wwPDB EM Validation Summary Report (i)

Oct 6, 2025 – 08:51 PM JST

PDB ID	:	9V24 / pdb_00009v24
EMDB ID	:	EMD-64716
Title	:	Cryo- EM structure of 75S ribosome with A/P- & P/E- tRNAs from Entamoeba histolytica
Authors	:	Sharma, S.; Mishra, S.; Gourinath, S.; Kaushal, P.S.
Deposited on	:	2025-05-19
Resolution	:	3.10 Å(reported)
Based on initial model	:	.

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 (i) 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 (i)) were used in the production of this report:

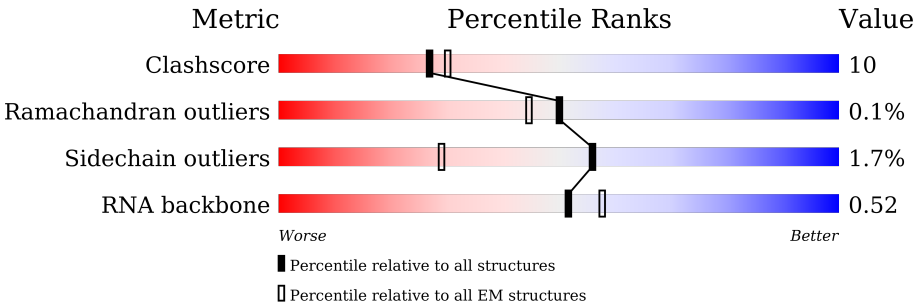
EMDB validation analysis	:	0.0.1.dev129
MolProbity	:	4-5-2 with Phenix2.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.46

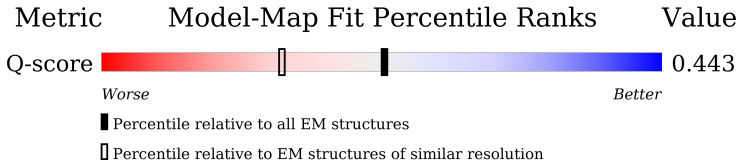
1 Overall quality at a glance

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

The reported resolution of this entry is 3.10 Å.

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





Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
RNA backbone	6643	2191	-
Q-score	-	25397	14724 (2.60 - 3.60)

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	lA	3503	46% 37% 7% 10%
2	lB	155	47% 41% 5% 6%
3	lC	117	26% 64% 10%

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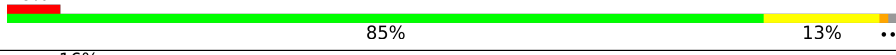
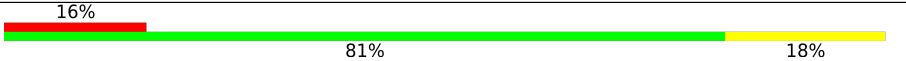
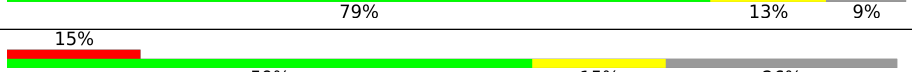
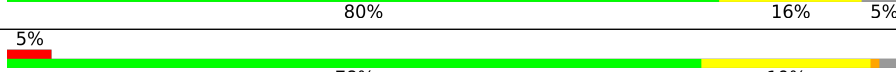
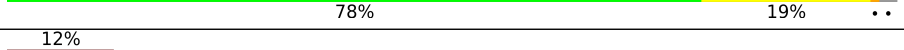
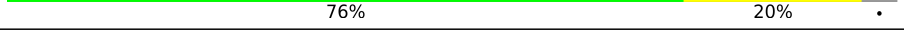
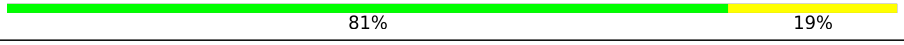
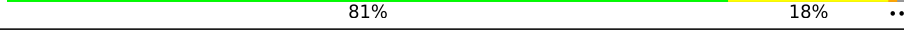
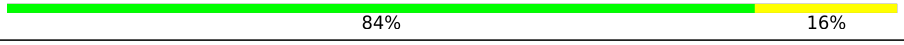
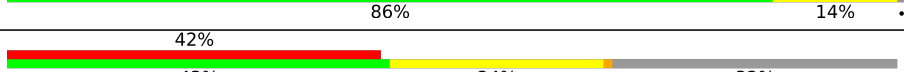
Mol	Chain	Length	Quality of chain
4	lD	257	
5	lE	402	
6	lF	431	
7	lG	286	
8	lH	204	
9	lI	230	
10	lJ	286	
11	lK	197	
12	lL	210	
13	lM	174	
14	lN	291	
15	lO	205	
16	lP	135	
17	lQ	205	
18	lR	179	
19	lS	168	
20	lT	173	
21	lU	198	
22	lV	166	
23	lW	137	
24	lX	140	
25	lY	121	
26	lZ	163	
27	la	213	
28	lb	139	

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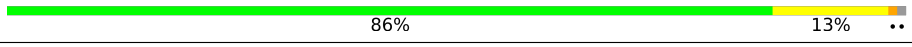
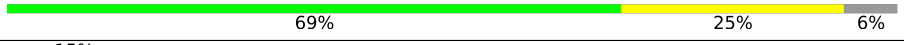
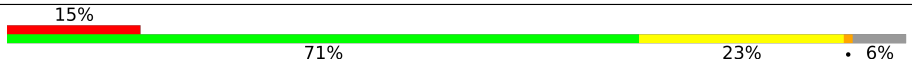
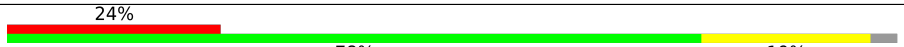
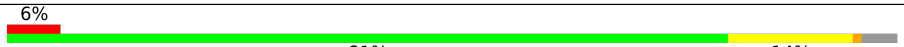
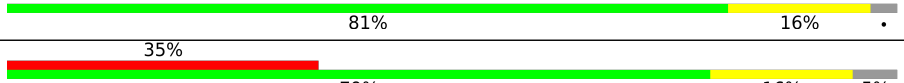
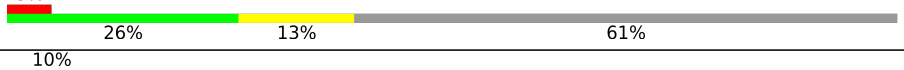
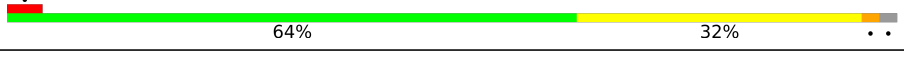
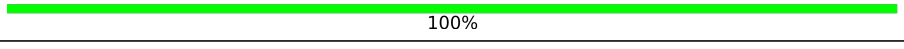
Mol	Chain	Length	Quality of chain
29	lc	149	
30	ld	64	
31	le	109	
32	lf	150	
33	lg	134	
34	lh	137	
35	li	122	
36	lj	108	
37	lk	104	
38	ll	77	
39	lm	93	
40	ln	77	
41	lo	51	
42	lp	56	
43	lq	98	
44	sA	137	
45	sB	144	
46	sC	84	
47	sD	69	
48	sE	56	
49	sH	4	
50	sI	76	
51	sJ	77	
52	sK	10	
53	sa	1947	

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Mol	Chain	Length	Quality of chain
54	sb	254	11% 61% 20% 19%
55	sc	255	7% 61% 24% 16%
56	sd	244	14% 68% 22% 10%
57	se	256	11% 37% 24% 36%
58	sf	326	25% 53% 24% 21%
59	sg	206	9% 64% 24% 12%
60	sh	266	22% 17% 23% 5% 55%
61	si	201	30% 41% 12% 45%
62	sj	237	6% 36% 17% 46%
63	sk	185	30% 68% 19% 12%
64	sl	127	28% 47% 24% 28%
65	sm	156	12% 67% 24% 10%
66	so	151	40% 10% 50%
67	sp	146	76% 14% 9%
68	sq	144	30% 51% 21% 27%
69	sr	130	78% 20%
70	ss	158	11% 63% 26% 11%
71	st	117	12% 53% 15% 31%
72	su	155	6% 61% 25% 13%
73	sv	155	15% 64% 34%
74	sw	118	30% 61% 21% 17%
75	sx	86	15% 70% 27%
76	sy	141	6% 56% 19% 25%
77	sz	140	36% 26% 13% 60%

2 Entry composition (i)

There are 77 unique types of molecules in this entry. The entry contains 185725 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a RNA chain called 25S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	lA	3145	67215	30134	12203	21733	3145	0	0

- Molecule 2 is a RNA chain called 5.8S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	lB	145	3097	1390	560	1002	145	0	0

- Molecule 3 is a RNA chain called 5S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
3	lC	117	2477	1108	425	827	117	0	0

- Molecule 4 is a protein called Large ribosomal subunit protein uL2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	lD	246	1881	1165	382	326	8	0	0

- Molecule 5 is a protein called 60S ribosomal protein L3, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	lE	387	3076	1956	578	527	15	0	0

- Molecule 6 is a protein called 60S ribosomal protein L4, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	lF	424	3253	2069	619	551	14	0	0

- Molecule 7 is a protein called 60S ribosomal protein L5, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	lG	282	Total	C	N	O	S	0	0
			2245	1434	405	398	8		

- Molecule 8 is a protein called Large ribosomal subunit protein eL6.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	lH	203	Total	C	N	O	S	0	0
			1608	1054	272	278	4		

- Molecule 9 is a protein called 60S ribosomal protein L7, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	lI	210	Total	C	N	O	S	0	0
			1658	1067	301	282	8		

- Molecule 10 is a protein called 60S ribosomal protein L7a.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	lJ	213	Total	C	N	O	S	0	0
			1727	1114	317	291	5		

- Molecule 11 is a protein called 60S ribosomal protein L9, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	lK	193	Total	C	N	O	S	0	0
			1538	974	279	279	6		

- Molecule 12 is a protein called Ribosomal protein L10, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	lL	200	Total	C	N	O	S	0	0
			1597	1017	302	264	14		

- Molecule 13 is a protein called 60S ribosomal protein L11, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	lM	170	Total	C	N	O	S	0	0
			1350	857	243	245	5		

- Molecule 14 is a protein called 60S ribosomal protein L13, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	lN	267	Total	C	N	O	S	0	0
			2122	1352	410	352	8		

- Molecule 15 is a protein called 60S ribosomal protein L13, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	lO	204	Total	C	N	O	S	0	0
			1616	1030	302	275	9		

- Molecule 16 is a protein called 60S ribosomal protein L14, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	lP	130	Total	C	N	O	S	0	0
			1020	654	188	174	4		

- Molecule 17 is a protein called Ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	lQ	204	Total	C	N	O	S	0	0
			1676	1051	356	264	5		

- Molecule 18 is a protein called 60S ribosomal protein L17, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	lR	158	Total	C	N	O	S	0	0
			1232	779	238	210	5		

- Molecule 19 is a protein called 60S ribosomal protein L18, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	lS	167	Total	C	N	O	S	0	0
			1316	832	257	218	9		

- Molecule 20 is a protein called 60S ribosomal protein L18a.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	lT	173	Total	C	N	O	S	0	0
			1413	910	259	235	9		

- Molecule 21 is a protein called Ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	lU	150	Total	C	N	O	S	0	0
			1235	787	246	197	5		

- Molecule 22 is a protein called 60S ribosomal protein L21, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	lV	165	Total	C	N	O	S	0	0
			1320	846	254	217	3		

- Molecule 23 is a protein called Large ribosomal subunit protein eL22.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	lW	93	Total	C	N	O	S	0	0
			761	491	132	133	5		

- Molecule 24 is a protein called 60S ribosomal protein L23, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	lX	133	Total	C	N	O	S	0	0
			1015	629	196	182	8		

- Molecule 25 is a protein called Ribosomal protein L23A, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	lY	116	Total	C	N	O	S	0	0
			926	597	166	159	4		

- Molecule 26 is a protein called 60S ribosomal protein L24, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	lZ	57	Total	C	N	O	S	0	0
			481	318	88	73	2		

- Molecule 27 is a protein called 60S ribosomal protein L26, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	la	210	Total	C	N	O	S	0	0
			1651	1055	304	285	7		

- Molecule 28 is a protein called 60S ribosomal protein L27, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	lb	137	Total	C	N	O	S	0	0
			1094	707	196	187	4		

- Molecule 29 is a protein called Large ribosomal subunit protein uL15A.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	lc	148	Total	C	N	O	S	0	0
			1192	757	236	194	5		

- Molecule 30 is a protein called 60S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	ld	60	Total	C	N	O	S	0	0
			478	297	97	82	2		

- Molecule 31 is a protein called 60S ribosomal protein L30, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	le	103	Total	C	N	O	S	0	0
			768	486	131	149	2		

- Molecule 32 is a protein called 60S ribosomal protein L31, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	lf	146	Total	C	N	O	S	0	0
			1184	759	219	200	6		

- Molecule 33 is a protein called 60S ribosomal protein L32, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	lg	129	Total	C	N	O	S	0	0
			1058	672	209	172	5		

- Molecule 34 is a protein called 60S ribosomal protein L34, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	lh	105	Total	C	N	O	S	0	0
			820	512	169	133	6		

- Molecule 35 is a protein called uL29.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	li	122	Total	C	N	O	S	0	0
			974	620	188	162	4		

- Molecule 36 is a protein called 60S ribosomal protein L35a, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	lj	106	Total	C	N	O	S	0	0
			841	545	158	135	3		

- Molecule 37 is a protein called 60S ribosomal protein L36, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	lk	89	Total	C	N	O	S	0	0
			712	447	144	116	5		

- Molecule 38 is a protein called 60S ribosomal protein L37-A, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	ll	72	Total	C	N	O	S	0	0
			591	361	132	91	7		

- Molecule 39 is a protein called 60S ribosomal protein L37a, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	lm	90	Total	C	N	O	S	0	0
			688	428	135	119	6		

- Molecule 40 is a protein called 60S ribosomal protein L38 putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	ln	73	Total	C	N	O	S	0	0
			584	378	104	100	2		

- Molecule 41 is a protein called Ribosomal protein L39, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	lo	50	Total	C	N	O	S	0	0
			432	275	91	63	3		

- Molecule 42 is a protein called 60S ribosomal protein L40, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	lp	53	Total	C	N	O	S	0	0
			420	259	86	69	6		

- Molecule 43 is a protein called 60S ribosomal protein L44, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	lq	92	Total	C	N	O	S	0	0
			756	480	148	122	6		

- Molecule 44 is a protein called 40S ribosomal protein S25.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	sA	69	Total	C	N	O	S	0	0
			548	356	92	96	4		

- Molecule 45 is a protein called 40S ribosomal protein S26.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	sB	98	Total	C	N	O	S	0	0
			787	478	169	134	6		

- Molecule 46 is a protein called Small ribosomal subunit protein eS27.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	sC	33	Total	C	N	O	S	0	0
			257	167	43	46	1		

- Molecule 47 is a protein called 40S ribosomal protein S28, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	sD	60	Total	C	N	O	S	0	0
			468	289	93	84	2		

- Molecule 48 is a protein called Ribosomal protein S29, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	sE	55	Total	C	N	O	S	0	0
			442	273	90	75	4		

- Molecule 49 is a protein called Unknown peptide.

Mol	Chain	Residues	Atoms				AltConf	Trace
49	sH	2	Total	C	N	O	0	0
			9	6	2	1		

- Molecule 50 is a RNA chain called A/P-tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	sI	72	Total	C	N	O	P	0	0
			1533	685	278	499	71		

- Molecule 51 is a RNA chain called P/E-tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	sJ	77	Total	C	N	O	P	0	0
			1630	728	282	543	77		

- Molecule 52 is a RNA chain called mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	sK	10	Total	C	N	O	P	0	0
			215	97	41	67	10		

- Molecule 53 is a RNA chain called 17S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	sa	1434	Total	C	N	O	P	0	0
			30685	13734	5586	9931	1434		

- Molecule 54 is a protein called Small ribosomal subunit protein uS2.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	sb	205	Total	C	N	O	S	0	0
			1626	1029	286	296	15		

- Molecule 55 is a protein called Small ribosomal subunit protein uS5.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	sc	215	Total	C	N	O	S	0	0
			1642	1052	291	291	8		

- Molecule 56 is a protein called 40S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
56	sd	219	Total	C	N	O	S	0	0
			1696	1072	310	303	11		

- Molecule 57 is a protein called Small ribosomal subunit protein eS1.

Mol	Chain	Residues	Atoms					AltConf	Trace
57	se	163	Total	C	N	O	S	0	0
			1329	853	237	232	7		

- Molecule 58 is a protein called 40S ribosomal protein S4, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
58	sf	256	Total	C	N	O	S	0	0
			2031	1297	378	345	11		

- Molecule 59 is a protein called Small ribosomal subunit protein uS7.

Mol	Chain	Residues	Atoms					AltConf	Trace
59	sg	181	Total	C	N	O	S	0	0
			1440	908	261	260	11		

- Molecule 60 is a protein called 40S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
60	sh	119	Total	C	N	O	S	0	0
			944	588	194	157	5		

- Molecule 61 is a protein called 40S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
61	si	110	Total	C	N	O	S	0	0
			854	559	152	142	1		

- Molecule 62 is a protein called 40S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
62	sj	127	Total	C	N	O	S	0	0
			990	611	198	177	4		

- Molecule 63 is a protein called Small ribosomal subunit protein uS4.

Mol	Chain	Residues	Atoms					AltConf	Trace
63	sk	162	Total	C	N	O	S	0	0
			1323	845	251	221	6		

- Molecule 64 is a protein called 40S ribosomal protein S10, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
64	sl	91	Total	C	N	O	S	0	0
			729	475	122	123	9		

- Molecule 65 is a protein called 40S ribosomal protein S11, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
65	sm	141	Total	C	N	O	S	0	0
			1161	735	224	196	6		

- Molecule 66 is a protein called 40S ribosomal protein S13, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
66	so	76	Total	C	N	O	S	0	0
			644	410	123	108	3		

- Molecule 67 is a protein called Ribosomal protein S14, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
67	sp	133	Total	C	N	O	S	0	0
			999	615	192	186	6		

- Molecule 68 is a protein called 40S ribosomal protein S15, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
68	sq	105	Total	C	N	O	S	0	0
			842	543	150	144	5		

- Molecule 69 is a protein called 40S ribosomal protein S15a, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
69	sr	129	Total	C	N	O	S	0	0
			1022	650	186	181	5		

- Molecule 70 is a protein called 40S ribosomal protein S16, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
70	ss	141	Total	C	N	O	S	0	0
			1104	713	198	189	4		

- Molecule 71 is a protein called 40S ribosomal protein S17, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
71	st	81	Total	C	N	O	S	0	0
			676	424	135	116	1		

- Molecule 72 is a protein called Small ribosomal subunit protein uS13.

Mol	Chain	Residues	Atoms					AltConf	Trace
72	su	135	Total	C	N	O	S	0	0
			1096	681	224	185	6		

- Molecule 73 is a protein called Small ribosomal subunit protein eS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
73	sv	151	Total	C	N	O	S	0	0
			1214	777	218	212	7		

- Molecule 74 is a protein called 40S ribosomal protein S20, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
74	sw	98	Total	C	N	O	S	0	0
			766	486	133	142	5		

- Molecule 75 is a protein called 40S ribosomal protein S21.

Mol	Chain	Residues	Atoms					AltConf	Trace
75	sx	83	Total	C	N	O	S	0	0
			651	412	117	119	3		

- Molecule 76 is a protein called 40S ribosomal protein S23, putative.

Mol	Chain	Residues	Atoms					AltConf	Trace
76	sy	106	Total	C	N	O	S	0	0
			836	522	169	142	3		

- Molecule 77 is a protein called 40S ribosomal protein S24, putative.

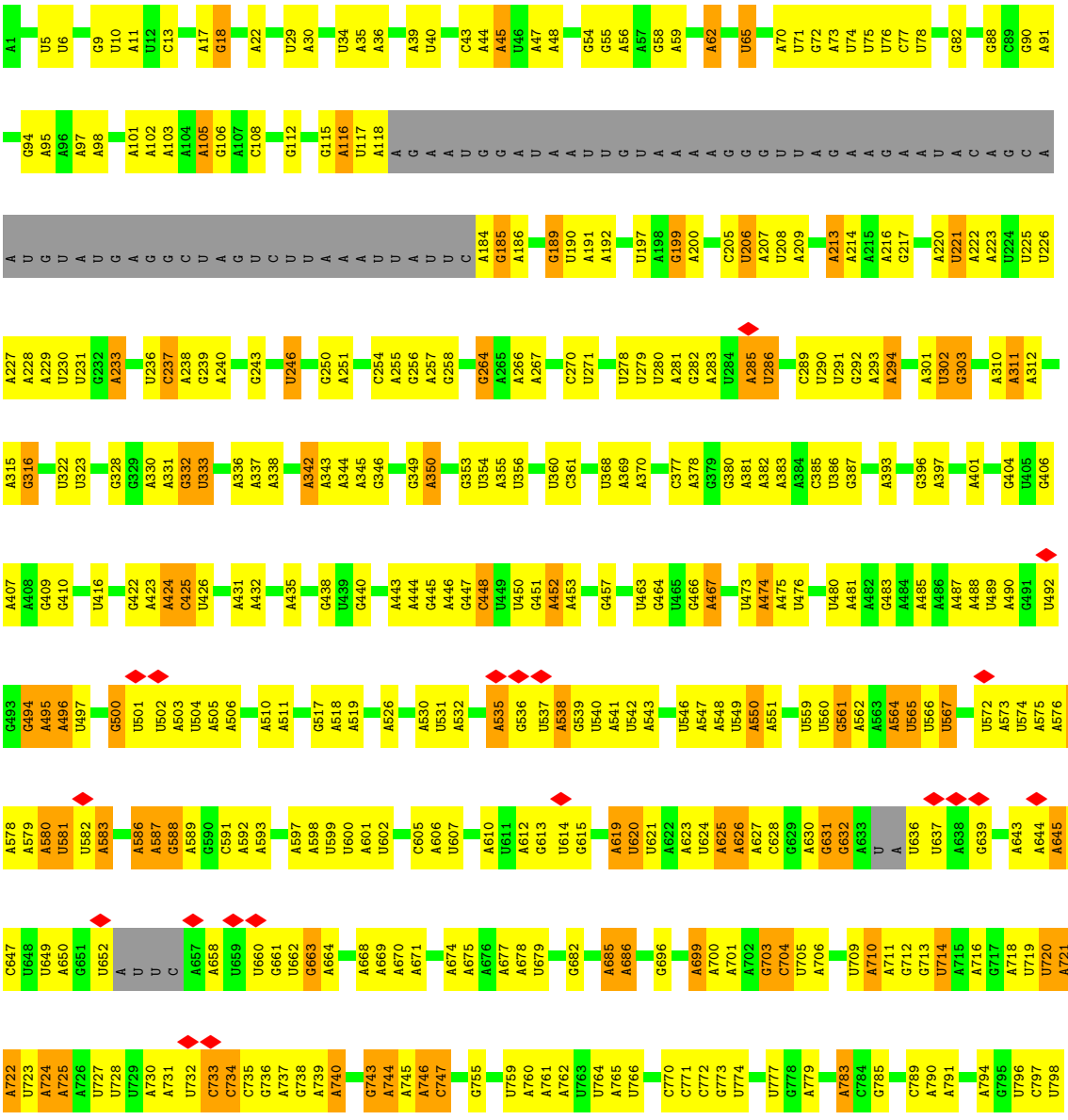
Mol	Chain	Residues	Atoms					AltConf	Trace
77	sz	56	Total	C	N	O	S	0	0
			438	288	74	75	1		

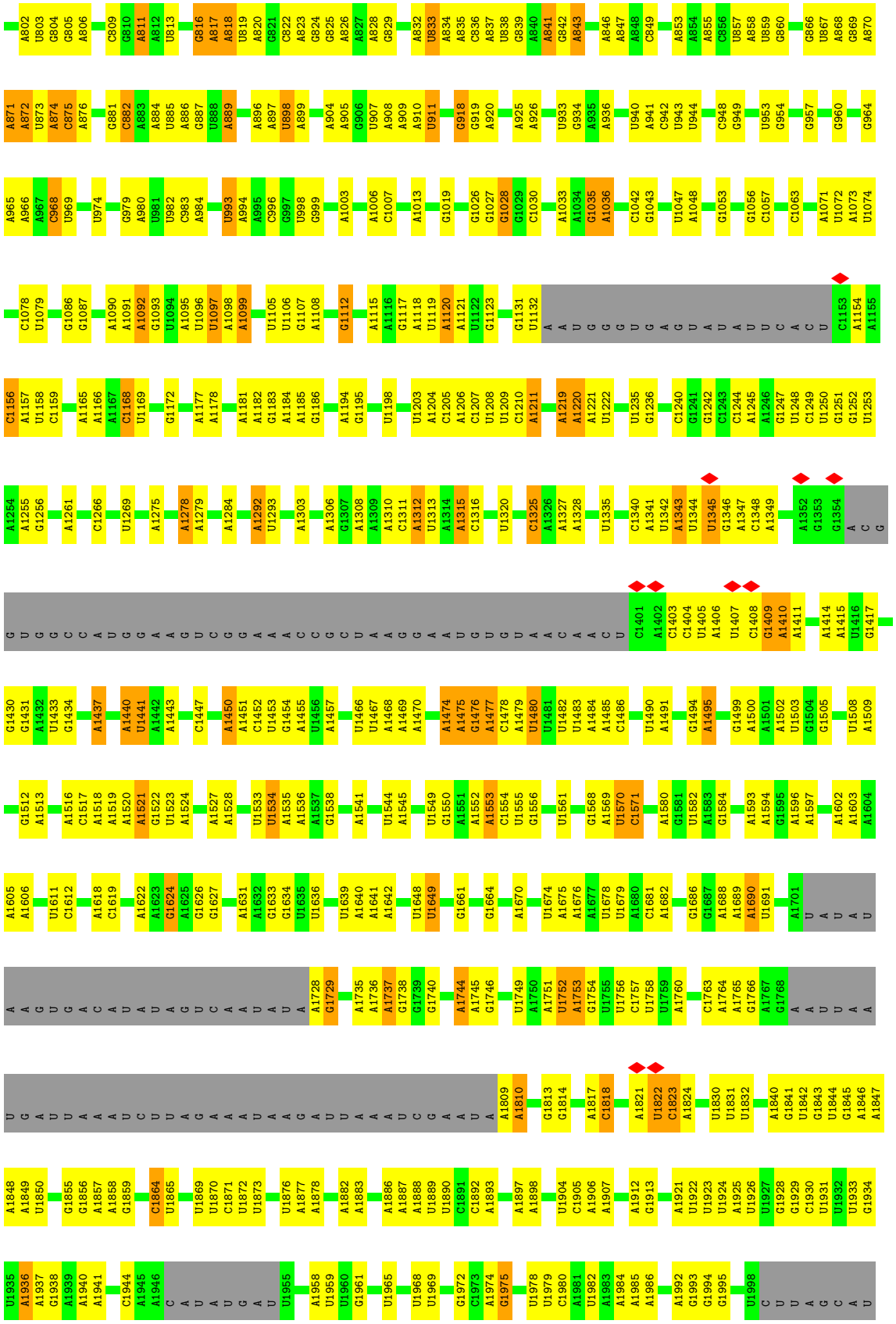
3 Residue-property plots (i)

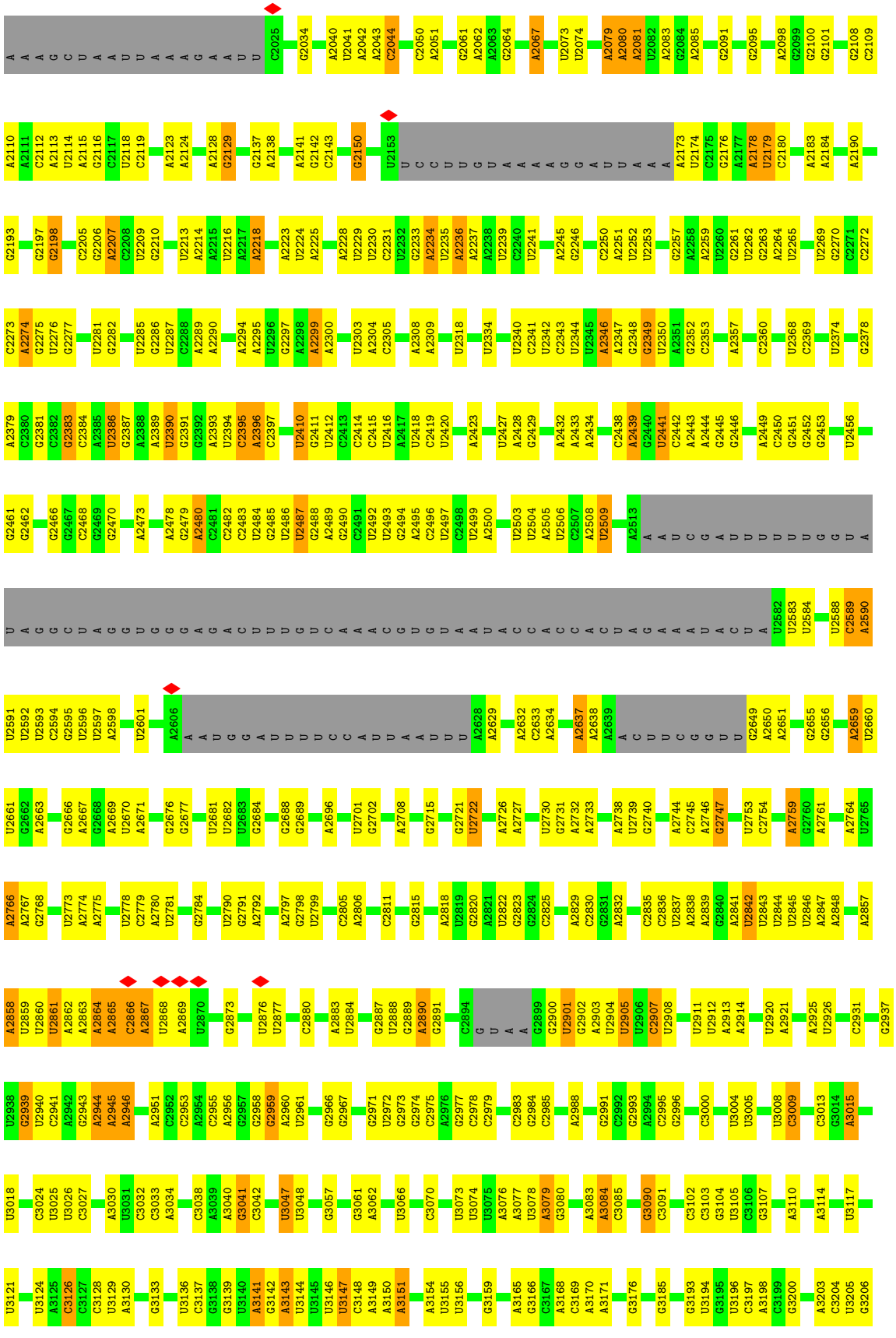
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

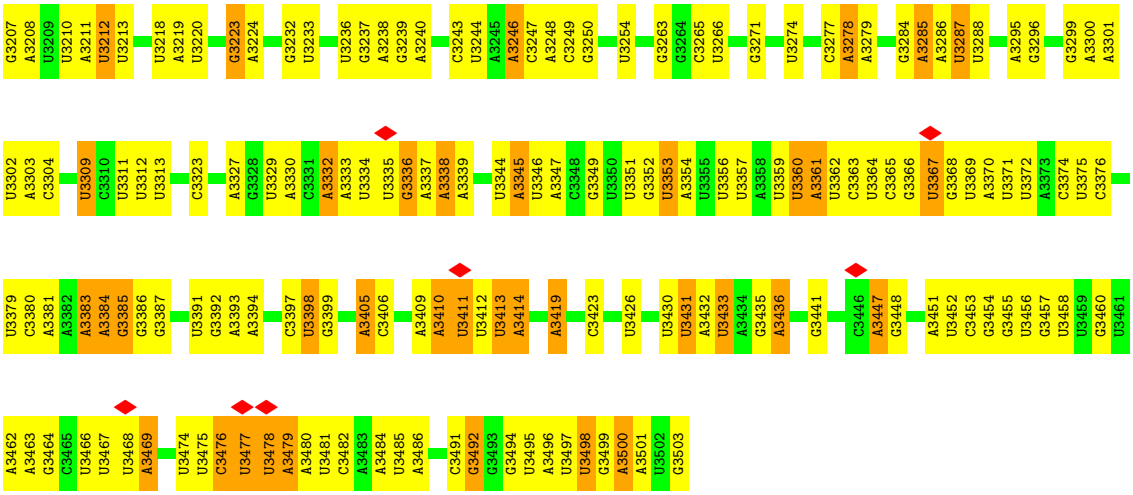
- Molecule 1: 25S rRNA

Chain lA:



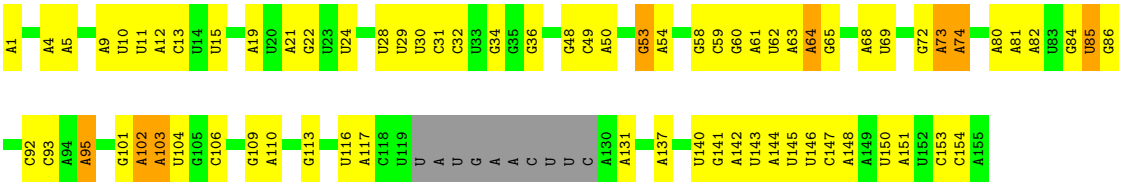






• Molecule 2: 5.8S rRNA

Chain lB:

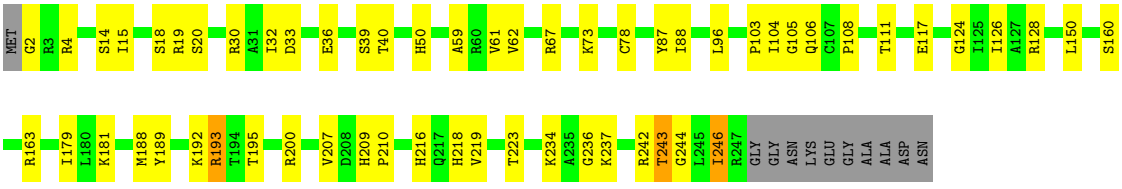


• Molecule 3: 5S rRNA

Chain lC:

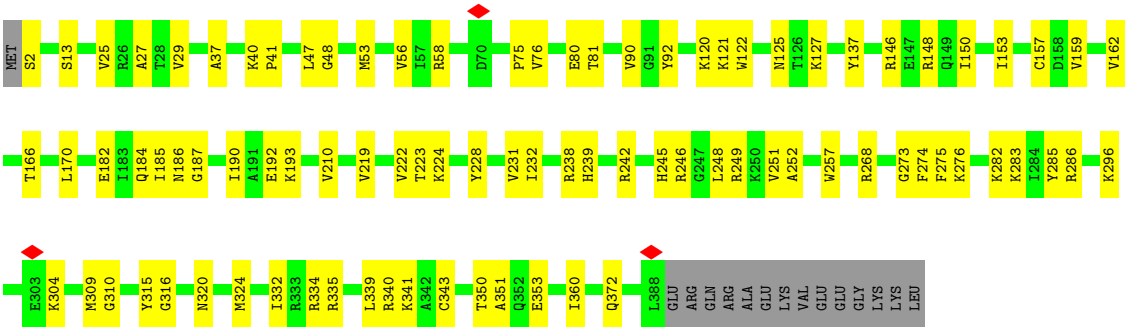
• Molecule 4: Large ribosomal subunit protein uL2

Chain lD:

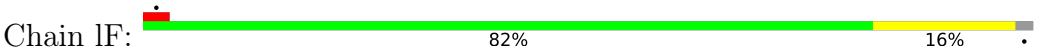


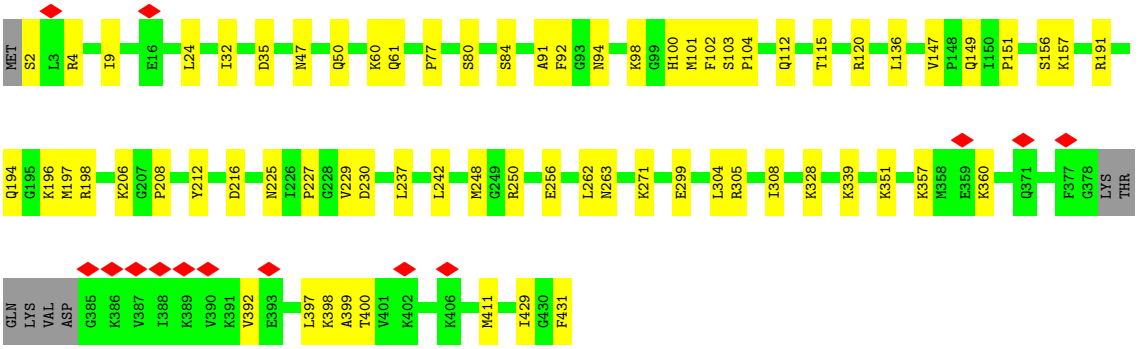
• Molecule 5: 60S ribosomal protein L3, putative

Chain lE:

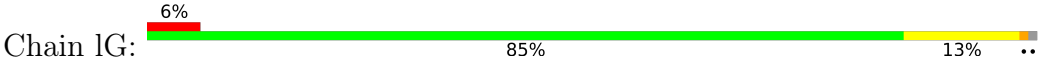


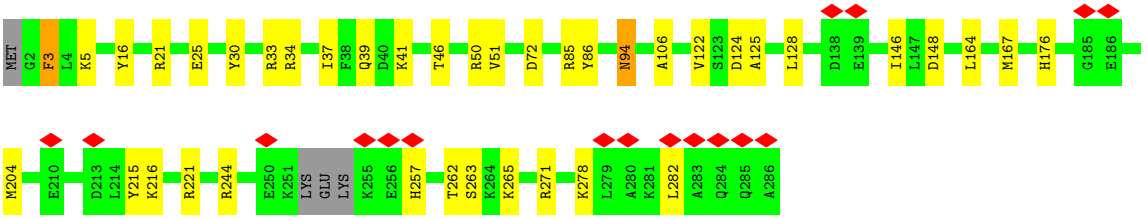
• Molecule 6: 60S ribosomal protein L4, putative



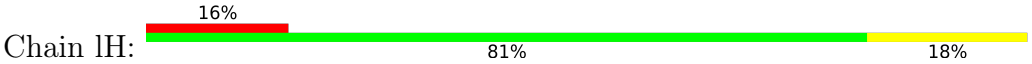


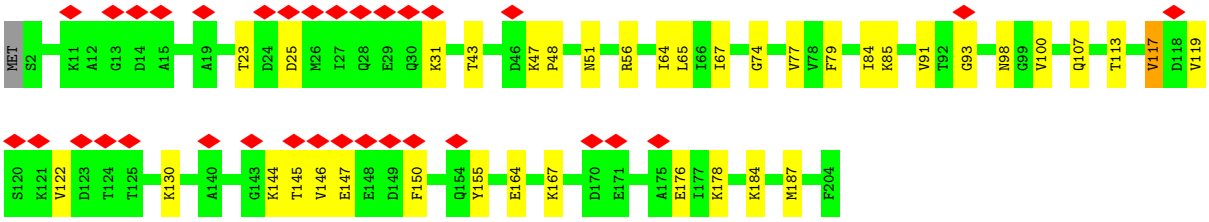
• Molecule 7: 60S ribosomal protein L5, putative





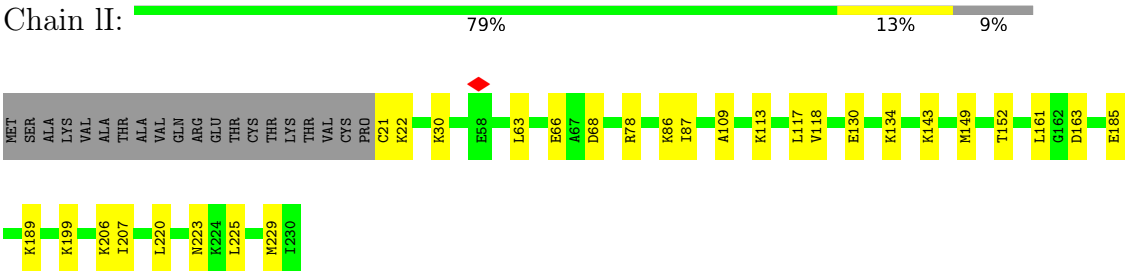
• Molecule 8: Large ribosomal subunit protein eL6





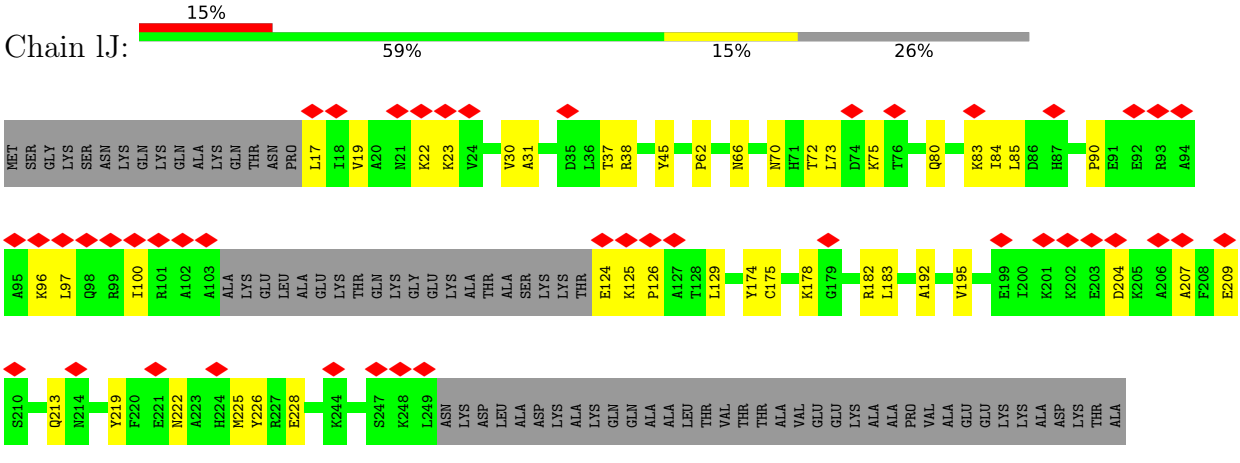
• Molecule 9: 60S ribosomal protein L7, putative

Chain lI:



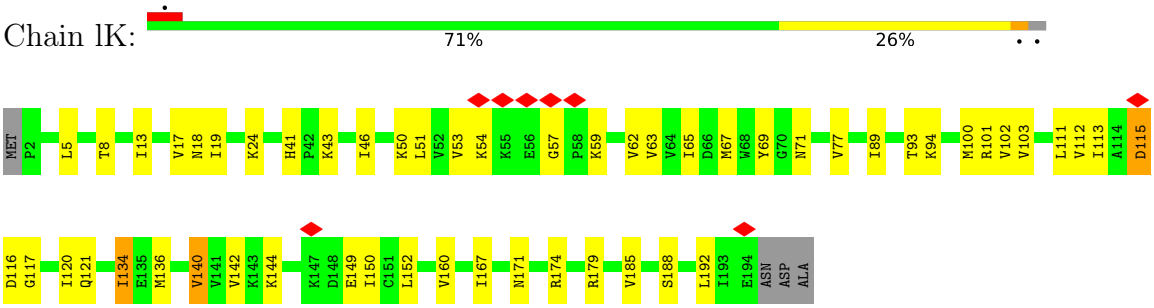
• Molecule 10: 60S ribosomal protein L7a

Chain lJ:



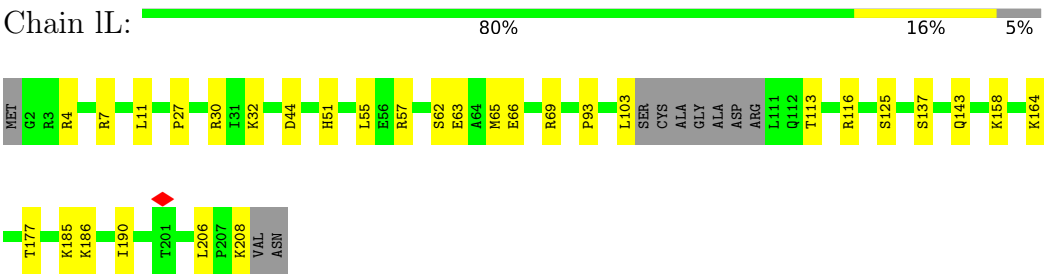
• Molecule 11: 60S ribosomal protein L9, putative

Chain lK:



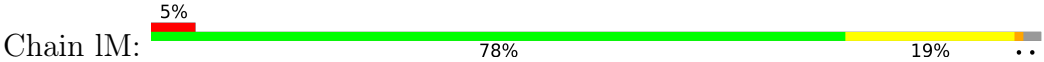
• Molecule 12: Ribosomal protein L10, putative

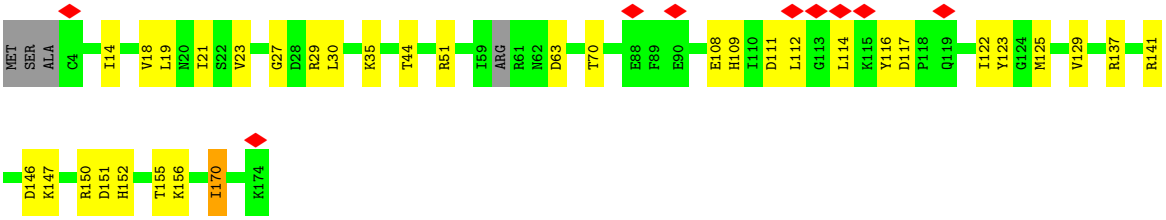
Chain lL:



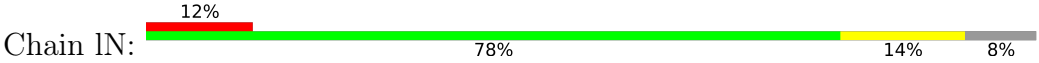
• Molecule 13: 60S ribosomal protein L11, putative

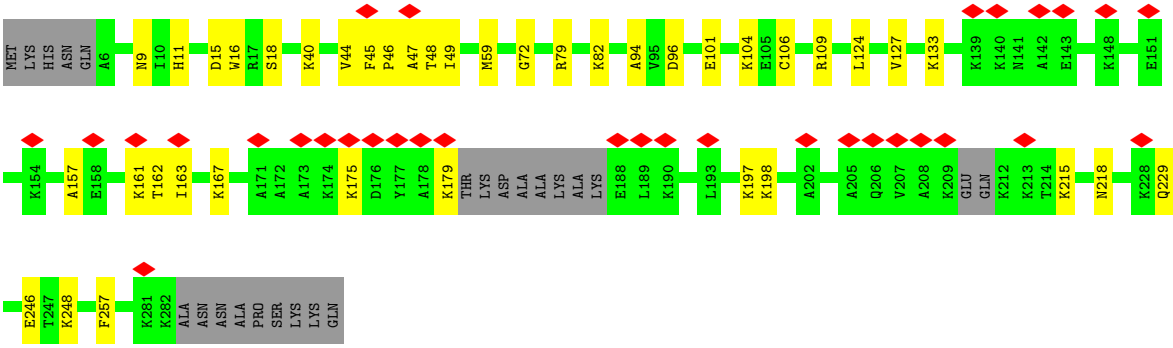
Chain lM:



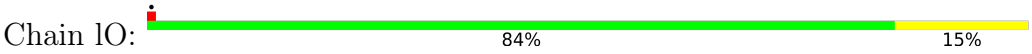


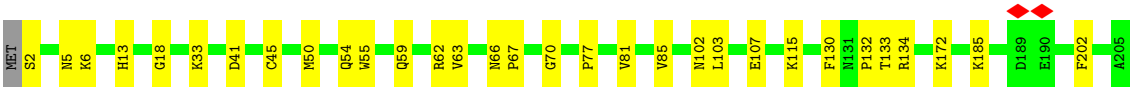
• Molecule 14: 60S ribosomal protein L13, putative



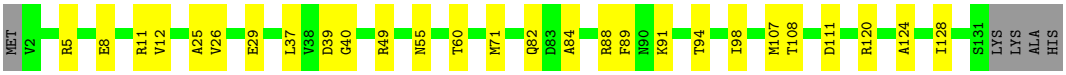


• Molecule 15: 60S ribosomal protein L13, putative

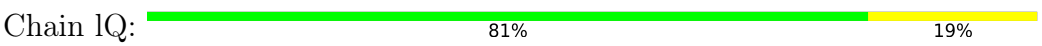




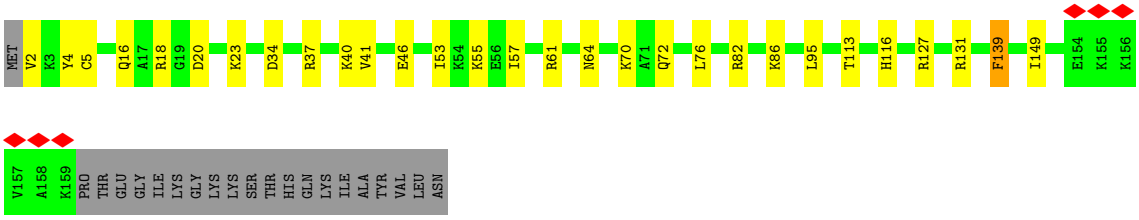
• Molecule 16: 60S ribosomal protein L14, putative



• Molecule 17: Ribosomal protein L15



• Molecule 18: 60S ribosomal protein L17, putative

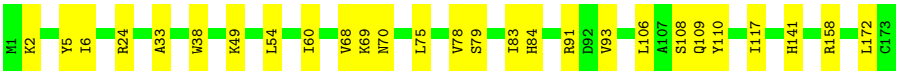


• Molecule 19: 60S ribosomal protein L18, putative

Chain lS:

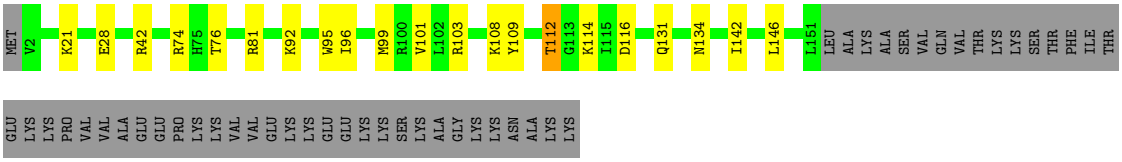
• Molecule 20: 60S ribosomal protein L18a

Chain lT:



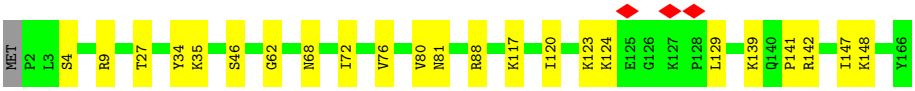
• Molecule 21: Ribosomal protein L19

Chain lU:



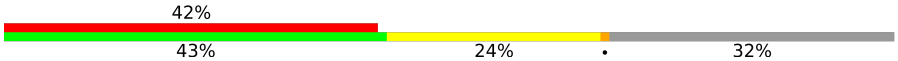
• Molecule 22: 60S ribosomal protein L21, putative

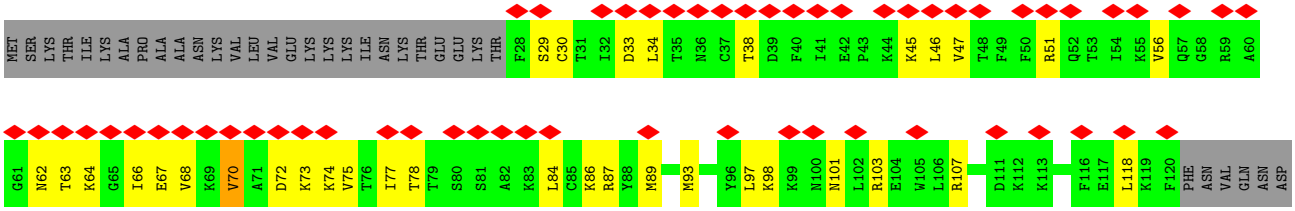
Chain lV:



• Molecule 23: Large ribosomal subunit protein eL22

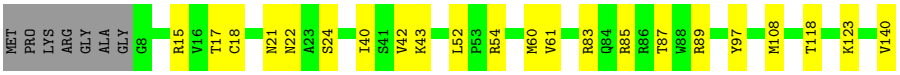
Chain lW:





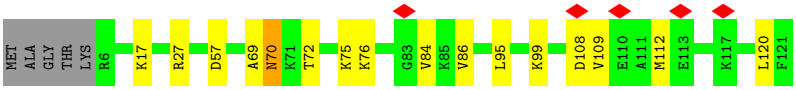
• Molecule 24: 60S ribosomal protein L23, putative

Chain lX:



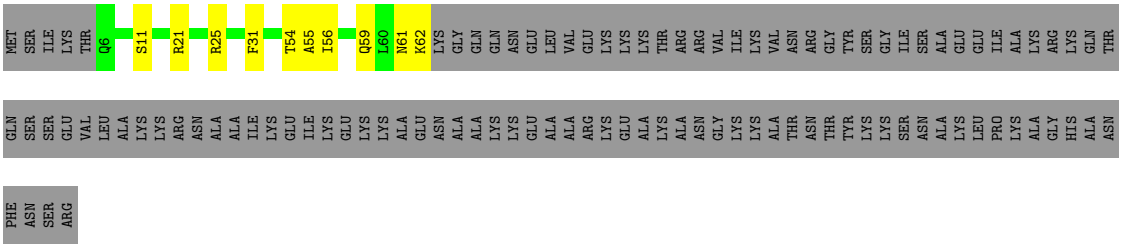
• Molecule 25: Ribosomal protein L23A, putative

Chain lY:



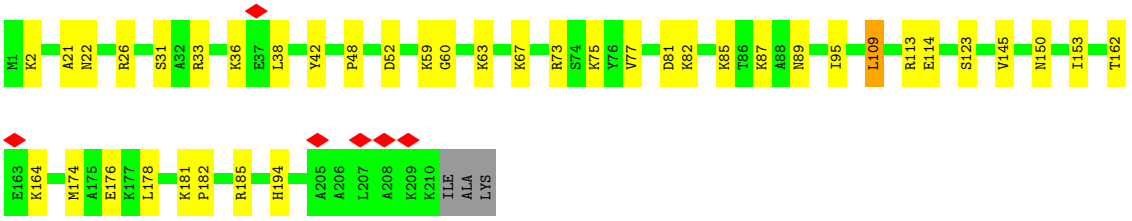
• Molecule 26: 60S ribosomal protein L24, putative

Chain lZ:



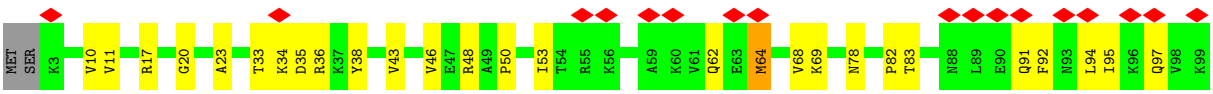
• Molecule 27: 60S ribosomal protein L26, putative

Chain la:



• Molecule 28: 60S ribosomal protein L27, putative

Chain lb:

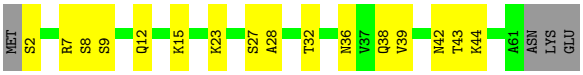


• Molecule 29: Large ribosomal subunit protein uL15A

Chain lc:

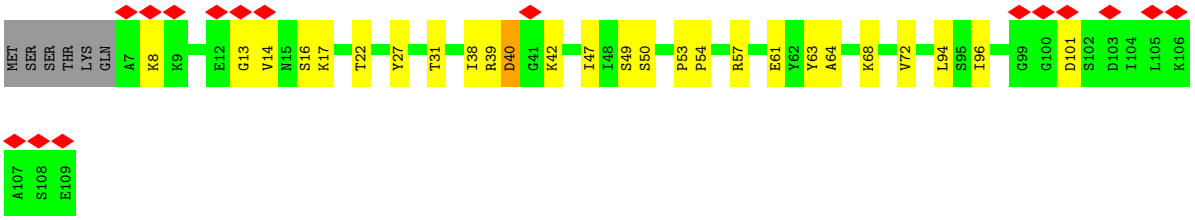
• Molecule 30: 60S ribosomal protein L29

Chain ld:



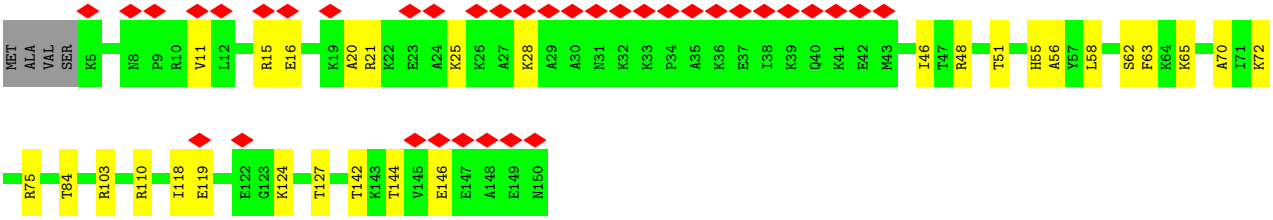
• Molecule 31: 60S ribosomal protein L30, putative

Chain le:



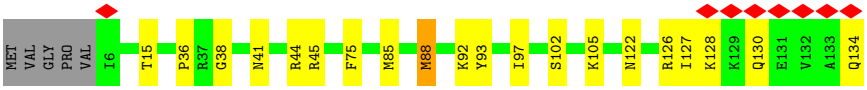
• Molecule 32: 60S ribosomal protein L31, putative

Chain lf:



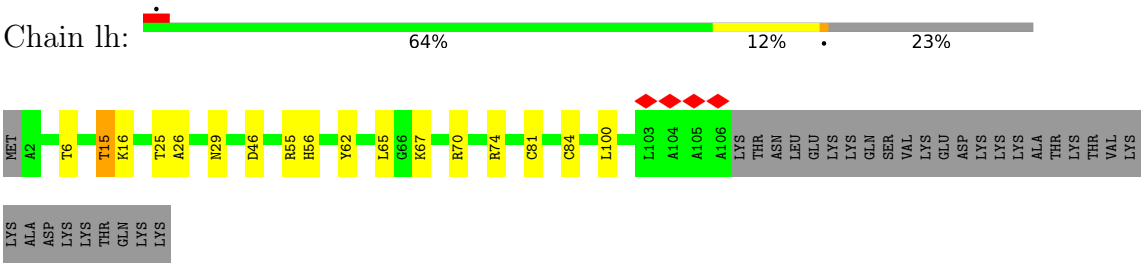
• Molecule 33: 60S ribosomal protein L32, putative

Chain lg:



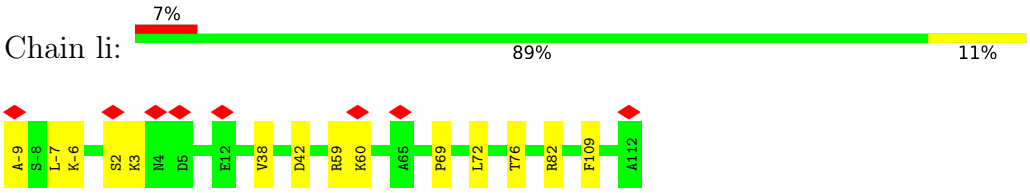
• Molecule 34: 60S ribosomal protein L34, putative

Chain lh:



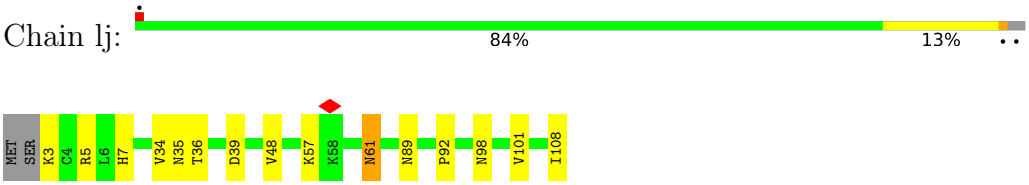
• Molecule 35: uL29

Chain li:



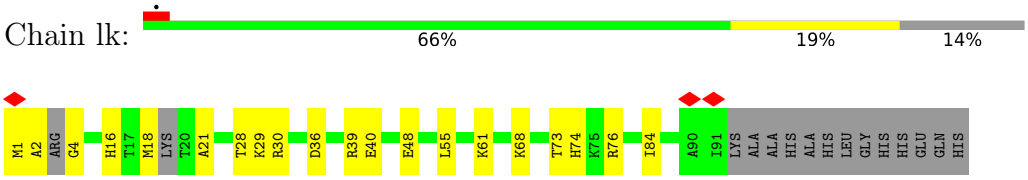
• Molecule 36: 60S ribosomal protein L35a, putative

Chain lj:



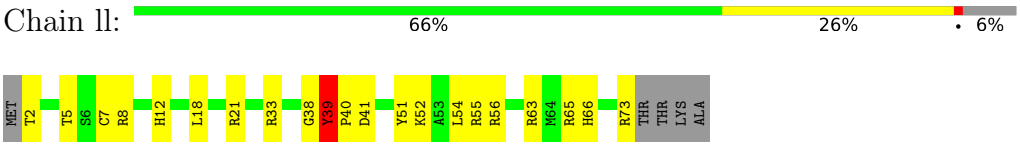
• Molecule 37: 60S ribosomal protein L36, putative

Chain lk:



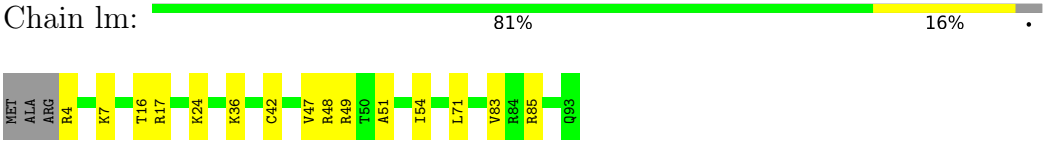
• Molecule 38: 60S ribosomal protein L37-A, putative

Chain ll:



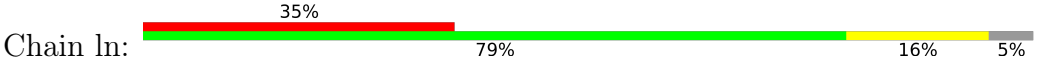
• Molecule 39: 60S ribosomal protein L37a, putative

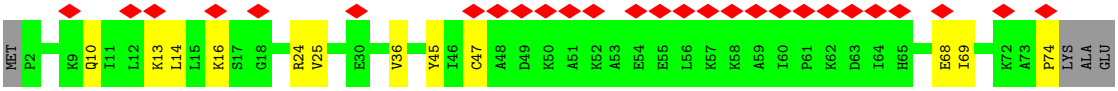
Chain lm:



• Molecule 40: 60S ribosomal protein L38 putative

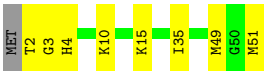
Chain ln:





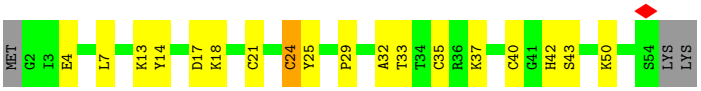
• Molecule 41: Ribosomal protein L39, putative

Chain lo:



• Molecule 42: 60S ribosomal protein L40, putative

Chain lp:

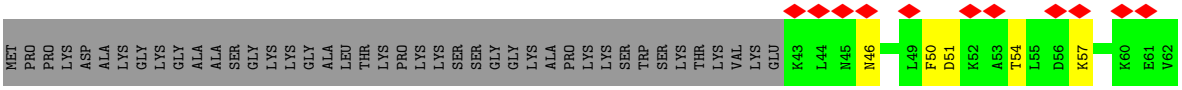


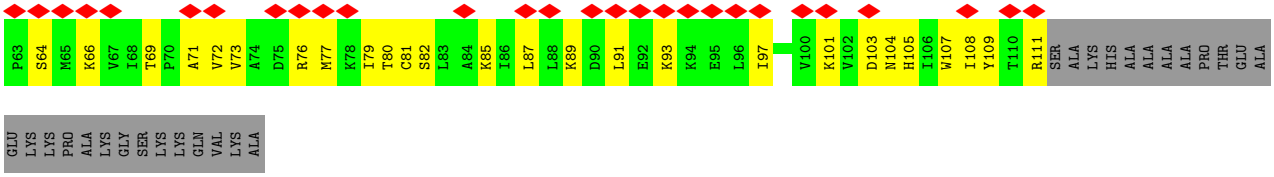
• Molecule 43: 60S ribosomal protein L44, putative

Chain lq:

• Molecule 44: 40S ribosomal protein S25

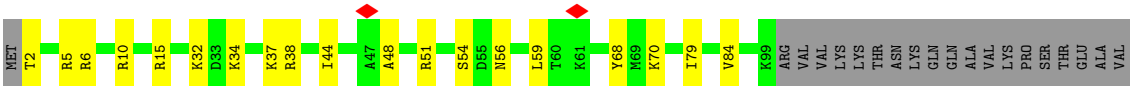
Chain sA:





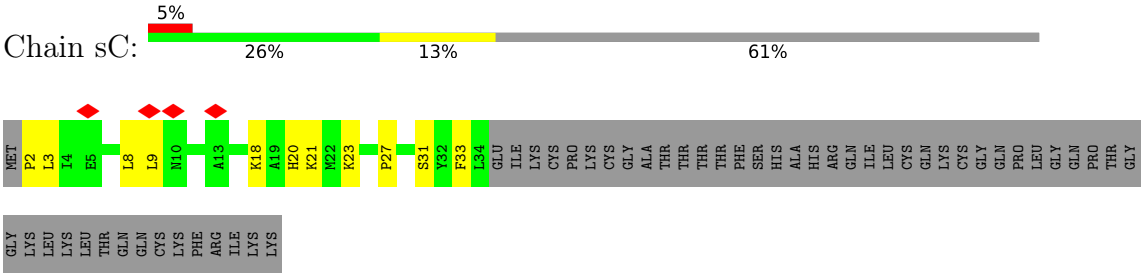
• Molecule 45: 40S ribosomal protein S26

Chain sB:



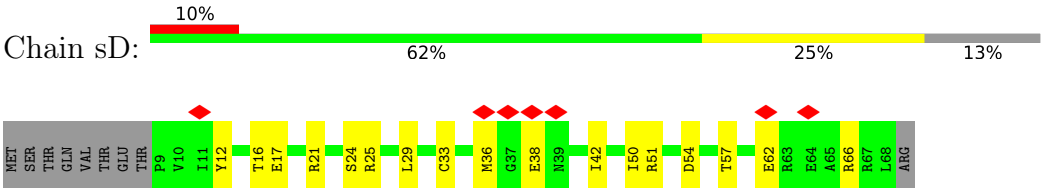
• Molecule 46: Small ribosomal subunit protein eS27

Chain sC:



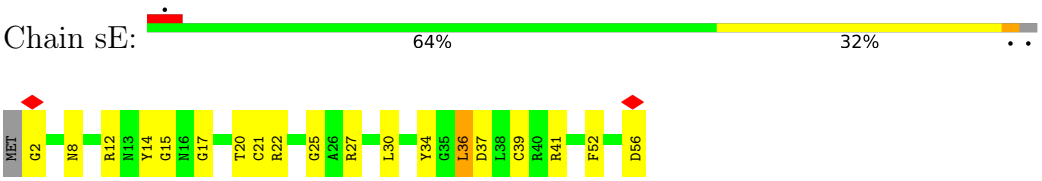
• Molecule 47: 40S ribosomal protein S28, putative

Chain sD:



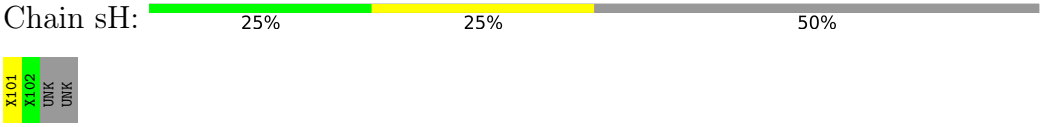
• Molecule 48: Ribosomal protein S29, putative

Chain sE:



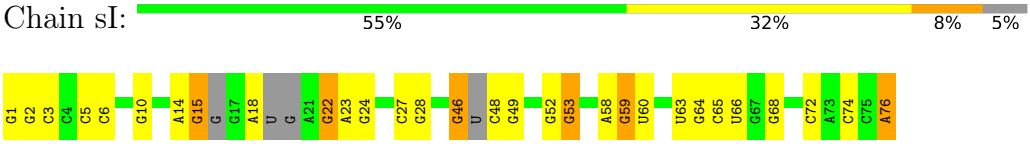
• Molecule 49: Unknown peptide

Chain sH:



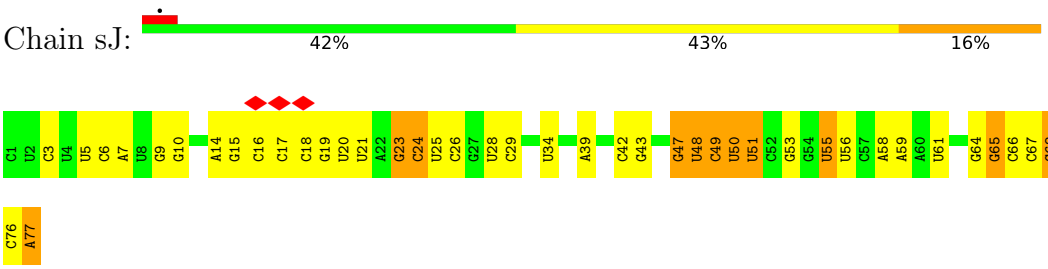
• Molecule 50: A/P-tRNA

Chain sI:



• Molecule 51: P/E-tRNA

Chain sJ:



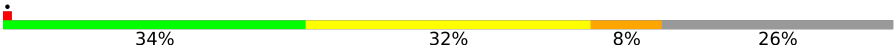
• Molecule 52: mRNA

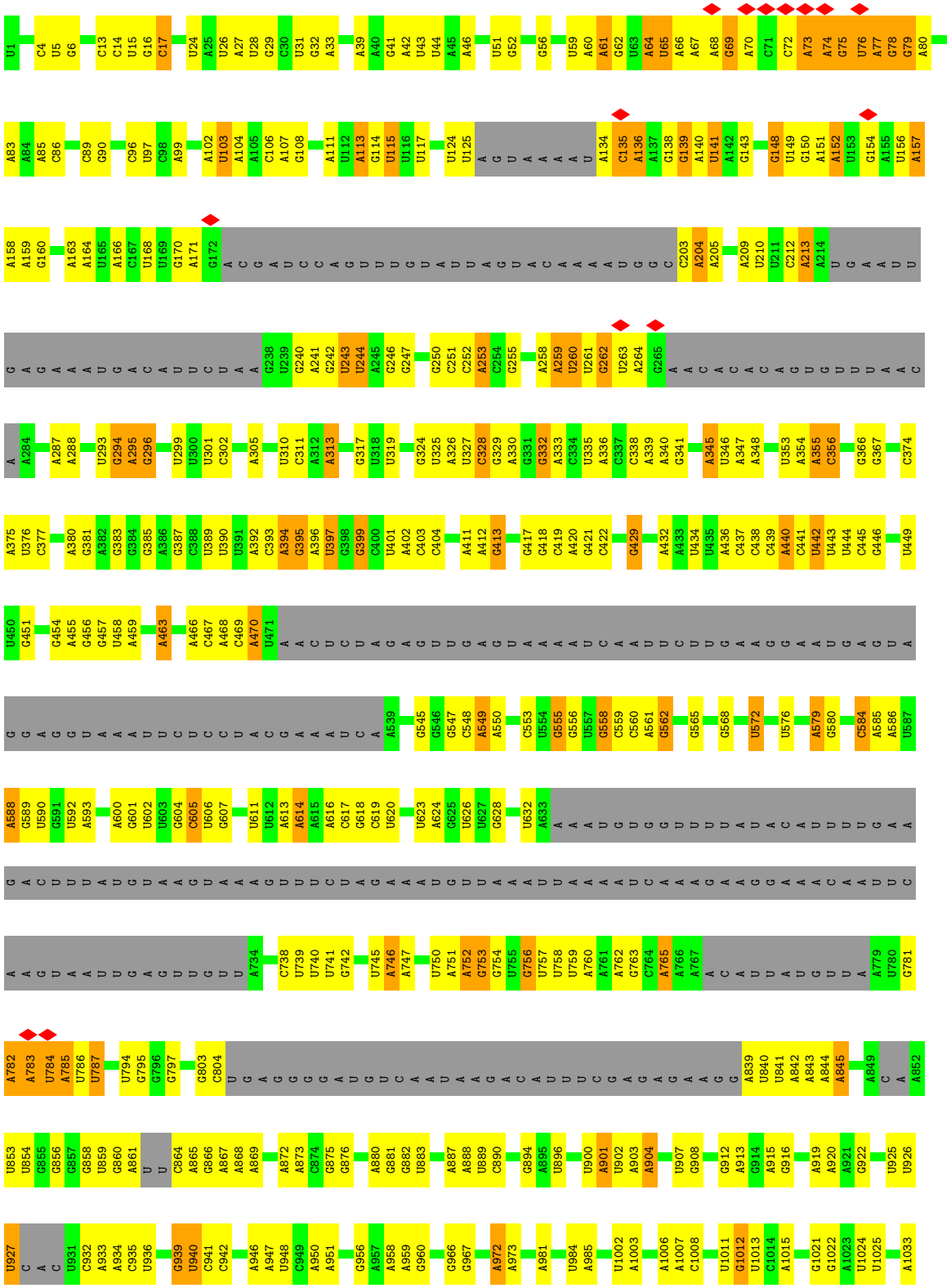
Chain sK:

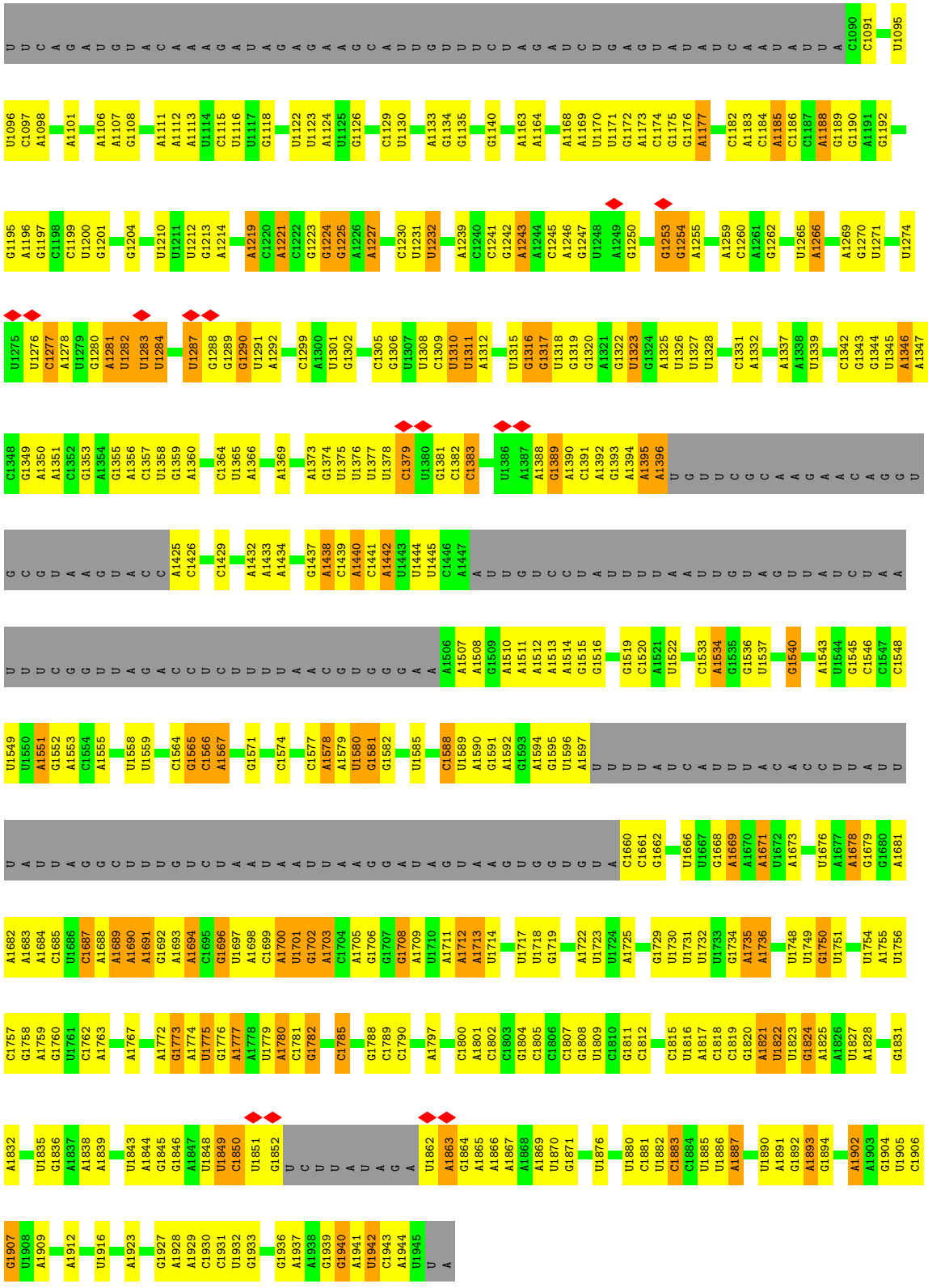
There are no outlier residues recorded for this chain.

- Molecule 53: 17S rRNA

Chain sa:

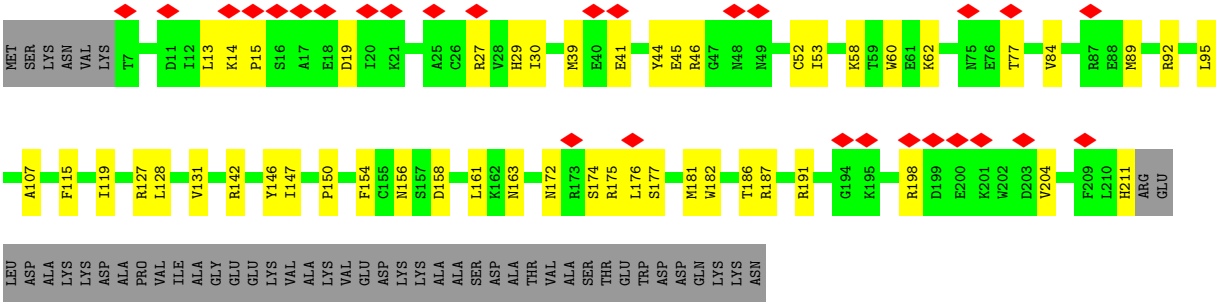






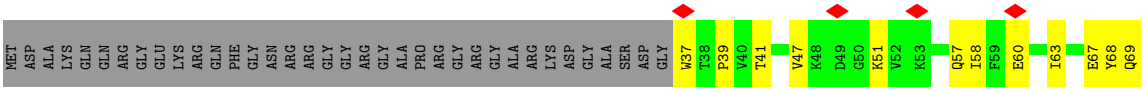
• Molecule 54: Small ribosomal subunit protein uS2

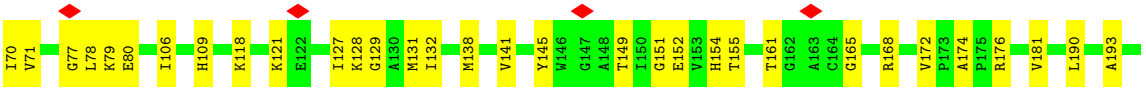
Chain sb:

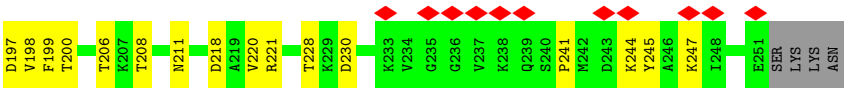


• Molecule 55: Small ribosomal subunit protein uS5

Chain sc:

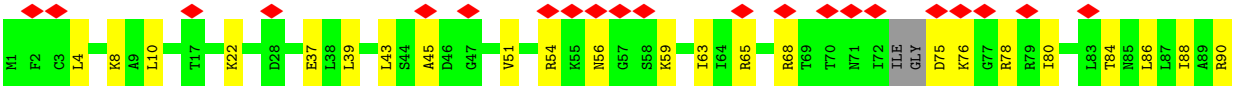


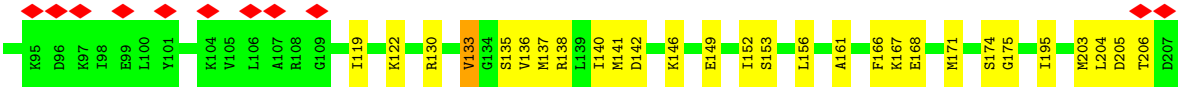


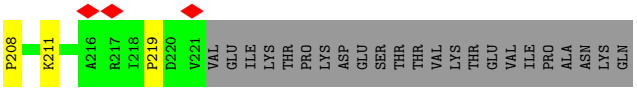


• Molecule 56: 40S ribosomal protein S3

Chain sd:

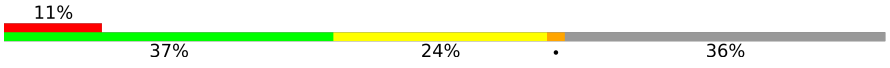


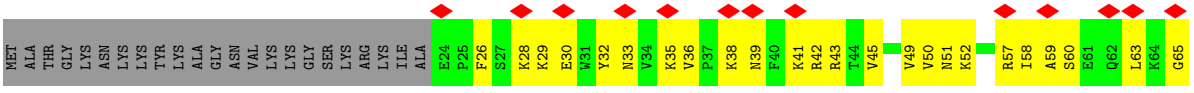


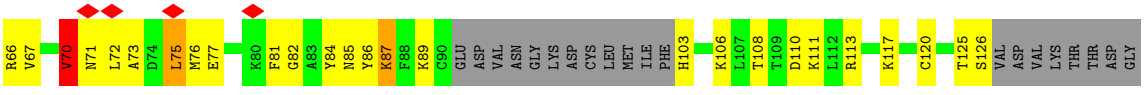


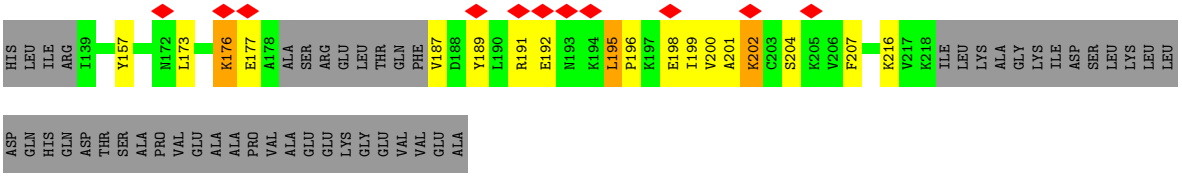
• Molecule 57: Small ribosomal subunit protein eS1

Chain se:



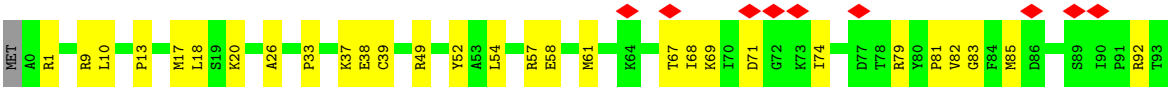


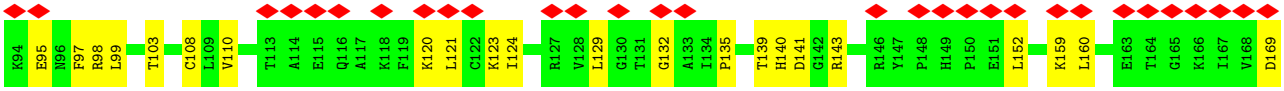


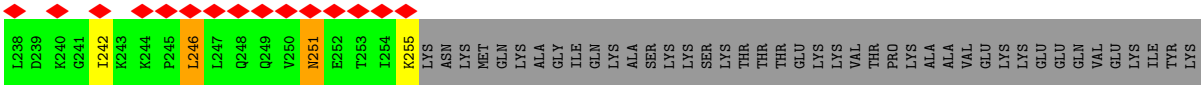


• Molecule 58: 40S ribosomal protein S4, putative

Chain sf:

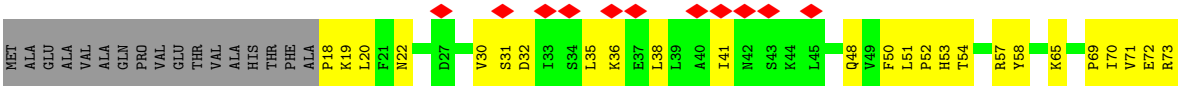


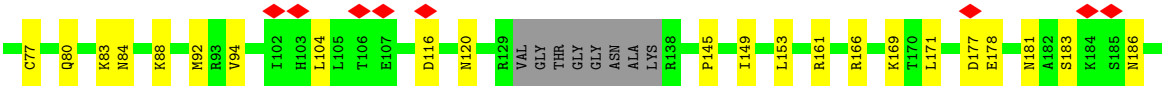




• Molecule 59: Small ribosomal subunit protein uS7

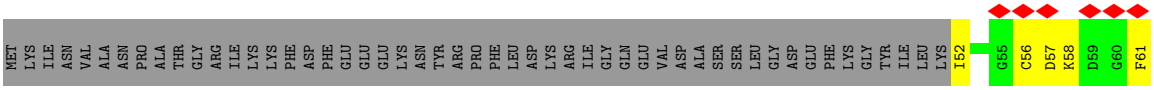
Chain sg:

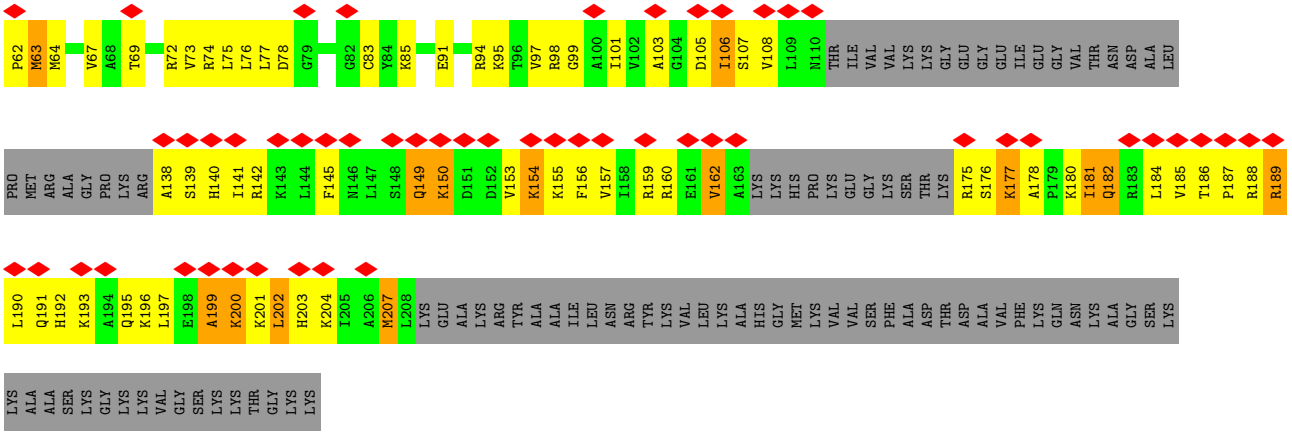




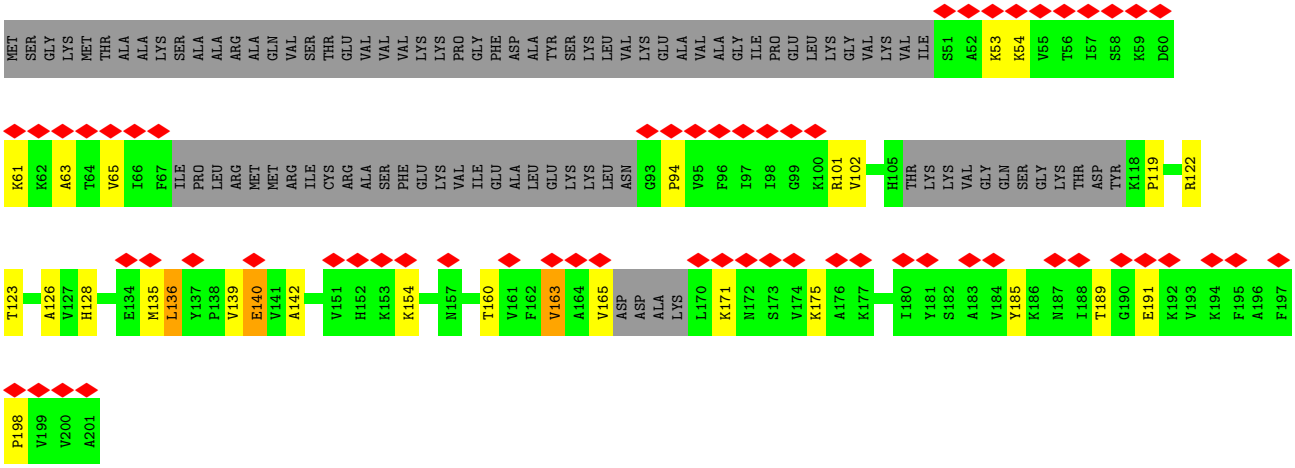
• Molecule 60: 40S ribosomal protein S6

Chain sh:

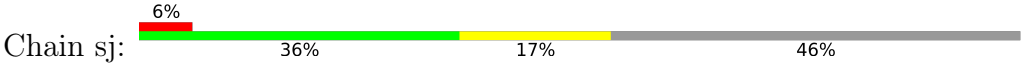


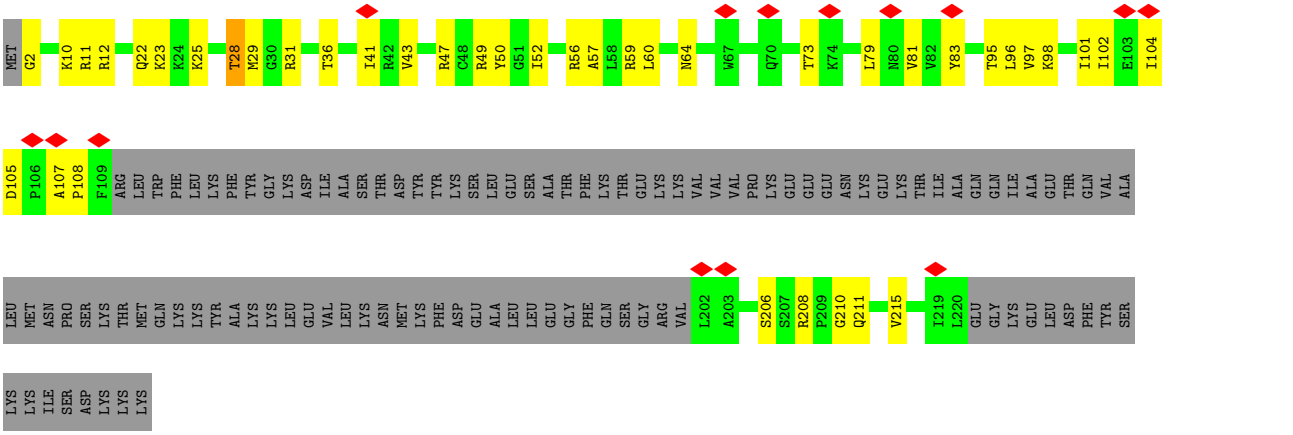


• Molecule 61: 40S ribosomal protein S7



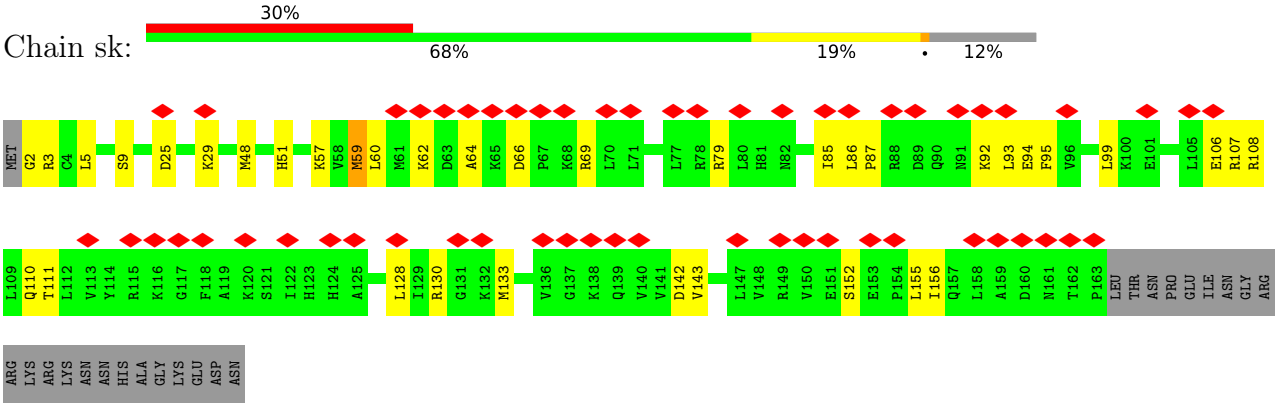
• Molecule 62: 40S ribosomal protein S8





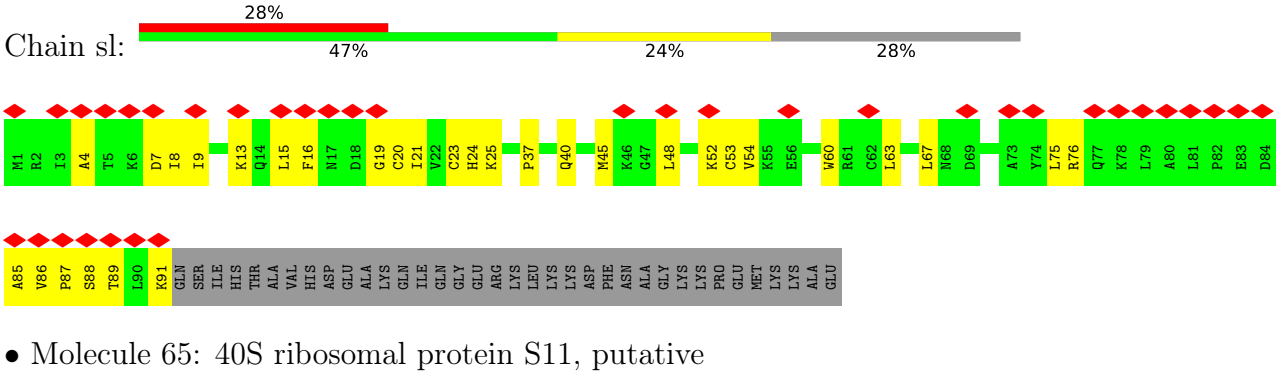
• Molecule 63: Small ribosomal subunit protein uS4

Chain sk:



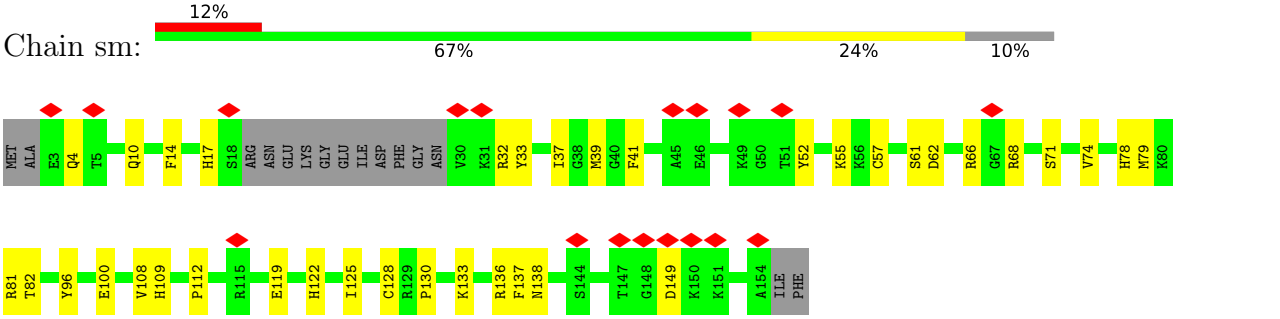
• Molecule 64: 40S ribosomal protein S10, putative

Chain sl:



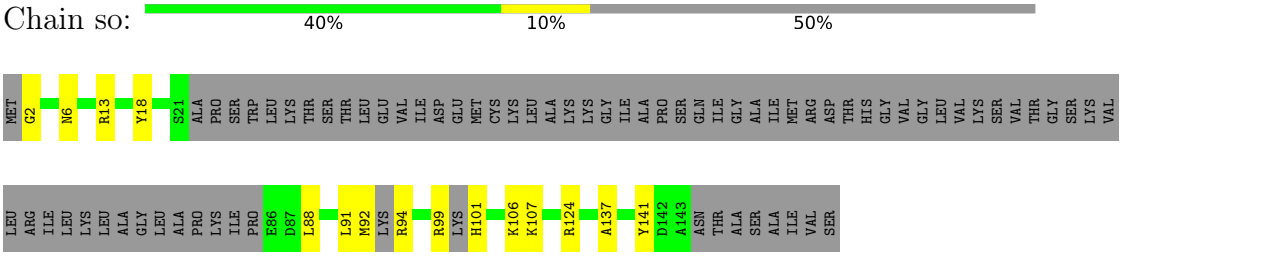
• Molecule 65: 40S ribosomal protein S11, putative

Chain sm:



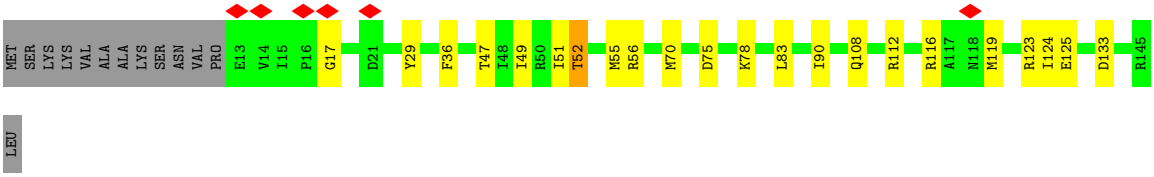
• Molecule 66: 40S ribosomal protein S13, putative

Chain so:



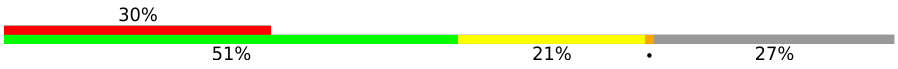
• Molecule 67: Ribosomal protein S14, putative

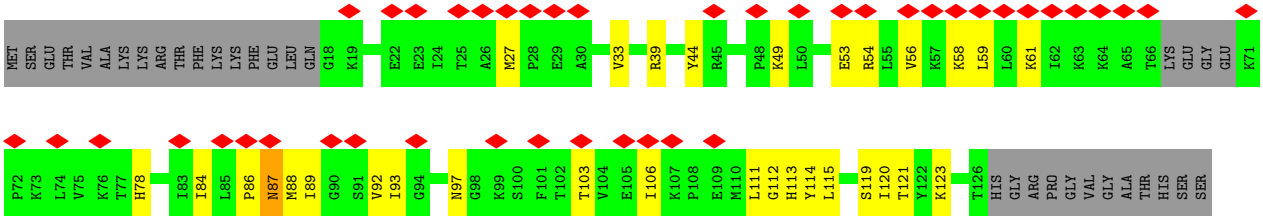
Chain sp:

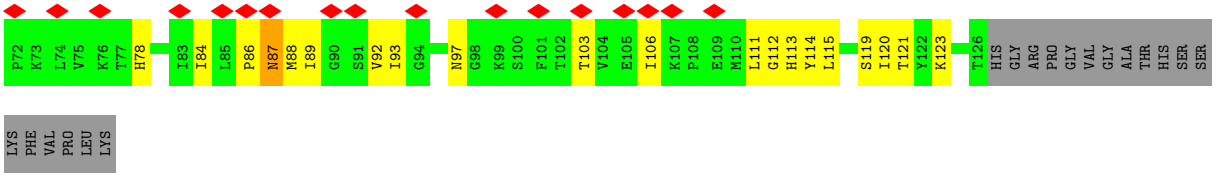


• Molecule 68: 40S ribosomal protein S15, putative

Chain sq:





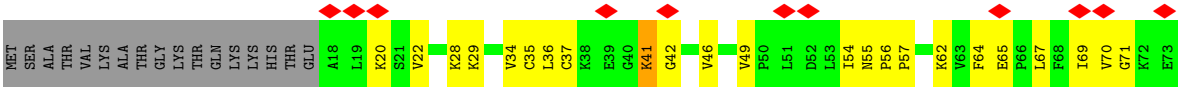


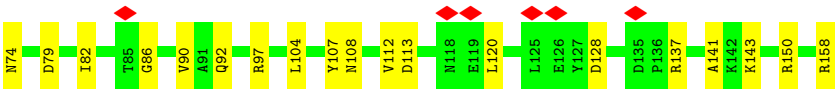
• Molecule 69: 40S ribosomal protein S15a, putative

Chain sr:

• Molecule 70: 40S ribosomal protein S16, putative

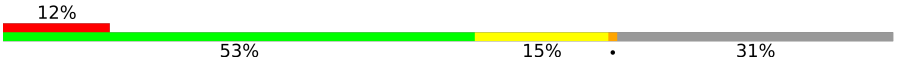
Chain ss:

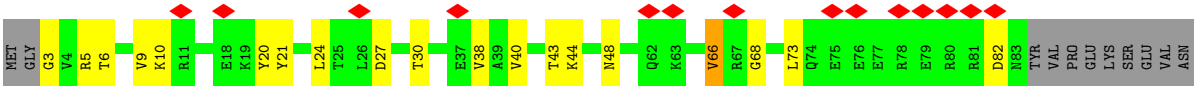




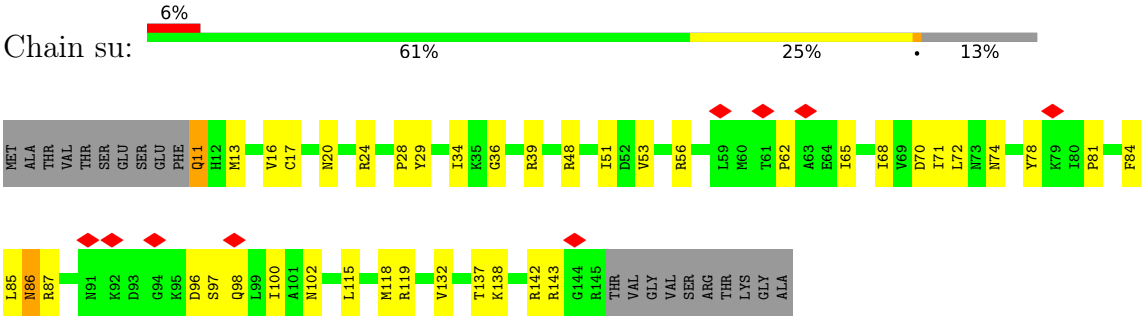
• Molecule 71: 40S ribosomal protein S17, putative

Chain st:

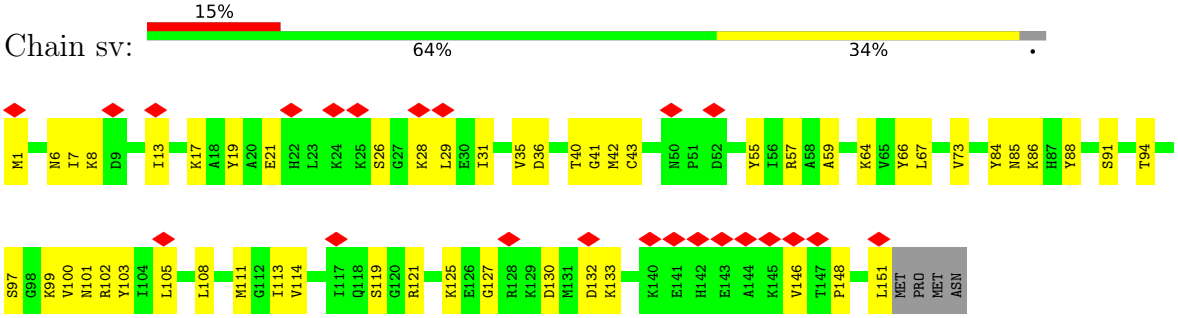




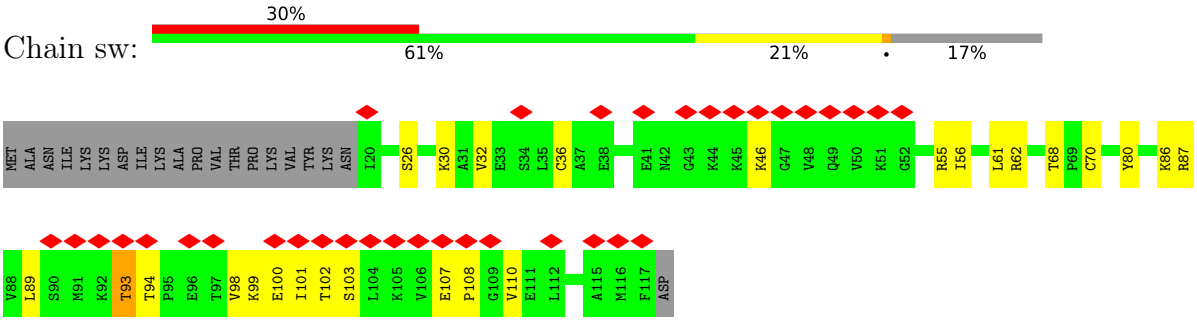
• Molecule 72: Small ribosomal subunit protein uS13



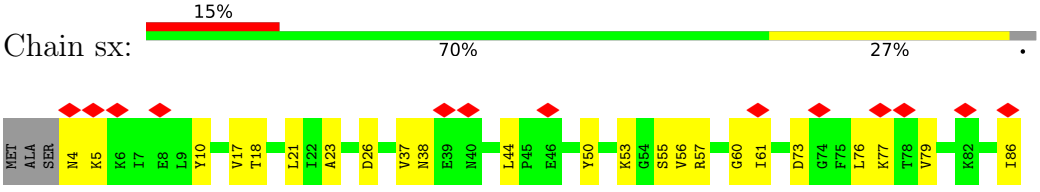
• Molecule 73: Small ribosomal subunit protein eS19



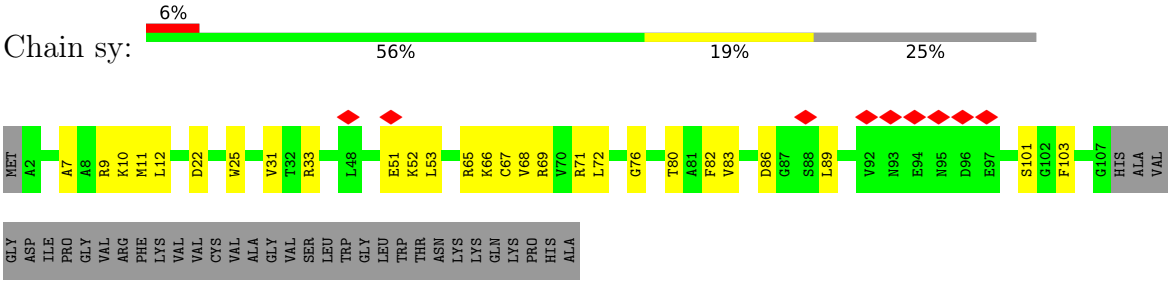
• Molecule 74: 40S ribosomal protein S20, putative



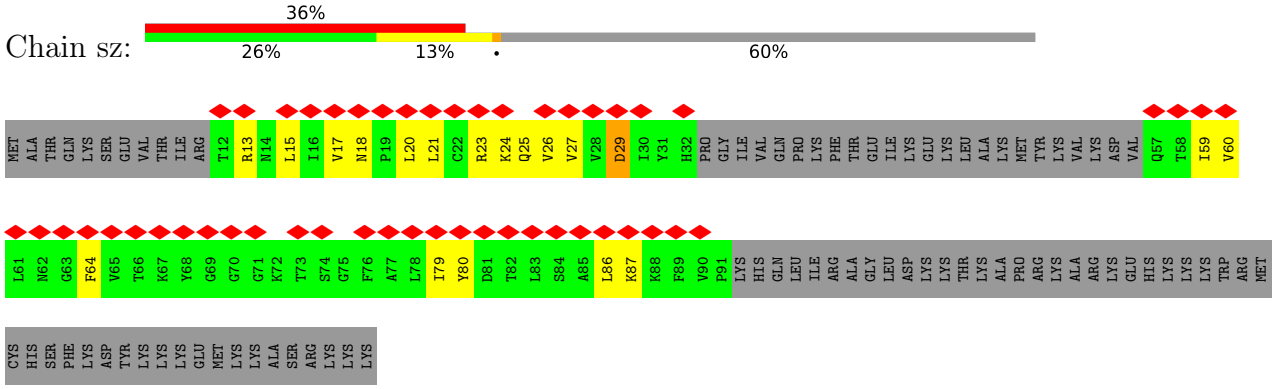
• Molecule 75: 40S ribosomal protein S21



• Molecule 76: 40S ribosomal protein S23, putative



• Molecule 77: 40S ribosomal protein S24, putative


Chain sz:
36%
26%
13%
60%
MET ALA THR GLN LYS SER GLU VAL THR ILE ARG T12 R13 N14 L15 I16 V17 N18 P19 L20 L21 C22 R23 K24 Q25 V26 V27 V28 D29 I30 Y31 H32 PRO GLY ILE VAL GLN PRO LYS PHE THR GLU ILE LYS GLU LYS LEU ALA LYS MET TYR LYS VAL LYS ASP VAL Q57 T58 I59 V60
L61 N62 G63 F64 V65 T66 K67 Y68 G69 G70 G71 K72 T73 S74 G75 F76 A77 L78 I79 Y80 D81 T82 L83 S84 A85 L86 K87 K88 F89 V90 P91 LYS HIS GLN LEU ILE ARG ALA GLY LEU ASP LYS LYS THR LYS ALA PRO ARG LYS ALA ARG LYS GLU HIS LYS LYS LYS TRP ARG MET
CYS HIS SER PHE LYS ASP TYR LYS LYS LYS GLU MET LYS LYS ALA SER ARG LYS LYS LYS

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	39958	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	1.106	Depositor
Minimum defocus (nm)	1800	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	75000	Depositor
Image detector	FEI FALCON III (4k x 4k)	Depositor
Maximum map value	18.910	Depositor
Minimum map value	-5.957	Depositor
Average map value	0.000	Depositor
Map value standard deviation	1.000	Depositor
Recommended contour level	2.8	Depositor
Map size (Å)	428.00003, 428.00003, 428.00003	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.07, 1.07, 1.07	Depositor

5 Model quality

5.1 Standard geometry

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|$ >5	RMSZ	#$\|Z\|$ >5
1	lA	0.12	0/75319	0.28	0/117329
2	lB	0.11	0/3470	0.27	0/5401
3	lC	0.12	0/2765	0.35	2/4303 (0.0%)
4	lD	0.10	0/1920	0.25	0/2582
5	lE	0.09	0/3140	0.25	0/4216
6	lF	0.09	0/3311	0.26	0/4446
7	lG	0.10	0/2284	0.26	0/3059
8	lH	0.09	0/1640	0.27	0/2204
9	lI	0.08	0/1680	0.23	0/2252
10	lJ	0.09	0/1757	0.26	0/2360
11	lK	0.07	0/1562	0.21	0/2103
12	lL	0.09	0/1633	0.23	0/2184
13	lM	0.08	0/1369	0.23	0/1834
14	lN	0.09	0/2150	0.23	0/2867
15	lO	0.09	0/1646	0.23	0/2209
16	lP	0.08	0/1032	0.21	0/1388
17	lQ	0.09	0/1707	0.22	0/2276
18	lR	0.08	0/1251	0.23	0/1675
19	lS	0.09	0/1337	0.23	0/1789
20	lT	0.09	0/1445	0.26	0/1946
21	lU	0.09	0/1253	0.23	0/1666
22	lV	0.10	0/1351	0.25	0/1819
23	lW	0.12	0/772	0.29	0/1028
24	lX	0.09	0/1030	0.23	0/1384
25	lY	0.08	0/941	0.21	0/1262
26	lZ	0.09	0/492	0.23	0/656
27	la	0.08	0/1673	0.23	0/2236
28	lb	0.09	0/1112	0.26	0/1489
29	lc	0.09	0/1223	0.23	0/1636
30	ld	0.10	0/485	0.25	0/639
31	le	0.08	0/776	0.29	0/1044
32	lf	0.10	0/1205	0.25	0/1609
33	lg	0.09	0/1075	0.23	0/1434
34	lh	0.09	0/833	0.22	0/1115

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\| > 5$	RMSZ	$\#\|Z\| > 5$
35	li	0.07	0/984	0.21	0/1310
36	lj	0.11	0/862	0.25	0/1163
37	lk	0.07	0/721	0.20	0/955
38	ll	0.11	0/602	0.28	0/797
39	lm	0.09	0/696	0.23	0/928
40	ln	0.10	0/592	0.27	0/789
41	lo	0.09	0/444	0.20	0/587
42	lp	0.13	0/425	0.42	1/563 (0.2%)
43	lq	0.09	0/770	0.22	0/1019
44	sA	0.13	0/555	0.37	0/749
45	sB	0.09	0/797	0.23	0/1062
46	sC	0.08	0/263	0.25	0/357
47	sD	0.10	0/470	0.25	0/630
48	sE	0.15	0/449	0.37	0/595
50	sI	0.13	0/1710	0.28	0/2657
51	sJ	0.09	0/1818	0.24	0/2827
52	sK	0.07	0/241	0.20	0/373
53	sa	0.11	0/34364	0.28	0/53526
54	sb	0.08	0/1659	0.22	0/2243
55	sc	0.11	0/1673	0.29	0/2257
56	sd	0.08	0/1716	0.24	0/2297
57	se	0.41	0/1346	0.95	6/1793 (0.3%)
58	sf	0.10	0/2072	0.28	0/2792
59	sg	0.08	0/1460	0.25	0/1960
60	sh	0.19	0/952	0.54	0/1265
61	si	0.11	0/868	0.30	0/1166
62	sj	0.08	0/1002	0.22	0/1341
63	sk	0.07	0/1344	0.22	0/1800
64	sl	0.08	0/745	0.24	0/1007
65	sm	0.08	0/1187	0.24	0/1586
66	so	0.07	0/654	0.20	0/866
67	sp	0.09	0/1013	0.22	0/1361
68	sq	0.11	0/856	0.37	0/1143
69	sr	0.10	0/1040	0.28	0/1404
70	ss	0.08	0/1121	0.23	0/1503
71	st	0.10	0/684	0.30	0/914
72	su	0.13	0/1113	0.37	0/1491
73	sv	0.09	0/1239	0.23	0/1665
74	sw	0.10	0/776	0.31	0/1044
75	sx	0.10	0/663	0.28	0/898
76	sy	0.07	0/848	0.24	0/1131
77	sz	0.09	0/445	0.24	0/601
All	All	0.11	0/199878	0.28	9/293855 (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
38	ll	0	1
48	sE	0	1
57	se	0	2
60	sh	0	2
68	sq	0	1
All	All	0	7

There are no bond length outliers.

The worst 5 of 9 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
57	se	70	VAL	N-CA-C	-21.55	81.78	109.58
3	lC	62	U	OP2-P-O3'	-8.82	81.54	108.00
3	lC	62	U	OP1-P-O3'	-8.48	82.56	108.00
57	se	39	ASN	CA-C-N	-6.54	110.65	122.54
57	se	39	ASN	C-N-CA	-6.54	110.65	122.54

There are no chirality outliers.

5 of 7 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
38	ll	39	TYR	Peptide
48	sE	15	GLY	Peptide
57	se	176	LYS	Peptide
57	se	195	LEU	Peptide
60	sh	199	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	lA	67215	0	33720	1093	0
2	lB	3097	0	1552	46	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	lC	2477	0	1252	87	0
4	lD	1881	0	1928	43	0
5	lE	3076	0	3209	60	0
6	lF	3253	0	3444	56	0
7	lG	2245	0	2325	33	0
8	lH	1608	0	1728	29	0
9	lI	1658	0	1802	21	0
10	lJ	1727	0	1849	27	0
11	lK	1538	0	1598	39	0
12	lL	1597	0	1654	21	0
13	lM	1350	0	1390	25	0
14	lN	2122	0	2316	32	0
15	lO	1616	0	1700	19	0
16	lP	1020	0	1104	19	0
17	lQ	1676	0	1777	33	0
18	lR	1232	0	1307	22	0
19	lS	1316	0	1420	23	0
20	lT	1413	0	1479	18	0
21	lU	1235	0	1369	18	0
22	lV	1320	0	1406	18	0
23	lW	761	0	811	23	0
24	lX	1015	0	1054	17	0
25	lY	926	0	997	12	0
26	lZ	481	0	518	7	0
27	la	1651	0	1822	26	0
28	lb	1094	0	1174	24	0
29	lc	1192	0	1205	19	0
30	ld	478	0	507	15	0
31	le	768	0	810	15	0
32	lf	1184	0	1270	22	0
33	lg	1058	0	1140	15	0
34	lh	820	0	864	15	0
35	li	974	0	1093	8	0
36	lj	841	0	878	11	0
37	lk	712	0	755	19	0
38	ll	591	0	617	16	0
39	lm	688	0	726	12	0
40	ln	584	0	643	8	0
41	lo	432	0	444	8	0
42	lp	420	0	450	19	0
43	lq	756	0	821	12	0
44	sA	548	0	604	25	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
45	sB	787	0	833	16	0
46	sC	257	0	270	9	0
47	sD	468	0	500	14	0
48	sE	442	0	444	17	0
49	sH	9	0	4	1	0
50	sI	1533	0	785	22	0
51	sJ	1630	0	829	31	0
52	sK	215	0	108	0	0
53	sa	30685	0	15419	589	0
54	sb	1626	0	1627	30	0
55	sc	1642	0	1721	39	0
56	sd	1696	0	1794	41	0
57	se	1329	0	1420	54	0
58	sf	2031	0	2145	59	0
59	sg	1440	0	1506	32	0
60	sh	944	0	1023	81	0
61	si	854	0	928	20	0
62	sj	990	0	1031	34	0
63	sk	1323	0	1420	31	0
64	sl	729	0	760	24	0
65	sm	1161	0	1181	35	0
66	so	644	0	664	13	0
67	sp	999	0	1024	18	0
68	sq	842	0	913	22	0
69	sr	1022	0	1051	20	0
70	ss	1104	0	1185	33	0
71	st	676	0	718	14	0
72	su	1096	0	1143	30	0
73	sv	1214	0	1254	41	0
74	sw	766	0	829	20	0
75	sx	651	0	668	16	0
76	sy	836	0	885	19	0
77	sz	438	0	465	11	0
All	All	185725	0	137079	3057	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 10.

The worst 5 of 3057 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)
1:lA:511:A:H62	1:lA:561:G:H21	1.01	0.95
53:sa:389:U:H3	53:sa:396:A:H62	1.07	0.95
3:lC:27:G:H1	3:lC:50:A:H61	1.12	0.94
57:se:72:LEU:HB3	57:se:81:PHE:HB3	1.52	0.91
3:lC:79:G:H1	3:lC:95:A:H2	1.13	0.91

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
4	lD	244/257 (95%)	233 (96%)	11 (4%)	0	100	100
5	lE	385/402 (96%)	378 (98%)	7 (2%)	0	100	100
6	lF	420/431 (97%)	400 (95%)	20 (5%)	0	100	100
7	lG	278/286 (97%)	261 (94%)	17 (6%)	0	100	100
8	lH	201/204 (98%)	181 (90%)	19 (10%)	1 (0%)	25	58
9	lI	208/230 (90%)	203 (98%)	5 (2%)	0	100	100
10	lJ	209/286 (73%)	199 (95%)	10 (5%)	0	100	100
11	lK	191/197 (97%)	185 (97%)	5 (3%)	1 (0%)	25	58
12	lL	196/210 (93%)	187 (95%)	9 (5%)	0	100	100
13	lM	166/174 (95%)	160 (96%)	6 (4%)	0	100	100
14	lN	261/291 (90%)	252 (97%)	9 (3%)	0	100	100
15	lO	202/205 (98%)	196 (97%)	6 (3%)	0	100	100
16	lP	128/135 (95%)	126 (98%)	2 (2%)	0	100	100
17	lQ	202/205 (98%)	195 (96%)	7 (4%)	0	100	100
18	lR	156/179 (87%)	153 (98%)	3 (2%)	0	100	100
19	lS	165/168 (98%)	152 (92%)	13 (8%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
20	lT	171/173 (99%)	165 (96%)	6 (4%)	0	100	100
21	lU	148/198 (75%)	146 (99%)	2 (1%)	0	100	100
22	lV	163/166 (98%)	158 (97%)	5 (3%)	0	100	100
23	lW	91/137 (66%)	84 (92%)	7 (8%)	0	100	100
24	lX	131/140 (94%)	126 (96%)	5 (4%)	0	100	100
25	lY	114/121 (94%)	111 (97%)	3 (3%)	0	100	100
26	lZ	55/163 (34%)	54 (98%)	1 (2%)	0	100	100
27	la	208/213 (98%)	202 (97%)	6 (3%)	0	100	100
28	lb	135/139 (97%)	134 (99%)	1 (1%)	0	100	100
29	lc	146/149 (98%)	141 (97%)	5 (3%)	0	100	100
30	ld	58/64 (91%)	54 (93%)	4 (7%)	0	100	100
31	le	101/109 (93%)	92 (91%)	9 (9%)	0	100	100
32	lf	144/150 (96%)	137 (95%)	7 (5%)	0	100	100
33	lg	127/134 (95%)	120 (94%)	7 (6%)	0	100	100
34	lh	103/137 (75%)	100 (97%)	3 (3%)	0	100	100
35	li	120/122 (98%)	117 (98%)	2 (2%)	1 (1%)	16	48
36	lj	104/108 (96%)	100 (96%)	4 (4%)	0	100	100
37	lk	83/104 (80%)	83 (100%)	0	0	100	100
38	ll	70/77 (91%)	64 (91%)	4 (6%)	2 (3%)	3	20
39	lm	88/93 (95%)	83 (94%)	5 (6%)	0	100	100
40	ln	71/77 (92%)	67 (94%)	4 (6%)	0	100	100
41	lo	48/51 (94%)	47 (98%)	1 (2%)	0	100	100
42	lp	51/56 (91%)	50 (98%)	1 (2%)	0	100	100
43	lq	90/98 (92%)	89 (99%)	1 (1%)	0	100	100
44	sA	67/137 (49%)	62 (92%)	5 (8%)	0	100	100
45	sB	96/144 (67%)	94 (98%)	2 (2%)	0	100	100
46	sC	31/84 (37%)	30 (97%)	1 (3%)	0	100	100
47	sD	58/69 (84%)	54 (93%)	4 (7%)	0	100	100
48	sE	53/56 (95%)	49 (92%)	4 (8%)	0	100	100
54	sb	203/254 (80%)	193 (95%)	10 (5%)	0	100	100
55	sc	213/255 (84%)	205 (96%)	7 (3%)	1 (0%)	25	58

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
56	sd	215/244 (88%)	202 (94%)	13 (6%)	0	100 100
57	se	155/256 (60%)	127 (82%)	27 (17%)	1 (1%)	22 53
58	sf	254/326 (78%)	243 (96%)	11 (4%)	0	100 100
59	sg	177/206 (86%)	168 (95%)	9 (5%)	0	100 100
60	sh	113/266 (42%)	88 (78%)	22 (20%)	3 (3%)	4 21
61	si	102/201 (51%)	96 (94%)	5 (5%)	1 (1%)	13 42
62	sj	123/237 (52%)	120 (98%)	3 (2%)	0	100 100
63	sk	160/185 (86%)	158 (99%)	2 (1%)	0	100 100
64	sl	89/127 (70%)	87 (98%)	2 (2%)	0	100 100
65	sm	137/156 (88%)	126 (92%)	11 (8%)	0	100 100
66	so	68/151 (45%)	68 (100%)	0	0	100 100
67	sp	131/146 (90%)	125 (95%)	6 (5%)	0	100 100
68	sq	101/144 (70%)	90 (89%)	10 (10%)	1 (1%)	13 42
69	sr	127/130 (98%)	116 (91%)	11 (9%)	0	100 100
70	ss	139/158 (88%)	134 (96%)	5 (4%)	0	100 100
71	st	79/117 (68%)	79 (100%)	0	0	100 100
72	su	133/155 (86%)	121 (91%)	12 (9%)	0	100 100
73	sv	149/155 (96%)	144 (97%)	5 (3%)	0	100 100
74	sw	96/118 (81%)	93 (97%)	1 (1%)	2 (2%)	5 25
75	sx	81/86 (94%)	80 (99%)	1 (1%)	0	100 100
76	sy	104/141 (74%)	99 (95%)	5 (5%)	0	100 100
77	sz	52/140 (37%)	49 (94%)	3 (6%)	0	100 100
All	All	9738/11683 (83%)	9285 (95%)	439 (4%)	14 (0%)	50 79

5 of 14 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
38	ll	40	PRO
60	sh	107	SER
60	sh	149	GLN
60	sh	202	LEU
74	sw	93	THR

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	
4	lD	195/201 (97%)	190 (97%)	5 (3%)	41	68
5	lE	330/343 (96%)	327 (99%)	3 (1%)	75	88
6	lF	332/345 (96%)	332 (100%)	0	100	100
7	lG	227/231 (98%)	225 (99%)	2 (1%)	75	88
8	lH	172/173 (99%)	169 (98%)	3 (2%)	56	78
9	lI	178/195 (91%)	176 (99%)	2 (1%)	70	84
10	lJ	186/242 (77%)	182 (98%)	4 (2%)	47	71
11	lK	171/174 (98%)	165 (96%)	6 (4%)	31	61
12	lL	169/176 (96%)	168 (99%)	1 (1%)	84	91
13	lM	144/147 (98%)	141 (98%)	3 (2%)	48	72
14	lN	222/243 (91%)	221 (100%)	1 (0%)	86	92
15	lO	167/168 (99%)	164 (98%)	3 (2%)	54	76
16	lP	113/118 (96%)	112 (99%)	1 (1%)	75	88
17	lQ	171/172 (99%)	170 (99%)	1 (1%)	84	91
18	lR	129/147 (88%)	128 (99%)	1 (1%)	79	89
19	lS	141/143 (99%)	138 (98%)	3 (2%)	48	72
20	lT	156/156 (100%)	155 (99%)	1 (1%)	84	91
21	lU	132/174 (76%)	130 (98%)	2 (2%)	60	80
22	lV	144/145 (99%)	142 (99%)	2 (1%)	62	81
23	lW	85/125 (68%)	84 (99%)	1 (1%)	67	83
24	lX	109/113 (96%)	108 (99%)	1 (1%)	75	88
25	lY	99/102 (97%)	97 (98%)	2 (2%)	50	74
26	lZ	52/137 (38%)	52 (100%)	0	100	100
27	la	177/179 (99%)	173 (98%)	4 (2%)	45	70
28	lb	121/123 (98%)	120 (99%)	1 (1%)	79	89
29	lc	120/121 (99%)	119 (99%)	1 (1%)	79	89

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
30	ld	50/54 (93%)	50 (100%)	0	100	100
31	le	86/92 (94%)	85 (99%)	1 (1%)	67	83
32	lf	125/128 (98%)	124 (99%)	1 (1%)	79	89
33	lg	112/116 (97%)	110 (98%)	2 (2%)	54	76
34	lh	86/116 (74%)	83 (96%)	3 (4%)	31	61
35	li	103/103 (100%)	102 (99%)	1 (1%)	73	86
36	lj	89/91 (98%)	87 (98%)	2 (2%)	47	71
37	lk	71/82 (87%)	71 (100%)	0	100	100
38	ll	60/64 (94%)	60 (100%)	0	100	100
39	lm	72/75 (96%)	72 (100%)	0	100	100
40	ln	63/66 (96%)	62 (98%)	1 (2%)	58	79
41	lo	44/45 (98%)	44 (100%)	0	100	100
42	lp	45/48 (94%)	45 (100%)	0	100	100
43	lq	85/91 (93%)	84 (99%)	1 (1%)	67	83
44	sA	64/112 (57%)	64 (100%)	0	100	100
45	sB	87/127 (68%)	86 (99%)	1 (1%)	70	84
46	sC	29/73 (40%)	28 (97%)	1 (3%)	32	62
47	sD	50/59 (85%)	49 (98%)	1 (2%)	50	74
48	sE	45/46 (98%)	44 (98%)	1 (2%)	47	71
54	sb	178/218 (82%)	177 (99%)	1 (1%)	84	91
55	sc	172/199 (86%)	170 (99%)	2 (1%)	67	83
56	sd	183/206 (89%)	178 (97%)	5 (3%)	40	67
57	se	149/225 (66%)	140 (94%)	9 (6%)	16	44
58	sf	223/283 (79%)	218 (98%)	5 (2%)	47	71
59	sg	162/178 (91%)	159 (98%)	3 (2%)	52	75
60	sh	101/220 (46%)	87 (86%)	14 (14%)	3	12
61	si	93/167 (56%)	90 (97%)	3 (3%)	34	63
62	sj	106/205 (52%)	103 (97%)	3 (3%)	38	66
63	sk	144/164 (88%)	142 (99%)	2 (1%)	62	81
64	sl	81/111 (73%)	80 (99%)	1 (1%)	67	83
65	sm	126/138 (91%)	126 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
66	so	68/129 (53%)	68 (100%)	0	100	100
67	sp	103/114 (90%)	99 (96%)	4 (4%)	27	58
68	sq	94/127 (74%)	93 (99%)	1 (1%)	70	84
69	sr	112/113 (99%)	110 (98%)	2 (2%)	54	76
70	ss	114/128 (89%)	112 (98%)	2 (2%)	54	76
71	st	73/106 (69%)	70 (96%)	3 (4%)	26	57
72	su	114/130 (88%)	111 (97%)	3 (3%)	41	68
73	sv	128/132 (97%)	126 (98%)	2 (2%)	58	79
74	sw	89/107 (83%)	89 (100%)	0	100	100
75	sx	75/77 (97%)	73 (97%)	2 (3%)	40	67
76	sy	86/114 (75%)	85 (99%)	1 (1%)	67	83
77	sz	49/125 (39%)	46 (94%)	3 (6%)	15	43
All	All	8431/9897 (85%)	8290 (98%)	141 (2%)	56	78

5 of 141 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
63	sk	59	MET
67	sp	75	ASP
72	su	11	GLN
27	la	36	LYS
25	lY	120	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 62 such sidechains are listed below:

Mol	Chain	Res	Type
27	la	198	ASN
64	sl	40	GLN
36	lj	76	HIS
58	sf	221	ASN
71	st	31	ASN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	lA	3131/3503 (89%)	564 (18%)	0

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Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
2	lB	143/155 (92%)	30 (20%)	0
3	lC	116/117 (99%)	19 (16%)	0
50	sI	68/76 (89%)	11 (16%)	0
51	sJ	76/77 (98%)	23 (30%)	0
52	sK	9/10 (90%)	0	0
53	sa	1417/1947 (72%)	308 (21%)	0
All	All	4960/5885 (84%)	955 (19%)	0

5 of 955 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	lA	18	G
1	lA	22	A
1	lA	29	U
1	lA	30	A
1	lA	36	A

There are no RNA pucker outliers to report.

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

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

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

There are no ligands in this entry.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

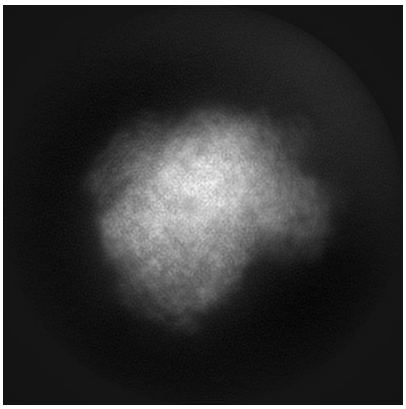
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-64716. These allow visual inspection of the internal detail of the map and identification of artifacts.

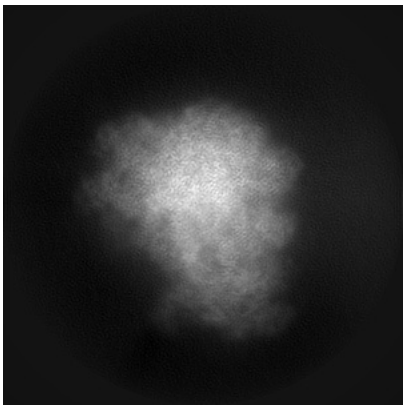
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

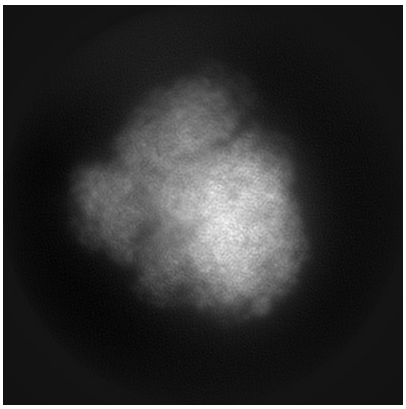
6.1.1 Primary map



X

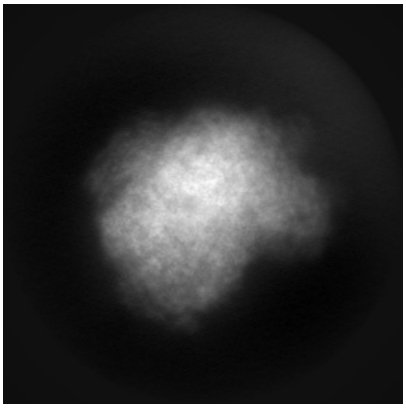


Y

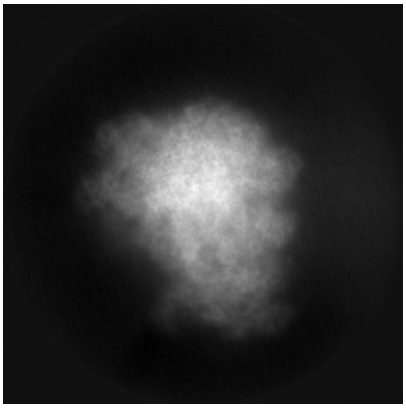


Z

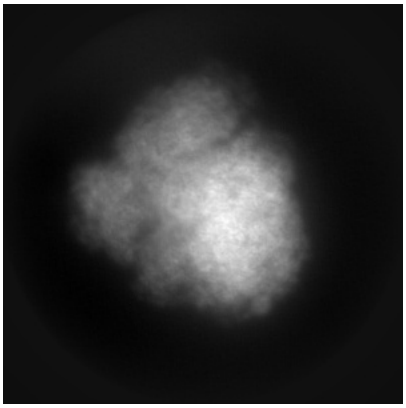
6.1.2 Raw map



X



Y

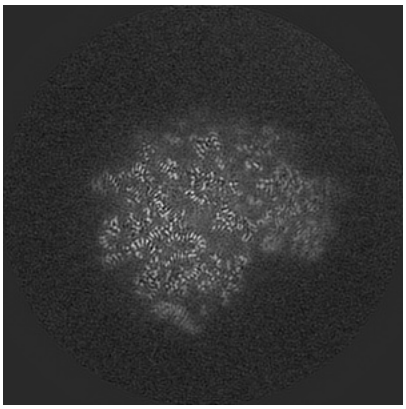


Z

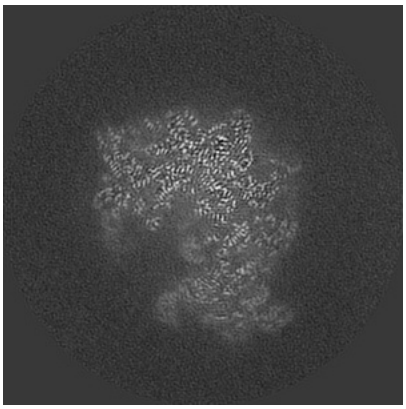
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

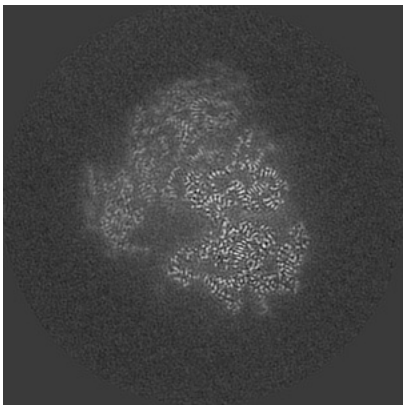
6.2.1 Primary map



X Index: 200

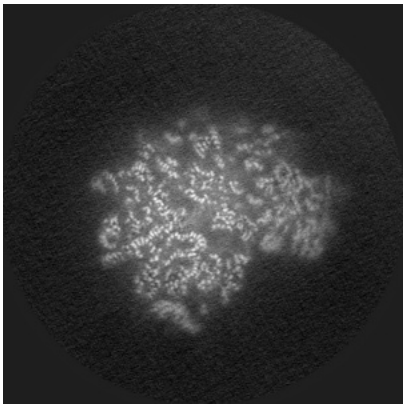


Y Index: 200

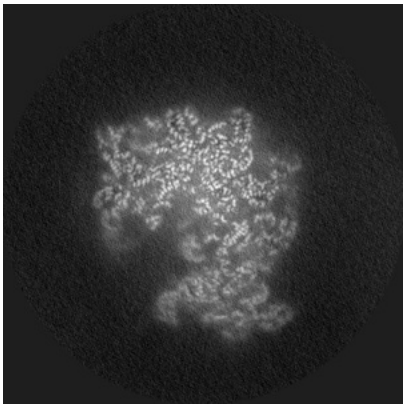


Z Index: 200

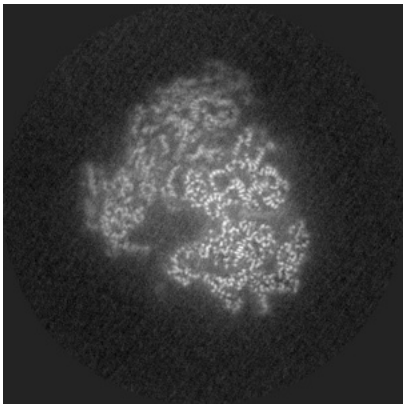
6.2.2 Raw map



X Index: 200



Y Index: 200

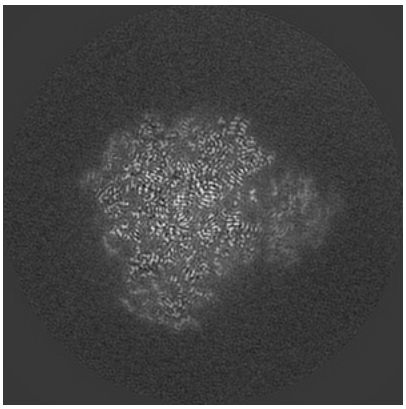


Z Index: 200

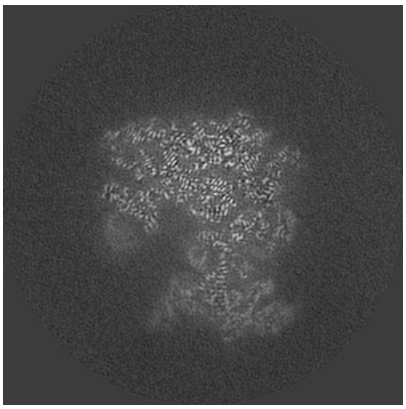
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

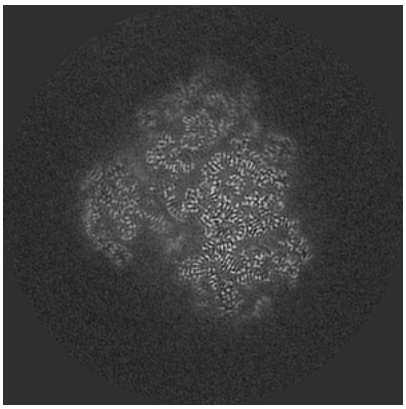
6.3.1 Primary map



X Index: 221

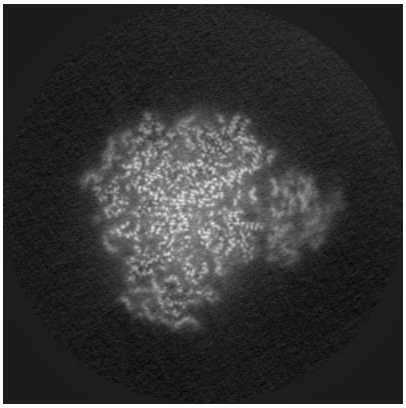


Y Index: 208

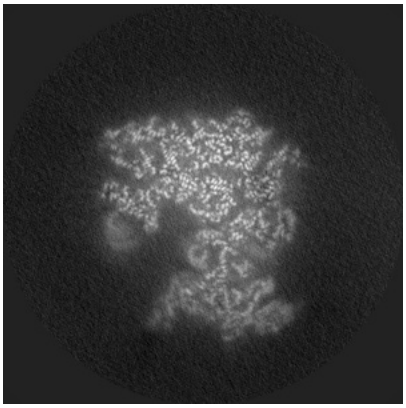


Z Index: 213

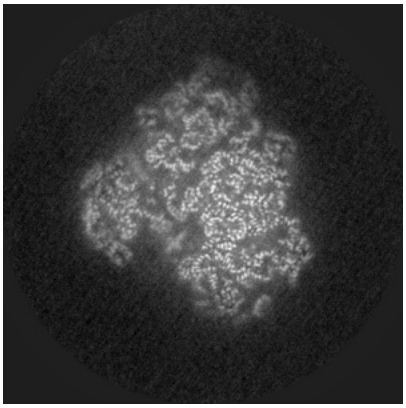
6.3.2 Raw map



X Index: 220



Y Index: 208

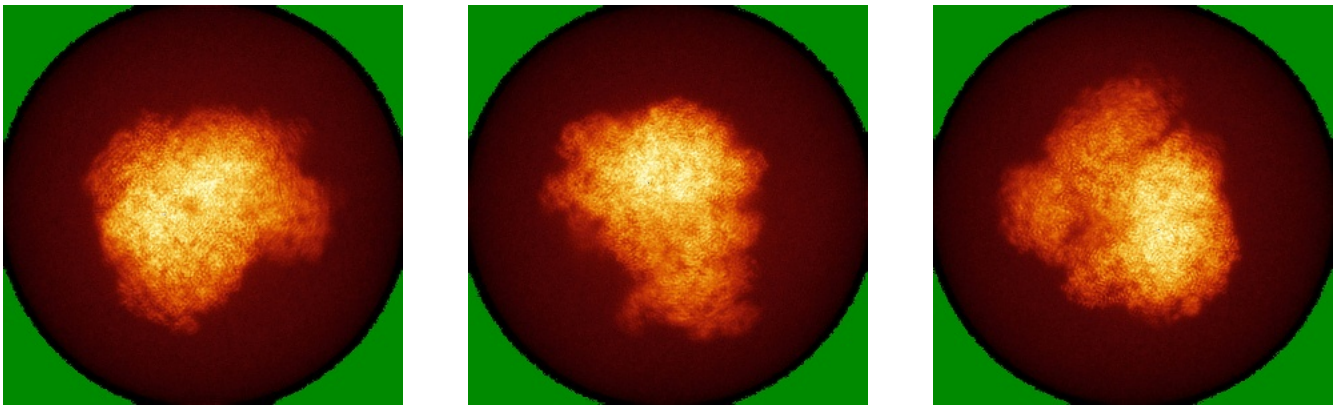


Z Index: 213

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

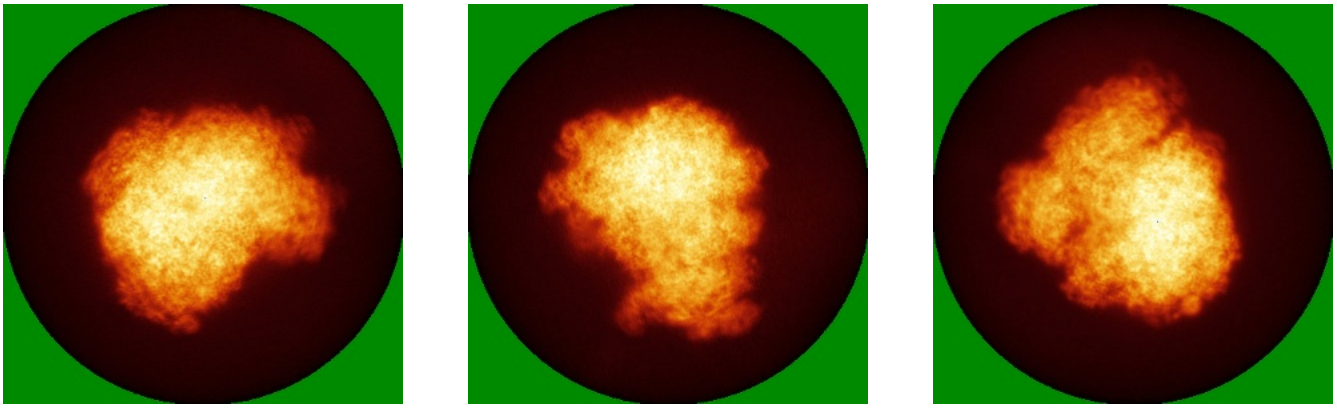
6.4 Orthogonal standard-deviation projections (False-color) (i)

6.4.1 Primary map



X Y Z

6.4.2 Raw map



X Y Z

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

6.5 Orthogonal surface views (i)

6.5.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 2.8. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

X Y Z

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

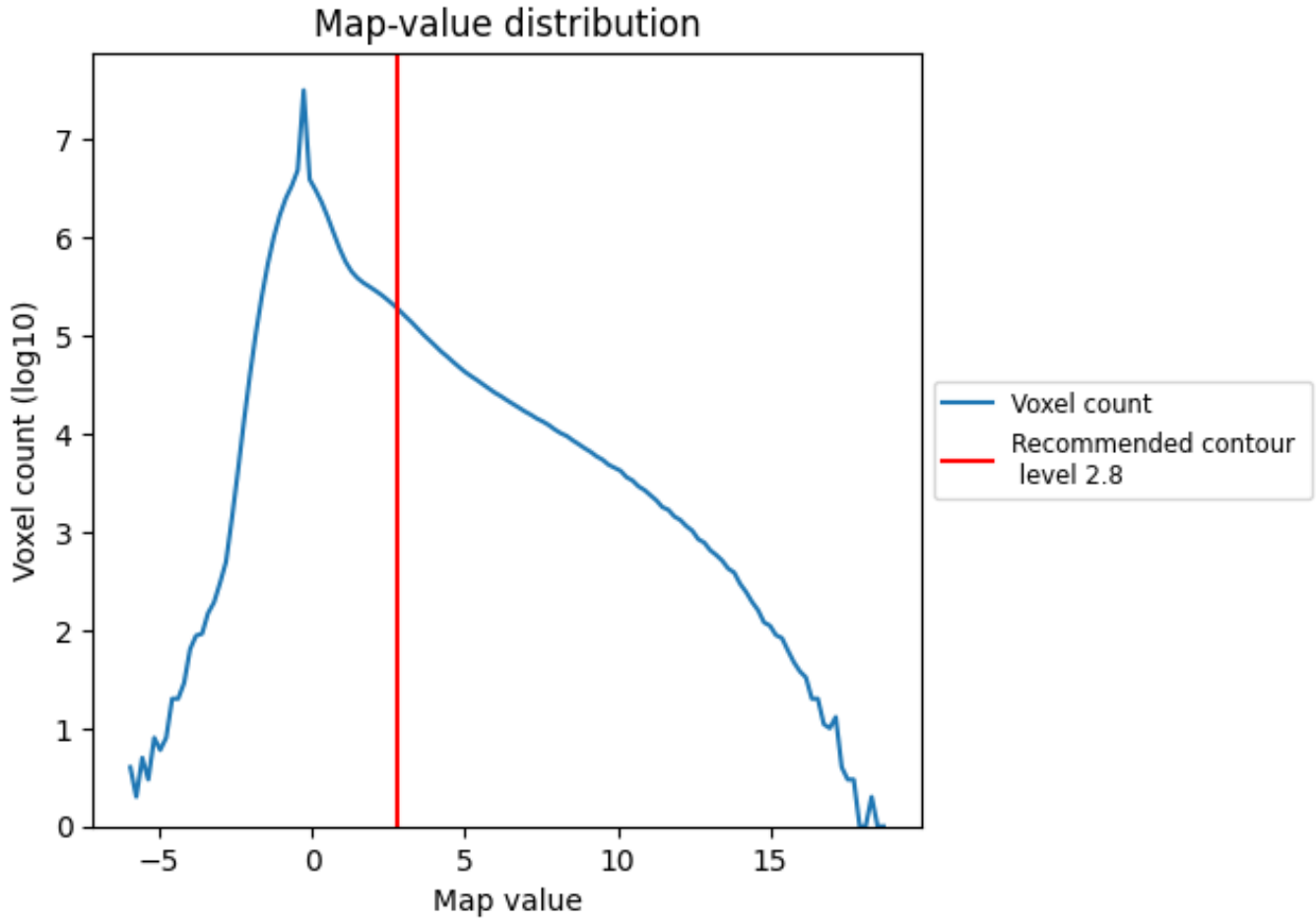
6.6 Mask visualisation (i)

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

7 Map analysis

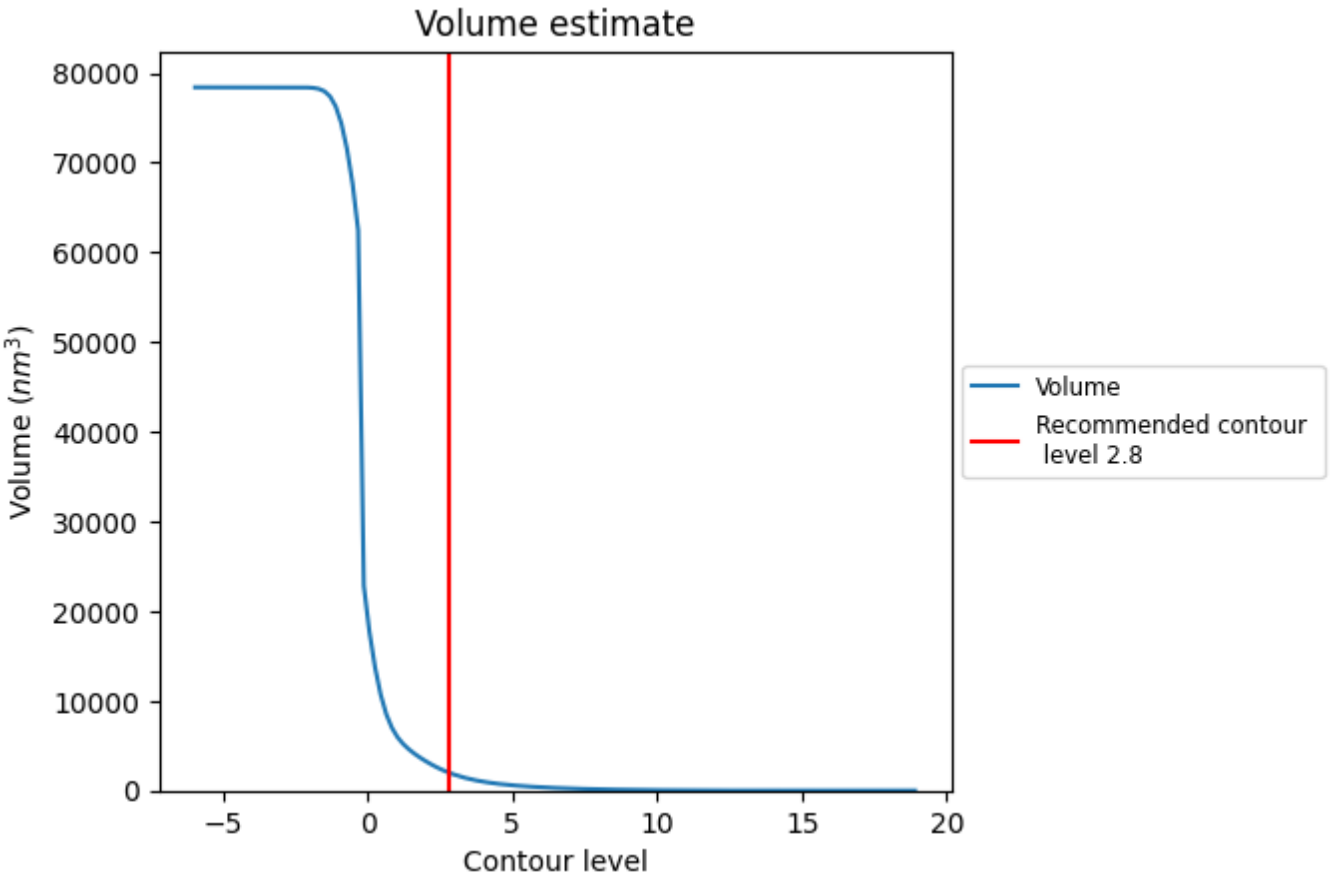
This section contains the results of statistical analysis of the map.

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.

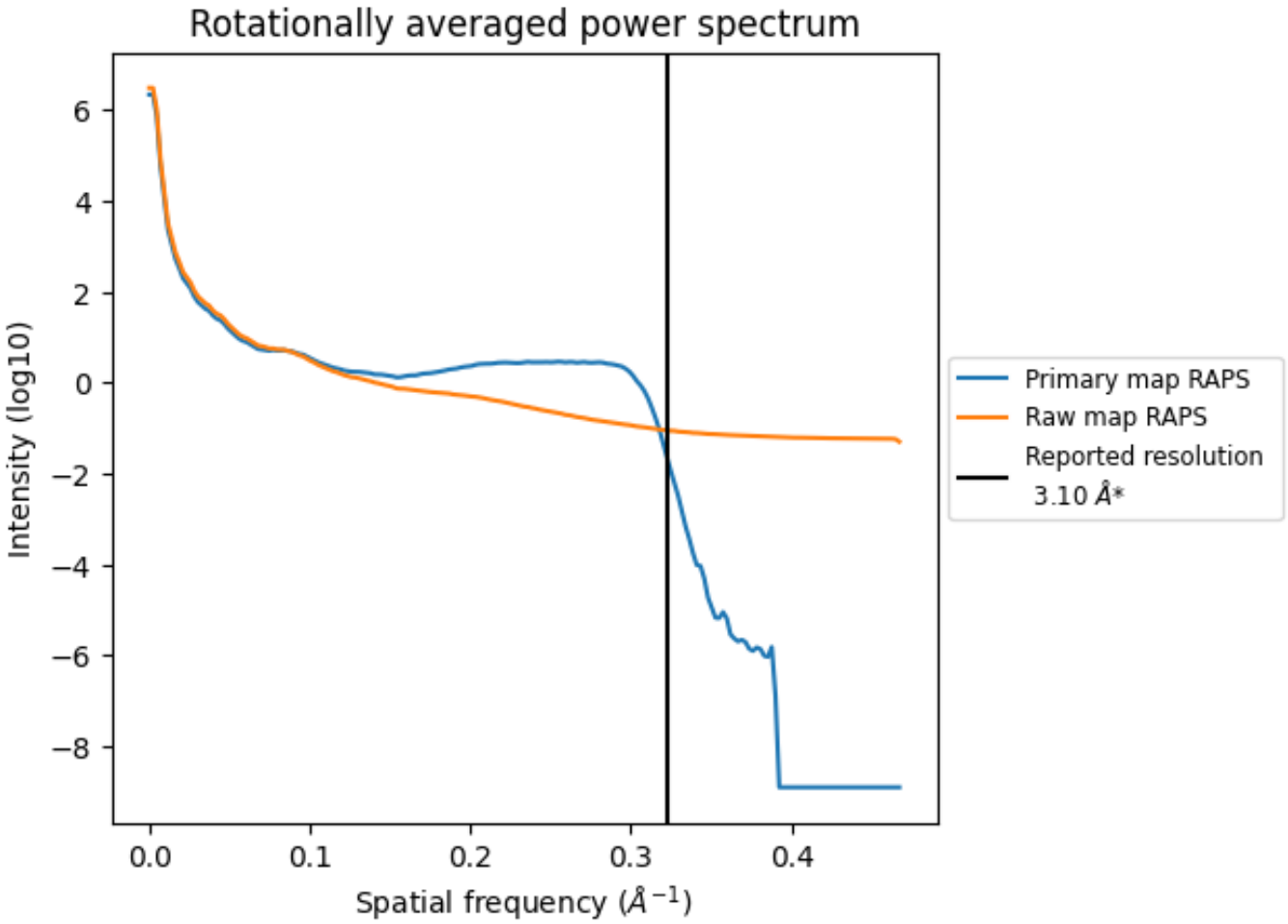
7.2 Volume estimate (i)



The volume at the recommended contour level is 2011 nm^3; this corresponds to an approximate mass of 1817 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)

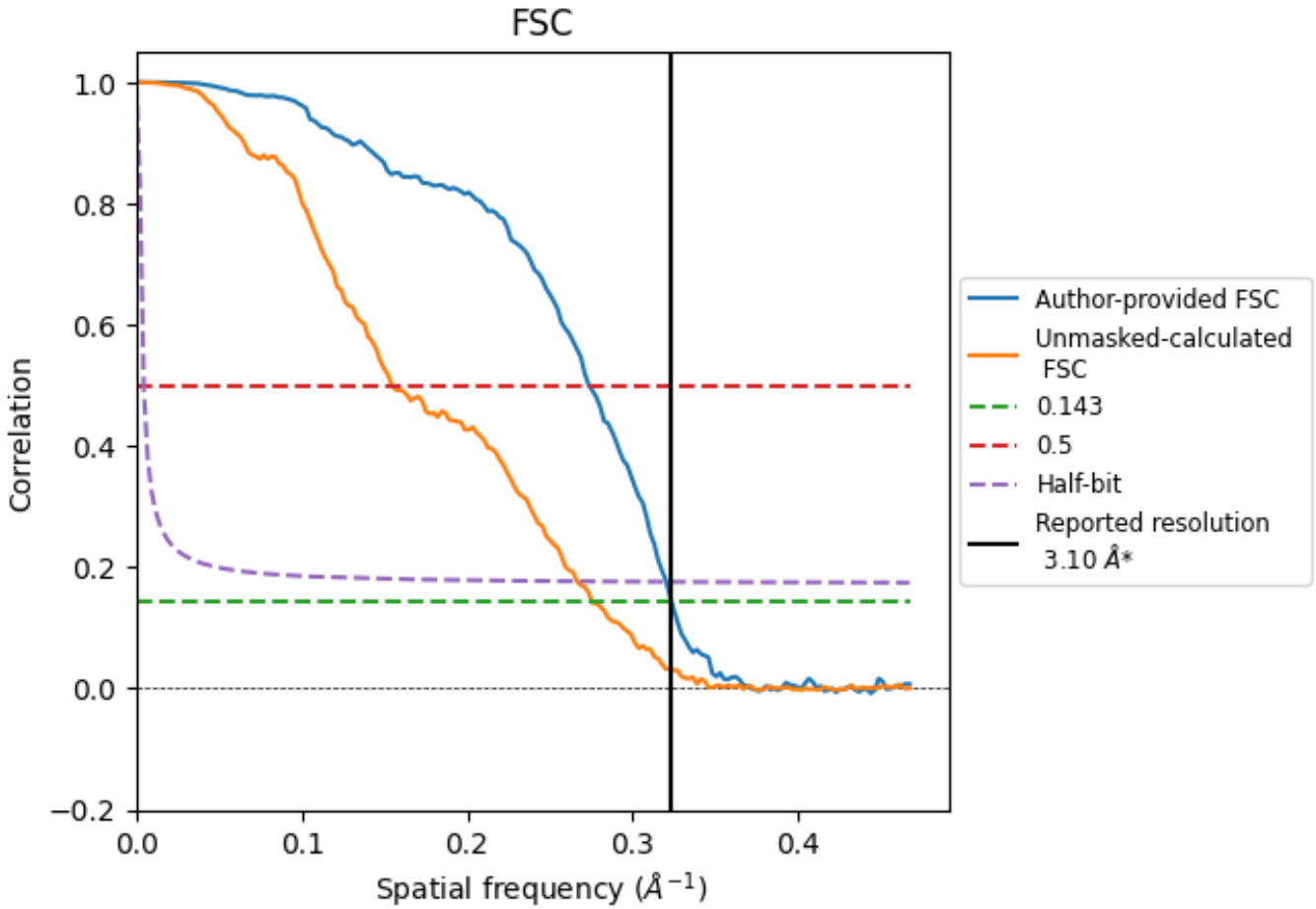


*Reported resolution corresponds to spatial frequency of 0.323 Å^{-1}

8 Fourier-Shell correlation

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



*Reported resolution corresponds to spatial frequency of 0.323 Å^{-1}

8.2 Resolution estimates (i)

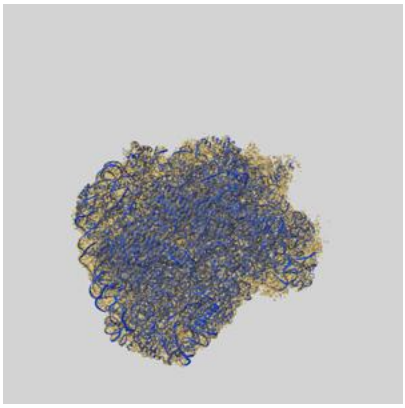
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.10	-	-
Author-provided FSC curve	3.09	3.65	3.12
Unmasked-calculated*	3.63	6.46	3.76

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.63 differs from the reported value 3.1 by more than 10 %

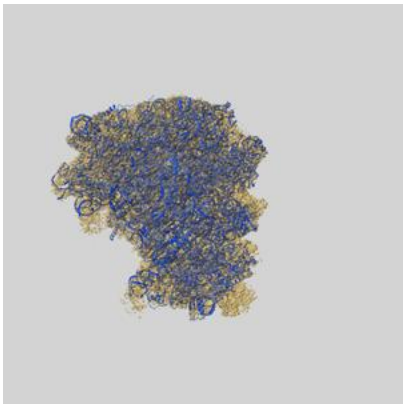
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-64716 and PDB model 9V24. Per-residue inclusion information can be found in section 3 on page 18.

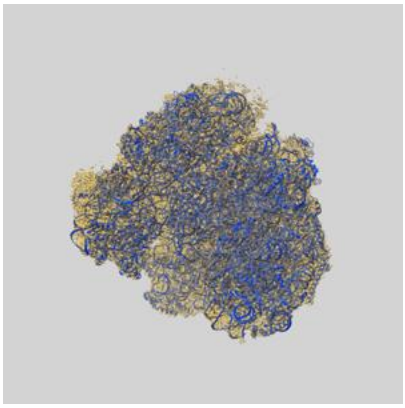
9.1 Map-model overlay



X



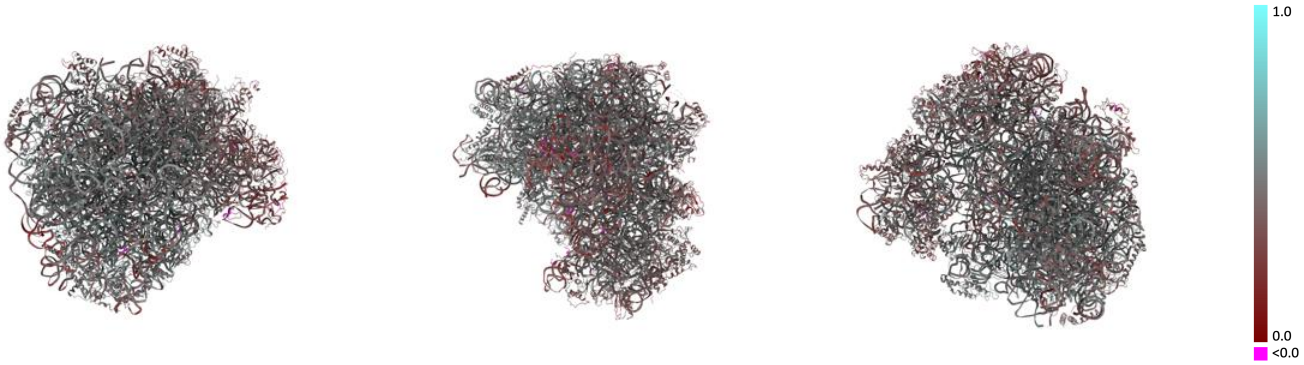
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 2.8 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

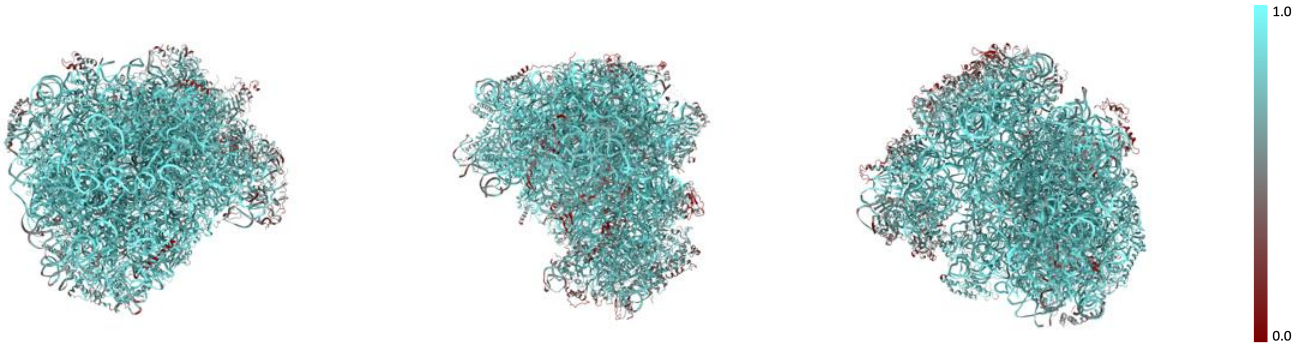
9.2 Q-score mapped to coordinate model (i)



X Y Z

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

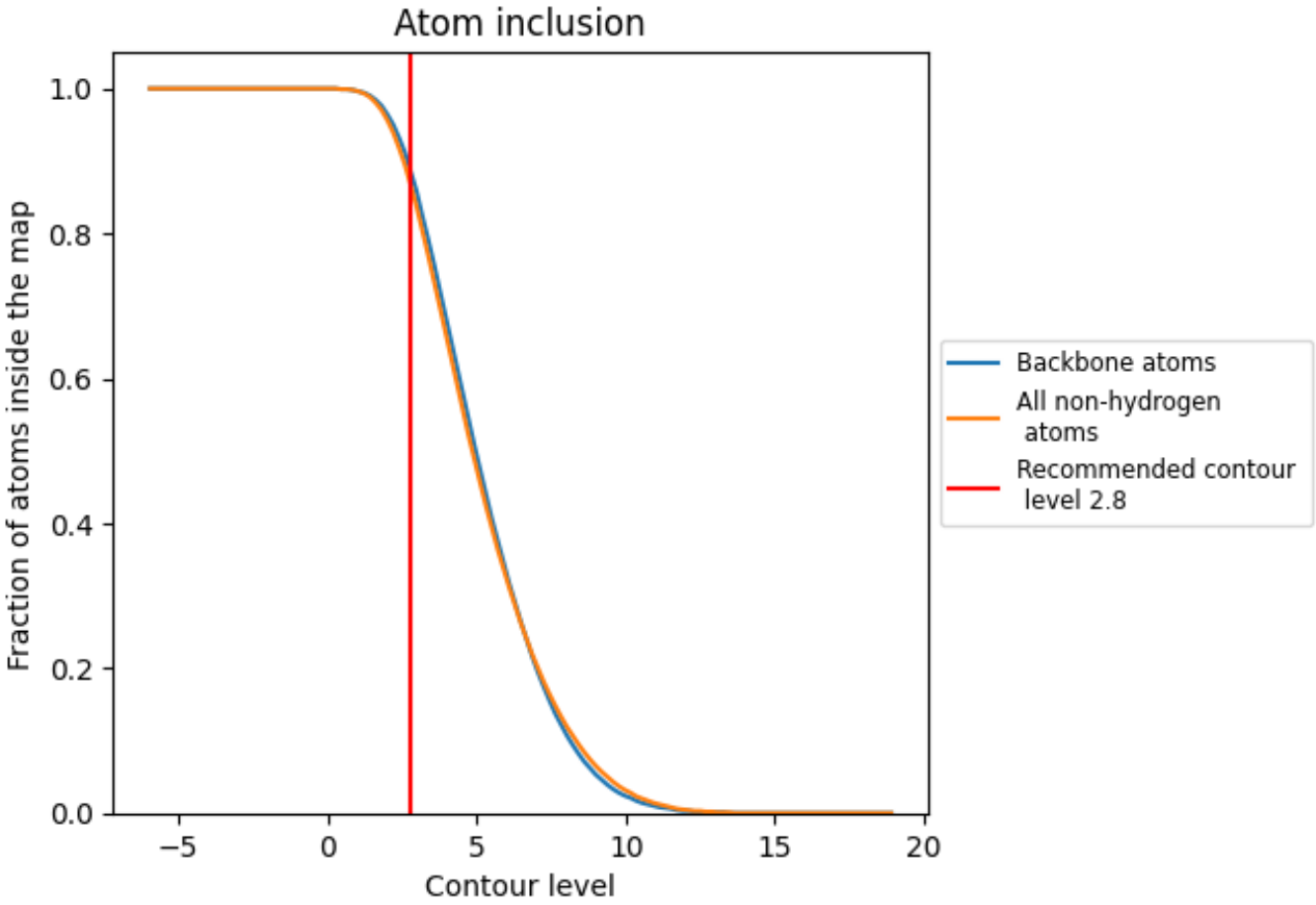
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (2.8).

9.4 Atom inclusion (i)



At the recommended contour level, 88% of all backbone atoms, 86% 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 (2.8) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8650	0.4430
lA	0.9340	0.4630
lB	0.9440	0.4660
lC	0.9550	0.4640
lD	0.9470	0.4750
lE	0.9000	0.4810
lF	0.8670	0.4890
lG	0.8040	0.4900
lH	0.6910	0.4490
lI	0.9180	0.5080
lJ	0.6770	0.4250
lK	0.8130	0.4780
lL	0.9350	0.4840
lM	0.8100	0.4610
lN	0.7580	0.4590
lO	0.9010	0.4930
lP	0.8480	0.4950
lQ	0.9590	0.4940
lR	0.8950	0.4630
lS	0.9520	0.5010
lT	0.9370	0.5120
lU	0.8670	0.4430
lV	0.9220	0.5130
lW	0.3630	0.2860
lX	0.9450	0.4770
lY	0.8070	0.4380
lZ	0.9190	0.4670
la	0.8150	0.4580
lb	0.6130	0.3670
lc	0.9460	0.5100
ld	0.9550	0.5110
le	0.7030	0.4170
lf	0.6710	0.3970
lg	0.8870	0.4830
lh	0.8750	0.4510

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Chain	Atom inclusion	Q-score
li	0.8010	0.4450
lj	0.9310	0.5040
lk	0.8620	0.4760
ll	0.9820	0.4880
lm	0.9320	0.4580
ln	0.5160	0.3580
lo	0.9830	0.4880
lp	0.9060	0.4860
lq	0.9580	0.5010
sA	0.4060	0.3350
sB	0.8830	0.4620
sC	0.7240	0.4080
sD	0.6730	0.3820
sE	0.8740	0.4390
sH	0.8890	0.2080
sI	0.9460	0.3250
sJ	0.9100	0.3970
sK	0.9810	0.4740
sa	0.9060	0.4150
sb	0.6630	0.4110
sc	0.7930	0.4550
sd	0.6500	0.4050
se	0.6980	0.3690
sf	0.5440	0.3320
sg	0.7250	0.4120
sh	0.4340	0.2000
si	0.3500	0.3040
sj	0.7580	0.3860
sk	0.5370	0.3630
sl	0.5290	0.3930
sm	0.7510	0.3760
so	0.8490	0.4170
sp	0.8470	0.4580
sq	0.4960	0.2260
sr	0.8450	0.4470
ss	0.6830	0.4280
st	0.6570	0.3770
su	0.7660	0.4450
sv	0.6680	0.4240
sw	0.5580	0.3530
sx	0.6760	0.4200
sy	0.7580	0.4080

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Chain	Atom inclusion	Q-score
sz	0.1580	0.2410