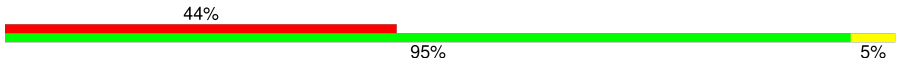
Chain s:

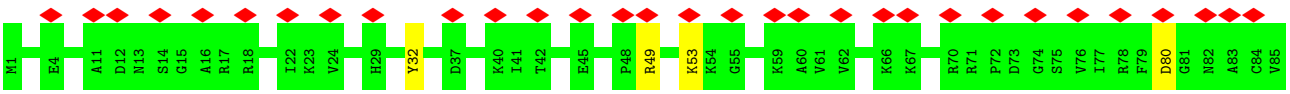


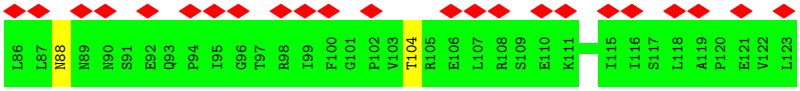


• Molecule 58: 50S ribosomal protein L14

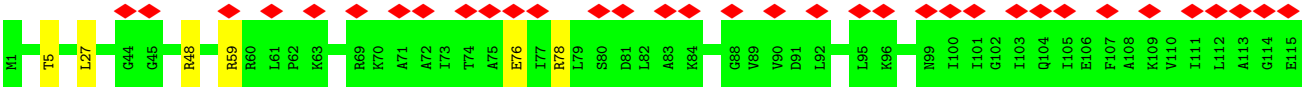
Chain t:

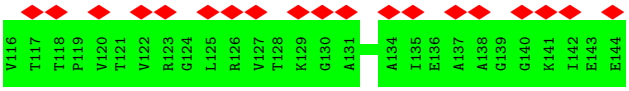




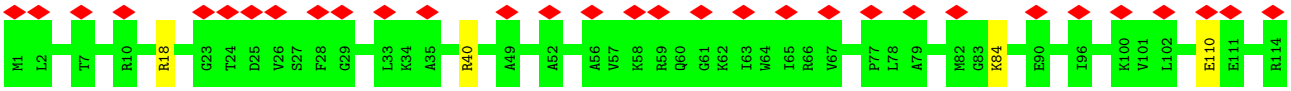


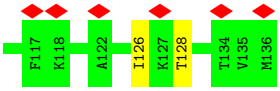
• Molecule 59: 50S ribosomal protein L15



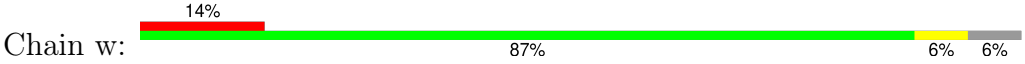


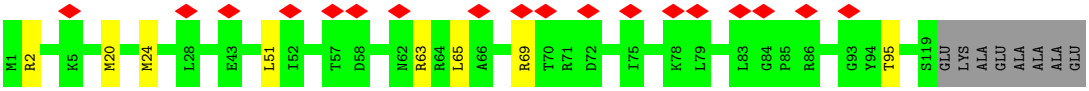
• Molecule 60: 50S ribosomal protein L16



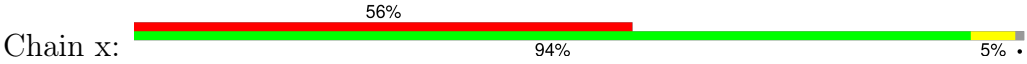


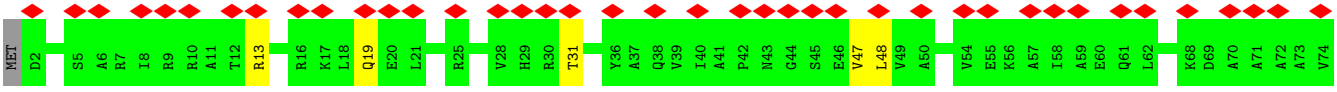
• Molecule 61: 50S ribosomal protein L17

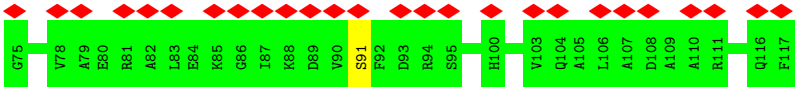




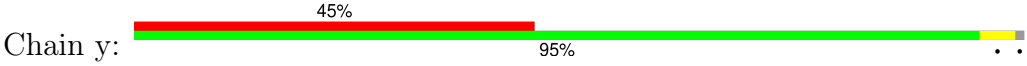
• Molecule 62: 50S ribosomal protein L18

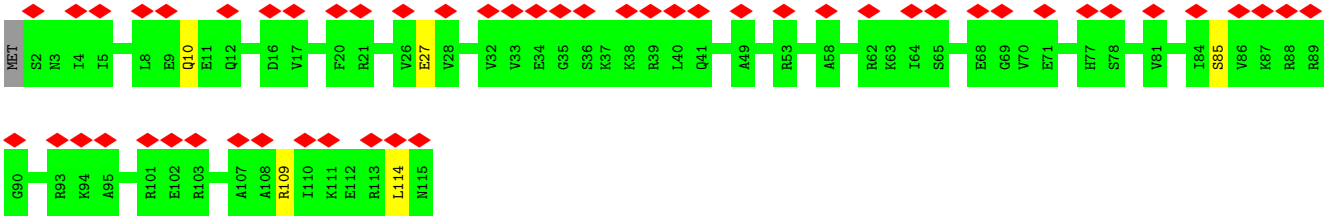






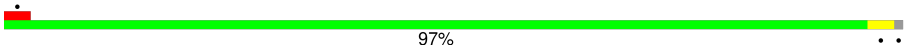
• Molecule 63: 50S ribosomal protein L19

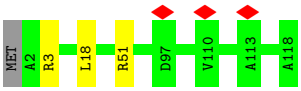




• Molecule 64: 50S ribosomal protein L20

Chain z:





4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	27378	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TALOS ARCTICA	Depositor
Voltage (kV)	200	Depositor
Electron dose ($e^-/Å^2$)	45	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	0.074	Depositor
Minimum map value	-0.024	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.004	Depositor
Recommended contour level	0.015	Depositor
Map size (Å)	520.0, 520.0, 520.0	wwPDB
Map dimensions	500, 500, 500	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.04, 1.04, 1.04	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: MG, 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	0	0.38	0/829	0.67	0/1107
2	1	0.48	0/864	0.82	0/1156
3	2	0.42	0/752	0.71	0/1005
4	3	0.35	0/796	0.66	2/1062 (0.2%)
5	4	0.40	0/766	0.68	0/1025
6	5	1.12	6/528 (1.1%)	0.97	1/810 (0.1%)
7	6	1.11	4/603 (0.7%)	0.97	0/926
8	7	0.57	2/747 (0.3%)	0.88	3/1160 (0.3%)
9	9	0.79	2/1131 (0.2%)	0.64	1/1524 (0.1%)
10	A	0.39	0/1810	0.75	1/2821 (0.0%)
10	B	0.46	1/1810 (0.1%)	0.86	7/2821 (0.2%)
11	AA	0.59	2/10591 (0.0%)	0.75	15/14289 (0.1%)
12	AB	0.43	0/808	0.60	0/1088
13	AC	0.48	0/1808	0.62	1/2450 (0.0%)
13	AD	0.40	0/1789	0.56	0/2425
14	AE	0.52	3/10545 (0.0%)	0.66	5/14236 (0.0%)
15	C	0.48	0/553	0.83	0/743
16	D	0.34	10/36610 (0.0%)	0.74	30/57091 (0.1%)
17	E	0.57	0/675	0.85	0/895
18	F	0.56	0/597	0.87	0/792
19	G	0.49	0/1791	0.71	0/2413
20	H	0.54	1/1746 (0.1%)	1.03	12/2382 (0.5%)
21	I	0.43	0/1663	0.71	0/2241
22	J	0.47	0/1665	0.73	0/2227
23	K	0.45	0/1165	0.75	0/1568
24	L	0.43	0/867	0.76	1/1171 (0.1%)
25	M	0.50	0/1195	0.81	0/1602
26	N	0.41	0/989	0.69	0/1326
27	O	0.43	0/1034	0.75	0/1375
28	P	0.43	0/800	0.75	0/1082
29	Q	0.40	0/893	0.70	0/1205
30	R	0.35	0/952	0.74	0/1274

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
31	S	0.49	0/817	0.79	0/1088
32	T	0.53	0/722	0.86	0/964
33	U	0.44	0/659	0.78	0/884
34	V	0.34	0/657	0.61	0/881
35	W	0.38	0/680	0.62	0/915
36	X	0.49	0/909	0.86	0/1215
37	Y	0.66	0/1046	0.59	0/1410
38	Z	0.69	0/227	0.57	0/304
39	a	0.38	3/69247 (0.0%)	0.72	17/107985 (0.0%)
40	b	0.39	0/589	0.70	0/779
41	c	0.48	0/635	0.81	1/848 (0.1%)
42	d	0.29	0/2872	0.70	0/4478
43	e	0.54	0/502	0.83	0/667
44	f	0.45	0/452	0.78	0/605
45	g	0.43	0/531	0.68	0/709
46	h	0.39	0/2121	0.78	0/2852
47	i	0.40	0/450	0.79	0/599
48	j	0.44	0/1586	0.69	0/2134
49	k	0.35	0/433	0.65	0/576
50	l	0.46	0/1571	0.77	0/2113
51	m	0.53	0/380	0.99	0/498
52	n	0.49	0/1434	0.88	3/1926 (0.2%)
53	o	0.45	0/513	0.83	0/676
54	p	0.39	0/1333	0.67	0/1805
55	q	0.37	0/303	0.77	0/397
56	r	0.44	0/1122	0.69	0/1515
57	s	0.50	0/1152	0.75	0/1551
58	t	0.41	0/955	0.78	0/1279
59	u	0.40	0/1062	0.76	0/1413
60	v	0.47	0/1093	0.81	0/1460
61	w	0.52	0/964	0.87	0/1289
62	x	0.46	0/902	0.81	0/1209
63	y	0.41	0/929	0.72	1/1242 (0.1%)
64	z	0.60	0/960	0.91	0/1278
All	All	0.43	34/189180 (0.0%)	0.74	101/278836 (0.0%)

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
10	A	0	2

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Mol	Chain	#Chirality outliers	#Planarity outliers
10	B	0	2
11	AA	0	10
14	AE	0	5
20	H	0	3
36	X	0	1
All	All	0	23

The worst 5 of 34 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
9	9	130	PRO	N-CA	13.78	1.70	1.47
16	D	1516	G	O3'-P	-13.47	1.45	1.61
16	D	1339	A	O3'-P	10.63	1.74	1.61
11	AA	374	GLU	C-N	10.46	1.54	1.34
14	AE	88	CYS	CB-SG	-10.16	1.65	1.82

The worst 5 of 101 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
16	D	1516	G	P-O3'-C3'	-18.97	96.94	119.70
16	D	1516	G	O3'-P-O5'	13.79	130.20	104.00
11	AA	1250	SER	C-N-CA	11.14	149.56	121.70
39	a	2252	G	N9-C1'-C2'	-10.94	99.78	114.00
16	D	1401	G	N9-C1'-C2'	-10.67	100.13	114.00

There are no chirality outliers.

5 of 23 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
10	A	19	G	Sidechain
10	A	7	G	Sidechain
11	AA	205	PRO	Peptide
11	AA	594	VAL	Peptide
11	AA	595	THR	Peptide

5.2 Too-close contacts (i)

Due to software issues we are unable to calculate clashes - this section is therefore empty.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	0	101/103 (98%)	97 (96%)	3 (3%)	1 (1%)	13 44
2	1	108/110 (98%)	104 (96%)	4 (4%)	0	100 100
3	2	92/100 (92%)	90 (98%)	2 (2%)	0	100 100
4	3	101/104 (97%)	96 (95%)	4 (4%)	1 (1%)	13 44
5	4	92/94 (98%)	91 (99%)	1 (1%)	0	100 100
9	9	146/165 (88%)	95 (65%)	37 (25%)	14 (10%)	0 7
11	AA	1318/1341 (98%)	1150 (87%)	136 (10%)	32 (2%)	5 30
12	AB	94/181 (52%)	88 (94%)	6 (6%)	0	100 100
13	AC	228/329 (69%)	215 (94%)	11 (5%)	2 (1%)	14 47
13	AD	226/329 (69%)	212 (94%)	14 (6%)	0	100 100
14	AE	1329/1407 (94%)	1200 (90%)	120 (9%)	9 (1%)	19 51
15	C	64/75 (85%)	63 (98%)	1 (2%)	0	100 100
17	E	84/87 (97%)	83 (99%)	1 (1%)	0	100 100
18	F	68/71 (96%)	68 (100%)	0	0	100 100
19	G	223/241 (92%)	210 (94%)	13 (6%)	0	100 100
20	H	255/557 (46%)	188 (74%)	55 (22%)	12 (5%)	2 19
21	I	206/233 (88%)	196 (95%)	9 (4%)	1 (0%)	25 57
22	J	203/206 (98%)	198 (98%)	5 (2%)	0	100 100
23	K	154/167 (92%)	146 (95%)	7 (4%)	1 (1%)	22 54
24	L	102/135 (76%)	97 (95%)	4 (4%)	1 (1%)	13 44
25	M	149/179 (83%)	144 (97%)	4 (3%)	1 (1%)	19 51
26	N	127/130 (98%)	121 (95%)	5 (4%)	1 (1%)	16 49
27	O	125/130 (96%)	115 (92%)	9 (7%)	1 (1%)	16 49
28	P	97/99 (98%)	88 (91%)	8 (8%)	1 (1%)	13 44
29	Q	115/129 (89%)	104 (90%)	9 (8%)	2 (2%)	7 36

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
30	R	117/124 (94%)	116 (99%)	1 (1%)	0	100 100
31	S	98/101 (97%)	96 (98%)	2 (2%)	0	100 100
32	T	86/89 (97%)	82 (95%)	4 (5%)	0	100 100
33	U	80/82 (98%)	76 (95%)	3 (4%)	1 (1%)	10 40
34	V	78/84 (93%)	74 (95%)	4 (5%)	0	100 100
35	W	81/92 (88%)	78 (96%)	3 (4%)	0	100 100
36	X	114/118 (97%)	107 (94%)	5 (4%)	2 (2%)	7 35
37	Y	139/142 (98%)	102 (73%)	25 (18%)	12 (9%)	0 9
38	Z	28/121 (23%)	19 (68%)	7 (25%)	2 (7%)	1 13
40	b	74/85 (87%)	69 (93%)	5 (7%)	0	100 100
41	c	75/78 (96%)	72 (96%)	3 (4%)	0	100 100
43	e	60/63 (95%)	57 (95%)	3 (5%)	0	100 100
44	f	56/59 (95%)	53 (95%)	3 (5%)	0	100 100
45	g	64/70 (91%)	63 (98%)	1 (2%)	0	100 100
46	h	269/273 (98%)	259 (96%)	9 (3%)	1 (0%)	30 62
47	i	54/57 (95%)	51 (94%)	3 (6%)	0	100 100
48	j	207/209 (99%)	198 (96%)	9 (4%)	0	100 100
49	k	50/55 (91%)	50 (100%)	0	0	100 100
50	l	199/201 (99%)	190 (96%)	8 (4%)	1 (0%)	25 57
51	m	44/46 (96%)	43 (98%)	1 (2%)	0	100 100
52	n	175/179 (98%)	162 (93%)	11 (6%)	2 (1%)	12 43
53	o	62/65 (95%)	59 (95%)	3 (5%)	0	100 100
54	p	173/177 (98%)	161 (93%)	12 (7%)	0	100 100
55	q	36/38 (95%)	35 (97%)	1 (3%)	0	100 100
56	r	147/149 (99%)	136 (92%)	11 (8%)	0	100 100
57	s	140/142 (99%)	135 (96%)	5 (4%)	0	100 100
58	t	121/123 (98%)	111 (92%)	10 (8%)	0	100 100
59	u	142/144 (99%)	135 (95%)	7 (5%)	0	100 100
60	v	134/136 (98%)	129 (96%)	5 (4%)	0	100 100
61	w	117/127 (92%)	107 (92%)	10 (8%)	0	100 100
62	x	114/117 (97%)	108 (95%)	6 (5%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
63	y	112/115 (97%)	105 (94%)	7 (6%)	0	100 100
64	z	115/118 (98%)	110 (96%)	4 (4%)	1 (1%)	14 47
All	All	9368/10481 (89%)	8607 (92%)	659 (7%)	102 (1%)	15 43

5 of 102 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
9	9	88	HIS
11	AA	596	ASP
11	AA	853	ASP
11	AA	859	GLU
11	AA	862	LEU

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	0	84/84 (100%)	78 (93%)	6 (7%)	12 39
2	1	93/93 (100%)	84 (90%)	9 (10%)	6 28
3	2	81/84 (96%)	76 (94%)	5 (6%)	15 42
4	3	84/85 (99%)	78 (93%)	6 (7%)	12 39
5	4	78/78 (100%)	74 (95%)	4 (5%)	20 47
9	9	112/123 (91%)	65 (58%)	47 (42%)	0 0
11	AA	1140/1156 (99%)	1039 (91%)	101 (9%)	8 31
12	AB	86/158 (54%)	84 (98%)	2 (2%)	45 64
13	AC	198/286 (69%)	182 (92%)	16 (8%)	9 34
13	AD	196/286 (68%)	194 (99%)	2 (1%)	73 82
14	AE	1120/1168 (96%)	1051 (94%)	69 (6%)	15 42
15	C	57/65 (88%)	55 (96%)	2 (4%)	31 56
17	E	65/66 (98%)	60 (92%)	5 (8%)	10 37
18	F	60/61 (98%)	57 (95%)	3 (5%)	20 47

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
19	G	187/199 (94%)	178 (95%)	9 (5%)	21 48
20	H	137/461 (30%)	128 (93%)	9 (7%)	14 41
21	I	171/190 (90%)	165 (96%)	6 (4%)	31 56
22	J	172/173 (99%)	165 (96%)	7 (4%)	26 52
23	K	119/126 (94%)	112 (94%)	7 (6%)	16 44
24	L	91/116 (78%)	85 (93%)	6 (7%)	14 41
25	M	124/147 (84%)	116 (94%)	8 (6%)	14 41
26	N	104/105 (99%)	102 (98%)	2 (2%)	52 70
27	O	105/107 (98%)	100 (95%)	5 (5%)	21 48
28	P	86/86 (100%)	78 (91%)	8 (9%)	7 30
29	Q	90/99 (91%)	87 (97%)	3 (3%)	33 57
30	R	101/104 (97%)	94 (93%)	7 (7%)	13 39
31	S	83/84 (99%)	79 (95%)	4 (5%)	21 48
32	T	76/77 (99%)	64 (84%)	12 (16%)	2 14
33	U	65/65 (100%)	60 (92%)	5 (8%)	10 37
34	V	74/78 (95%)	72 (97%)	2 (3%)	40 61
35	W	72/79 (91%)	68 (94%)	4 (6%)	17 45
36	X	94/96 (98%)	85 (90%)	9 (10%)	7 28
37	Y	109/110 (99%)	72 (66%)	37 (34%)	0 1
38	Z	26/85 (31%)	12 (46%)	14 (54%)	0 0
40	b	58/63 (92%)	57 (98%)	1 (2%)	56 73
41	c	67/68 (98%)	64 (96%)	3 (4%)	23 50
43	e	54/55 (98%)	53 (98%)	1 (2%)	52 70
44	f	48/49 (98%)	46 (96%)	2 (4%)	25 51
45	g	59/62 (95%)	53 (90%)	6 (10%)	6 26
46	h	216/218 (99%)	199 (92%)	17 (8%)	10 36
47	i	47/48 (98%)	41 (87%)	6 (13%)	3 19
48	j	164/164 (100%)	157 (96%)	7 (4%)	25 50
49	k	47/49 (96%)	44 (94%)	3 (6%)	14 42
50	l	165/165 (100%)	151 (92%)	14 (8%)	8 33
51	m	38/38 (100%)	35 (92%)	3 (8%)	10 36

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
52	n	148/150 (99%)	134 (90%)	14 (10%)	7 29
53	o	51/52 (98%)	46 (90%)	5 (10%)	6 27
54	p	136/138 (99%)	132 (97%)	4 (3%)	37 59
55	q	34/34 (100%)	32 (94%)	2 (6%)	16 44
56	r	114/114 (100%)	104 (91%)	10 (9%)	8 32
57	s	116/116 (100%)	110 (95%)	6 (5%)	19 46
58	t	104/104 (100%)	98 (94%)	6 (6%)	17 44
59	u	103/103 (100%)	97 (94%)	6 (6%)	17 44
60	v	109/109 (100%)	103 (94%)	6 (6%)	18 45
61	w	99/103 (96%)	91 (92%)	8 (8%)	9 34
62	x	86/87 (99%)	80 (93%)	6 (7%)	12 39
63	y	99/100 (99%)	95 (96%)	4 (4%)	27 52
64	z	89/90 (99%)	87 (98%)	2 (2%)	47 65
All	All	7791/8659 (90%)	7208 (92%)	583 (8%)	14 37

5 of 583 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
46	h	195	VAL
62	x	31	THR
47	i	40	ARG
46	h	189	ARG
53	o	31	HIS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 6 such sidechains are listed below:

Mol	Chain	Res	Type
23	K	70	ASN
36	X	105	ASN
59	u	4	ASN
11	AA	1236	ASN
9	9	103	ASN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
10	A	75/76 (98%)	29 (38%)	6 (8%)
10	B	75/76 (98%)	35 (46%)	6 (8%)
16	D	1515/1542 (98%)	288 (19%)	35 (2%)
39	a	2859/2904 (98%)	532 (18%)	0
42	d	119/120 (99%)	17 (14%)	0
8	7	31/32 (96%)	21 (67%)	3 (9%)
All	All	4674/4750 (98%)	922 (19%)	50 (1%)

5 of 922 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
8	7	-9	G
8	7	-8	U
8	7	-7	U
8	7	-5	U
8	7	-4	U

5 of 50 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
16	D	532	A
16	D	1109	C
16	D	1493	A
16	D	562	U
16	D	793	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 3 ligands modelled in this entry, 3 are 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 (i)

There are no chain breaks in this entry.

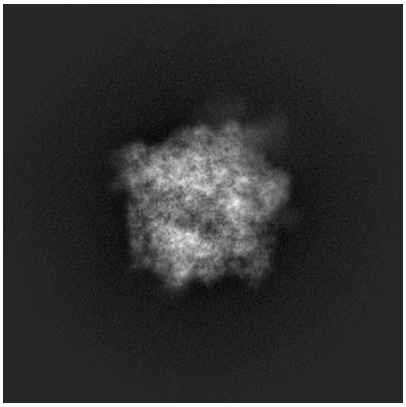
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-21468. These allow visual inspection of the internal detail of the map and identification of artifacts.

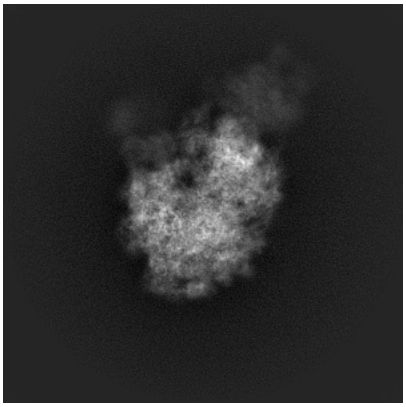
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

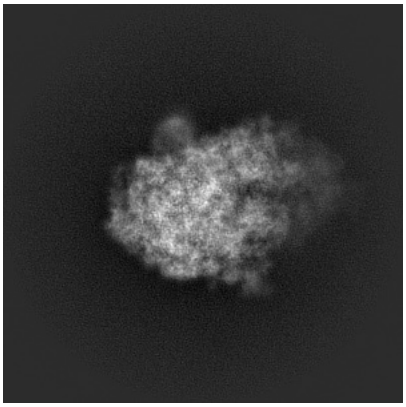
6.1.1 Primary map



X



Y

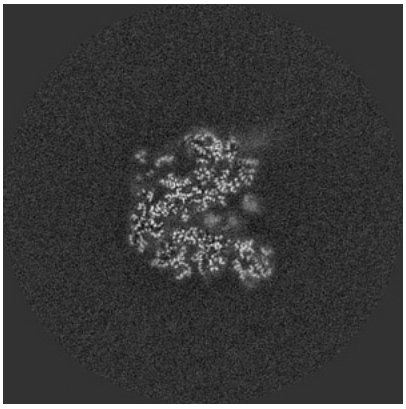


Z

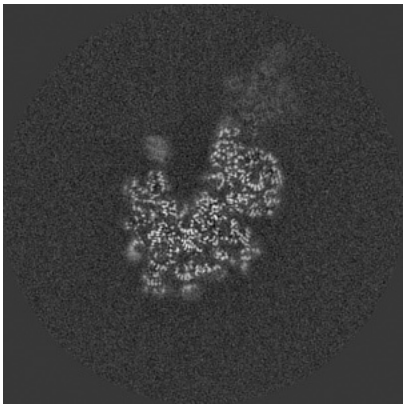
The images above show the map projected in three orthogonal directions.

6.2 Central slices

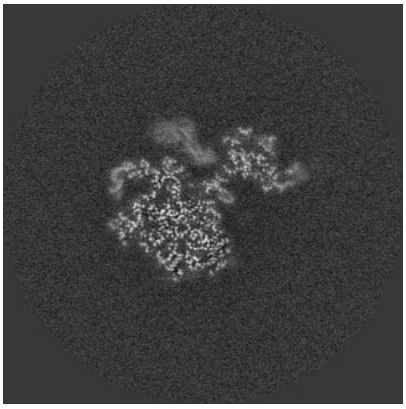
6.2.1 Primary map



X Index: 250



Y Index: 250

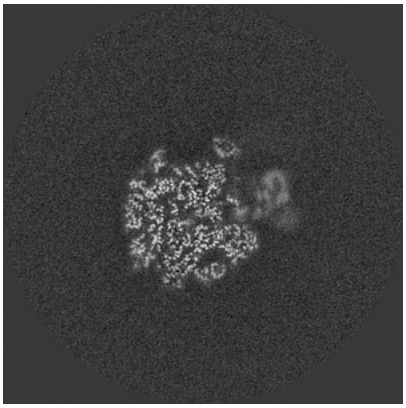


Z Index: 250

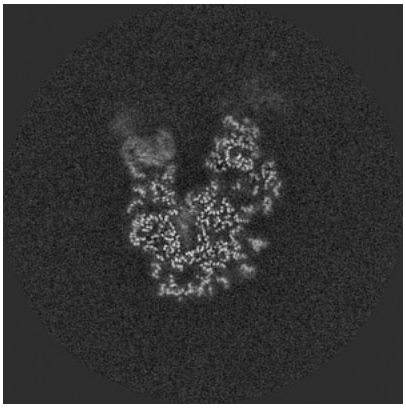
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

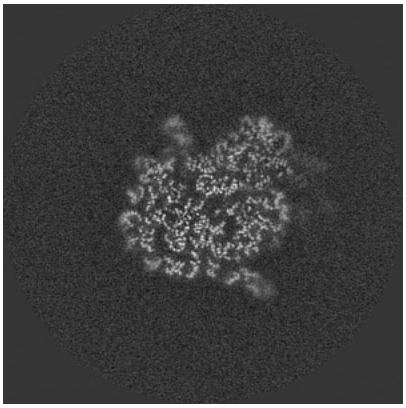
6.3.1 Primary map



X Index: 221



Y Index: 230

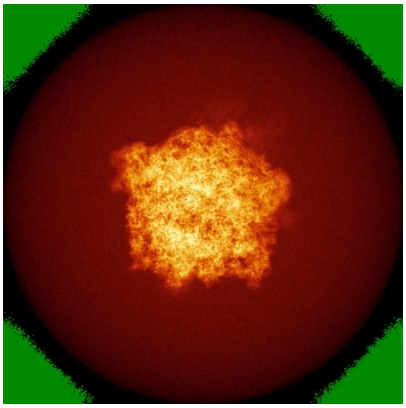


Z Index: 277

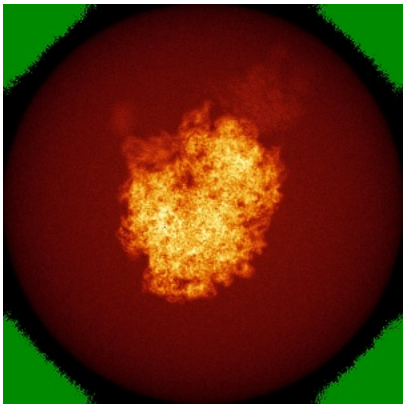
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) (i)

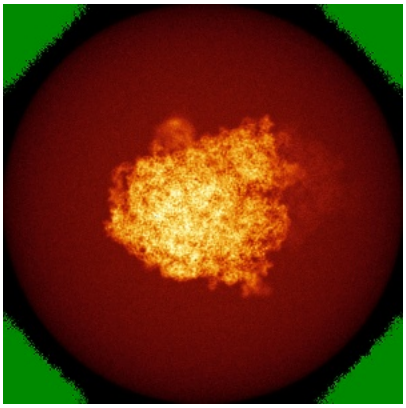
6.4.1 Primary map



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

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.015. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

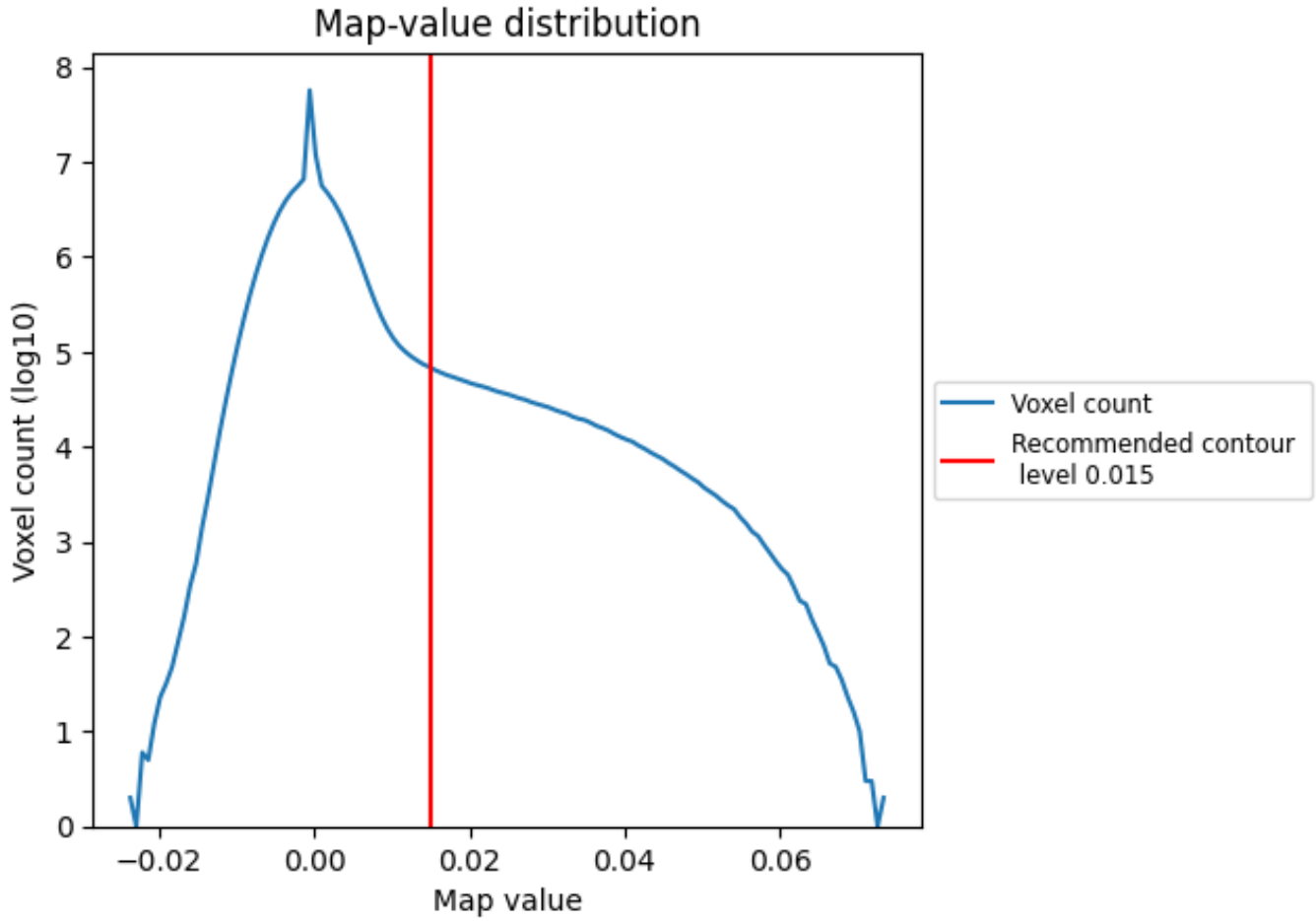
6.6 Mask visualisation (i)

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

7 Map analysis

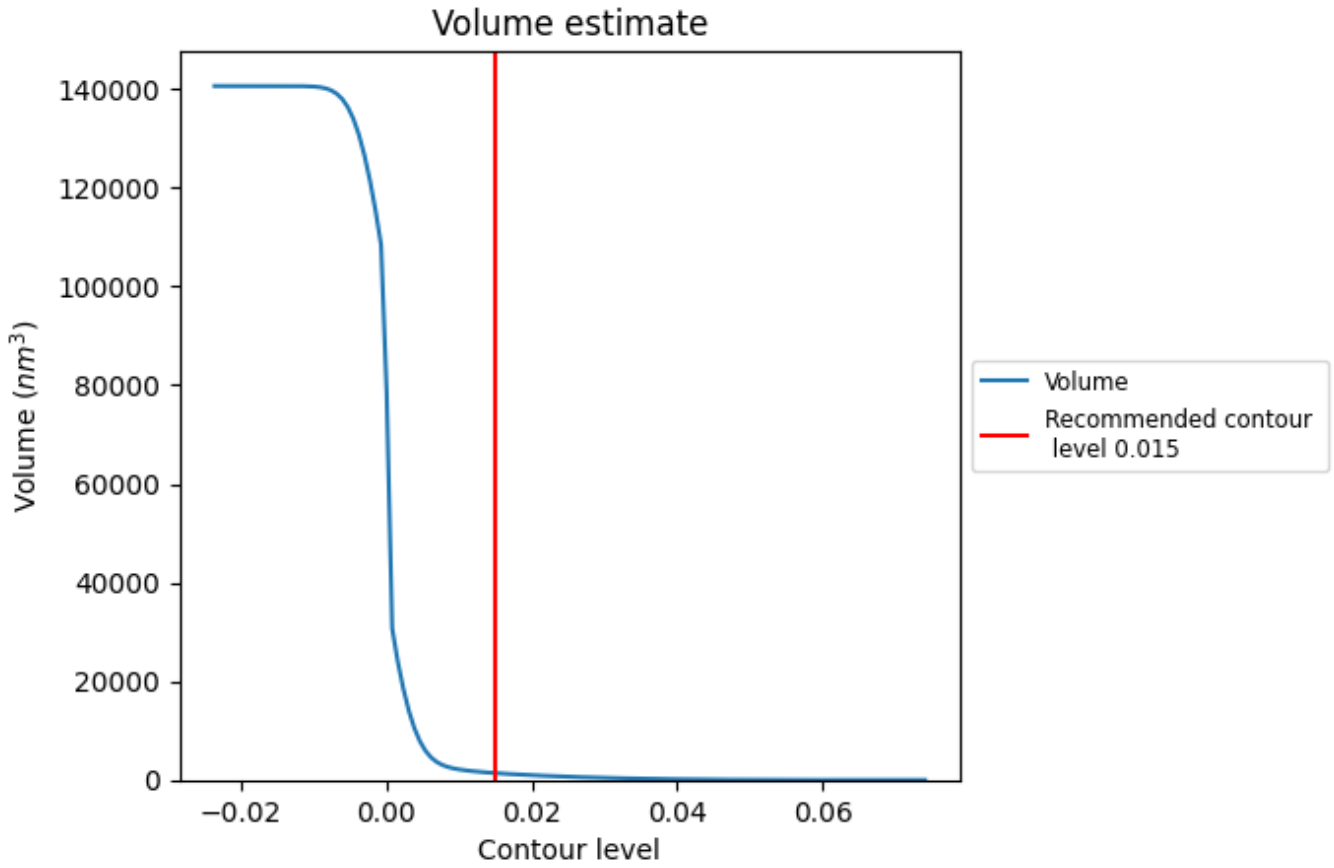
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

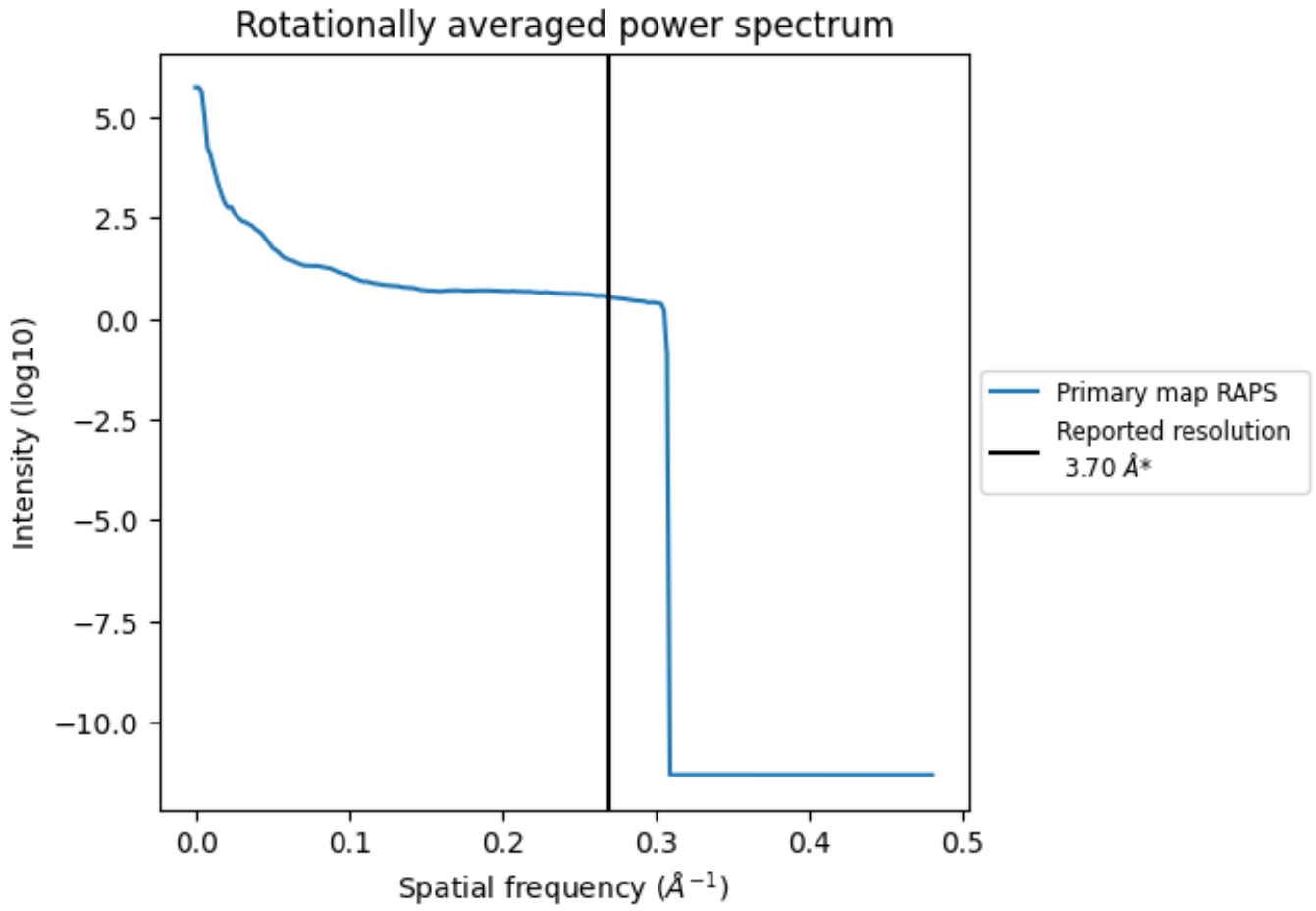
7.2 Volume estimate (i)



The volume at the recommended contour level is 1389 nm^3; this corresponds to an approximate mass of 1255 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 0.270 $Å^{-1}$

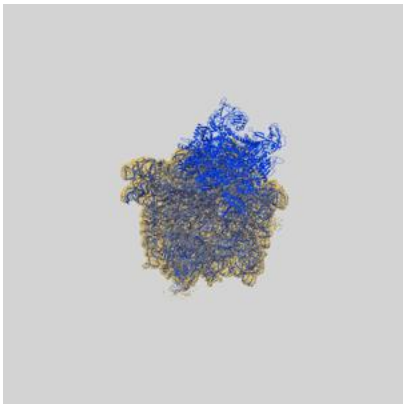
8 Fourier-Shell correlation (i)

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

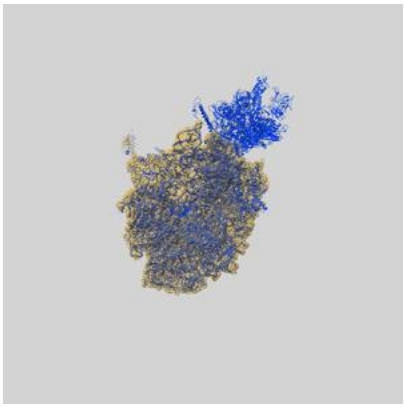
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-21468 and PDB model 6VYQ. Per-residue inclusion information can be found in section 3 on page 16.

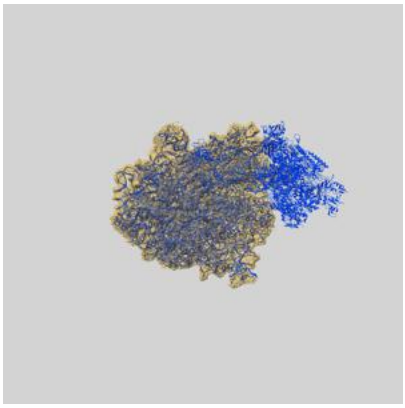
9.1 Map-model overlay



X



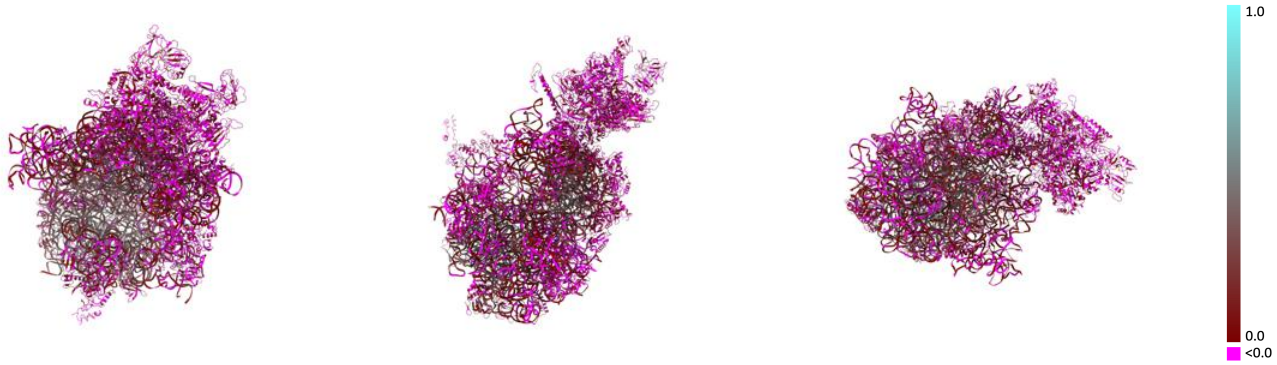
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.015 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.

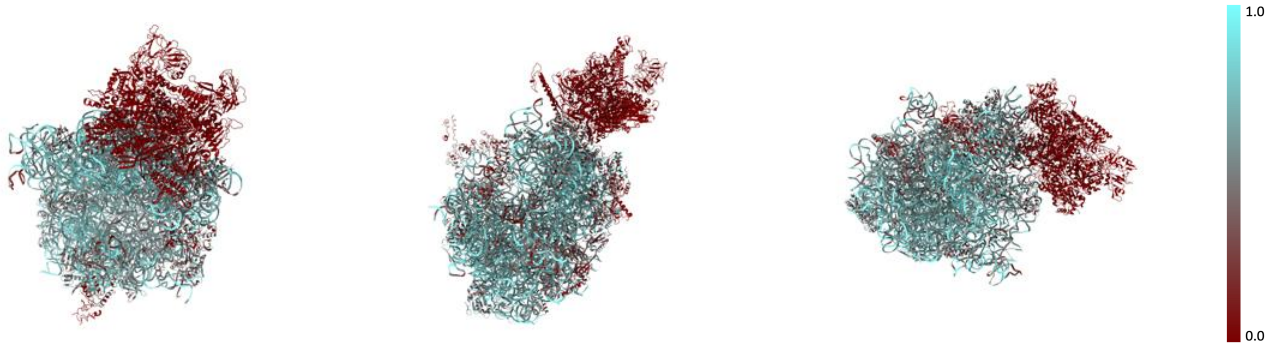
9.2 Q-score mapped to coordinate model



X Y Z

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

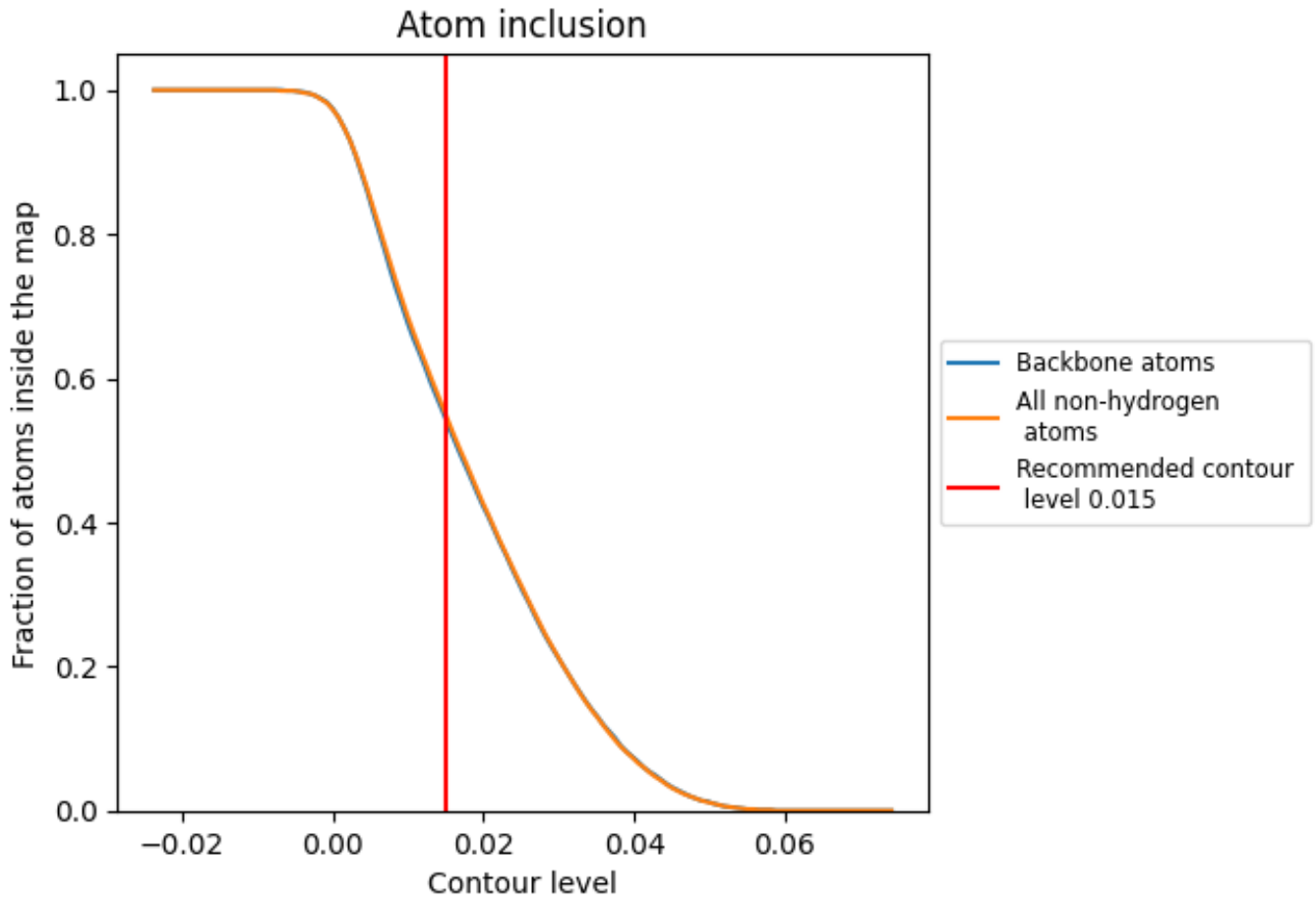
9.3 Atom inclusion mapped to coordinate model



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.015).

9.4 Atom inclusion (i)



At the recommended contour level, 54% of all backbone atoms, 55% 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 (0.015) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.5500	0.1250
0	0.7250	0.3280
1	0.7690	0.3950
2	0.5080	0.1070
3	0.5880	0.1340
4	0.5470	0.1360
5	0.0090	0.0800
6	0.0110	0.0650
7	0.0860	0.0210
9	0.2640	0.0340
A	0.5880	0.1520
AA	0.0050	0.0110
AB	0.0010	0.0180
AC	0.0050	0.0140
AD	0.0010	0.0070
AE	0.0040	0.0200
B	0.4120	0.0460
C	0.4610	0.0530
D	0.7590	0.1790
E	0.4820	0.0710
F	0.4870	0.1620
G	0.4090	0.0170
H	0.0430	0.0150
I	0.4150	0.0520
J	0.4670	0.0580
K	0.5550	0.1520
L	0.4120	0.0150
M	0.4530	0.1010
N	0.5230	0.0910
O	0.4730	0.0580
P	0.4550	0.0570
Q	0.5820	0.1640
R	0.6830	0.2960
S	0.4610	0.0530
T	0.5750	0.1330

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Chain	Atom inclusion	Q-score
U	0.4190	-0.0050
V	0.5630	0.1350
W	0.3030	-0.0290
X	0.3500	0.0010
Y	0.1850	0.0360
Z	0.0040	-0.0850
a	0.7420	0.1650
b	0.4810	0.0580
c	0.4760	0.0420
d	0.6760	0.0620
e	0.4540	0.0480
f	0.6970	0.2870
g	0.3070	-0.0250
h	0.3940	-0.0360
i	0.7620	0.3590
j	0.6350	0.2290
k	0.3330	-0.0410
l	0.5720	0.1880
m	0.6900	0.2170
n	0.3680	-0.0230
o	0.4870	0.0990
p	0.4530	0.0510
q	0.5930	0.1860
r	0.2310	-0.0210
s	0.7530	0.3600
t	0.4670	0.1010
u	0.5230	0.1320
v	0.5630	0.1420
w	0.6490	0.2020
x	0.3750	-0.0530
y	0.4510	0.0480
z	0.8150	0.4170