wwPDB EM Validation Summary Report (i)

Nov 7, 2026 – 01:25 pm GMT

PDB ID	:	32PD / pdb_000032pd
EMDB ID	:	EMD-59046
Title	:	Structural characterization of hibernating ribosomes in the Gram-negative pathogen Acinetobacter baumannii with E-site tRNA and no bS21
Authors	:	Vasanthakrishnan, R.K.B.S.; Olivier, D.; Sophie, C.; Yann, L.C.; Sylvie, G.D.; Sassi, M.; Emmanuel, G.; Reynald, G.
Deposited on	:	2026-07-19
Resolution	:	2.70 Å(reported)
Based on initial model	:	8B0X

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

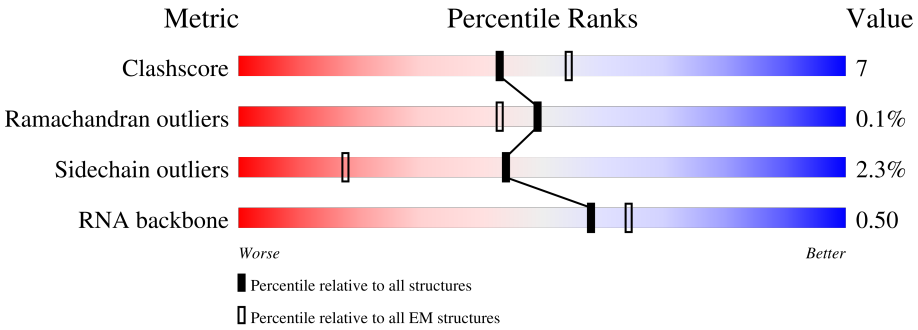
EMDB validation analysis	:	0.0.1.dev133
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4-5-2 with Phenix2.2
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.51

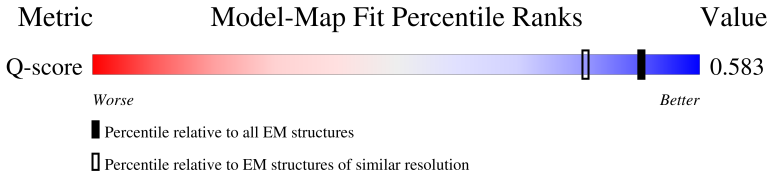
1 Overall quality at a glance

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

The reported resolution of this entry is 2.70 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)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
RNA backbone	8273	3508	-
Q-score	-	25397	10327 (2.20 - 3.20)

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	51	20% 75% 25%
2	1	44	80% 20%
3	2	64	80% 19%

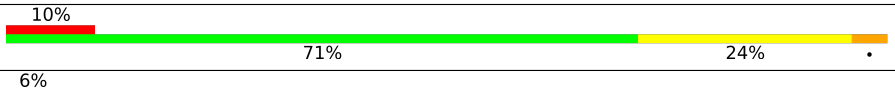
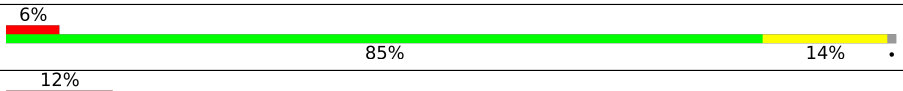
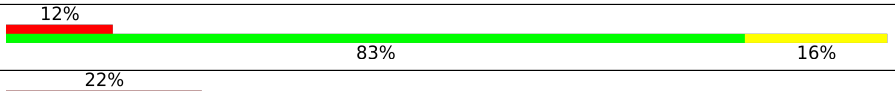
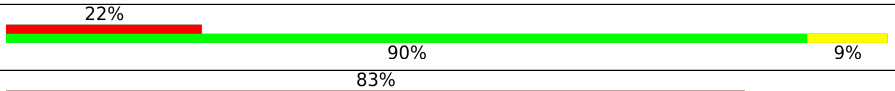
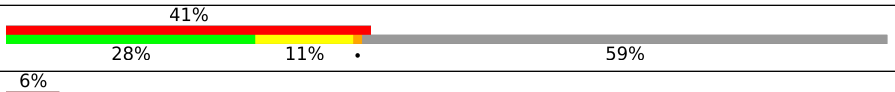
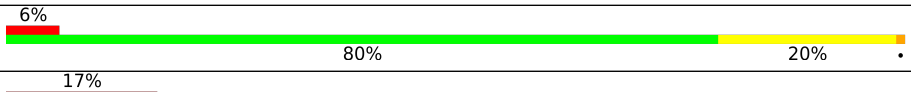
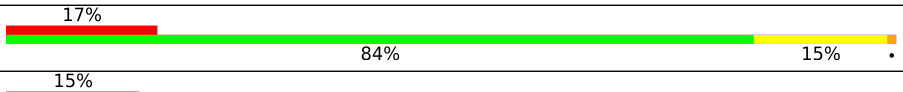
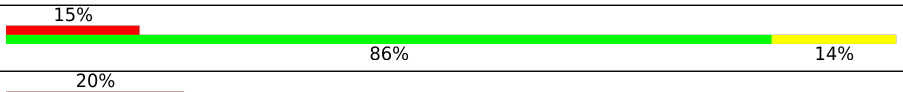
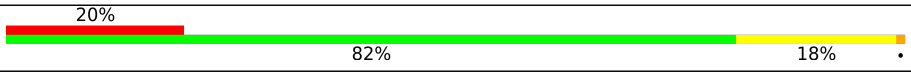
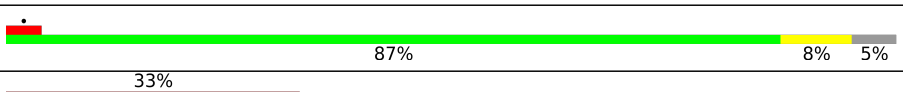
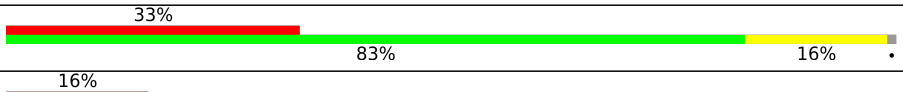
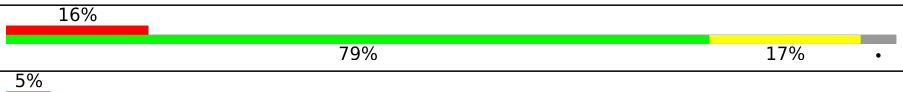
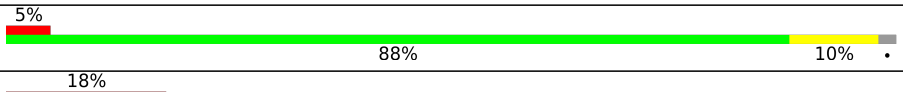
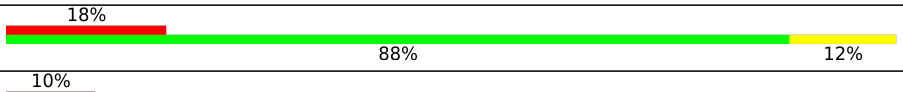
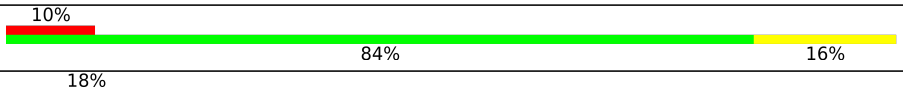
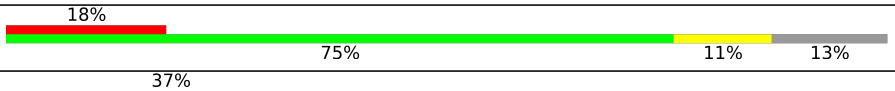
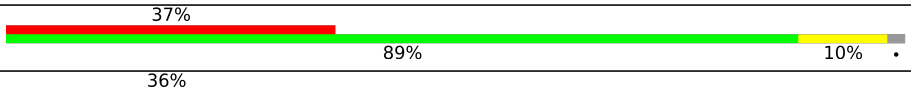
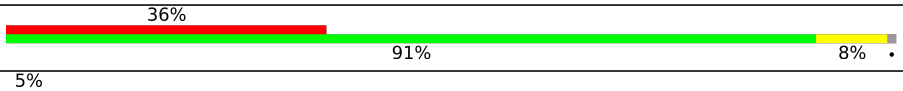
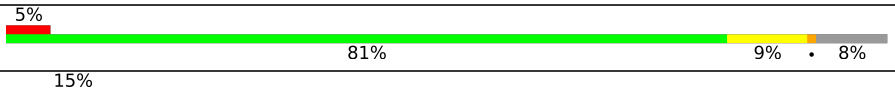
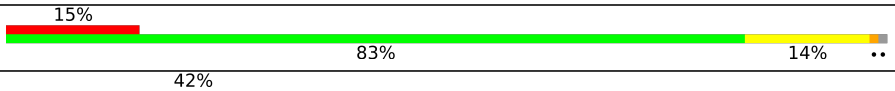
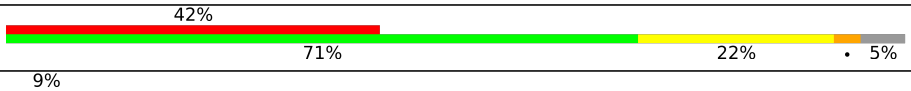
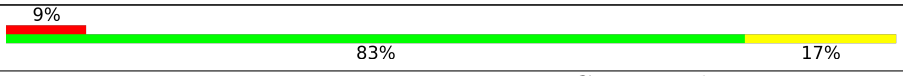
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Mol	Chain	Length	Quality of chain
4	3	38	71% 29%
5	4	74	96% 72% 24%
6	A	1537	22% 58% 36% 7%
7	B	250	92% 68% 22% 8%
8	C	250	52% 70% 15% 14%
9	D	208	76% 79% 21%
10	E	165	24% 76% 18% 6%
11	F	127	82% 65% 17% 17%
12	G	156	86% 74% 24%
13	H	131	37% 78% 21%
14	I	128	64% 73% 26%
15	J	103	67% 70% 27%
16	K	128	51% 73% 18% 9%
17	L	124	48% 77% 20%
18	M	118	86% 83% 15%
19	N	101	65% 65% 34%
20	O	89	45% 83% 16%
21	P	83	41% 84% 14%
22	Q	85	60% 72% 21% 7%
23	R	75	83% 69% 17% 12%
24	S	91	81% 70% 22% 8%
25	T	88	40% 78% 19%
26	V	77	99% 25% 47% 26%
27	W	15	60% 53% 7% 7% 33%
28	X	116	44% 68% 21% 10%

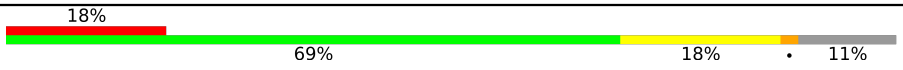
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Mol	Chain	Length	Quality of chain
29	a	2893	
30	b	115	
31	c	274	
32	d	212	
33	e	200	
34	f	178	
35	g	177	
36	h	148	
37	i	142	
38	j	122	
39	k	146	
40	l	137	
41	m	125	
42	n	116	
43	o	122	
44	p	119	
45	q	103	
46	r	109	
47	s	106	
48	t	105	
49	u	98	
50	v	85	
51	w	78	
52	x	65	
53	y	58	

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Mol	Chain	Length	Quality of chain
54	z	61	

2 Entry composition (i)

There are 57 unique types of molecules in this entry. The entry contains 144018 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called Large ribosomal subunit protein bL33.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	0	51	427	274	77	73	3	0	0

- Molecule 2 is a protein called Large ribosomal subunit protein bL34.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	1	44	363	222	85	54	2	0	0

- Molecule 3 is a protein called Large ribosomal subunit protein bL35.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	2	63	509	319	110	76	4	0	0

- Molecule 4 is a protein called Large ribosomal subunit protein bL36.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	3	38	295	179	64	48	4	0	0

- Molecule 5 is a protein called Large ribosomal subunit protein bL31.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	4	71	552	343	101	102	6	0	0

- Molecule 6 is a RNA chain called 16S rRNA (1536-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
6	A	1536	32947	14705	6016	10690	1536	0	0

- Molecule 7 is a protein called Small ribosomal subunit protein uS2.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	B	229	Total	C	N	O	S	0	0
			1801	1130	333	332	6		

- Molecule 8 is a protein called Small ribosomal subunit protein uS3.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	C	215	Total	C	N	O	S	0	0
			1690	1065	318	299	8		

- Molecule 9 is a protein called Small ribosomal subunit protein uS4.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	D	207	Total	C	N	O	S	0	0
			1631	1017	313	299	2		

- Molecule 10 is a protein called Small ribosomal subunit protein uS5.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	E	155	Total	C	N	O	S	0	0
			1129	700	217	207	5		

- Molecule 11 is a protein called Small ribosomal subunit protein bS6.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	F	106	Total	C	N	O	S	0	0
			878	552	160	162	4		

- Molecule 12 is a protein called Small ribosomal subunit protein uS7.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	G	153	Total	C	N	O	S	0	0
			1210	758	229	216	7		

- Molecule 13 is a protein called Small ribosomal subunit protein uS8.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	H	130	Total	C	N	O	S	0	0
			985	615	177	187	6		

- Molecule 14 is a protein called Small ribosomal subunit protein uS9.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	I	127	Total	C	N	O	S	0	0
			995	621	198	175	1		

- Molecule 15 is a protein called Small ribosomal subunit protein uS10.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	J	100	Total	C	N	O	S	0	0
			801	500	150	148	3		

- Molecule 16 is a protein called Small ribosomal subunit protein uS11.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	K	117	Total	C	N	O	S	0	0
			862	535	166	160	1		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
K	118	IAS	ASN	conflict	UNP D0CD20

- Molecule 17 is a protein called Small ribosomal subunit protein uS12.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	L	122	Total	C	N	O	S	0	0
			947	581	193	167	6		

- Molecule 18 is a protein called Small ribosomal subunit protein uS13.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	M	116	Total	C	N	O	S	0	0
			912	564	186	159	3		

- Molecule 19 is a protein called Small ribosomal subunit protein uS14.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	N	100	Total	C	N	O	S	0	0
			792	493	158	137	4		

- Molecule 20 is a protein called Small ribosomal subunit protein uS15.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	O	88	Total	C	N	O	S	0	0
			705	434	144	126	1		

- Molecule 21 is a protein called Small ribosomal subunit protein bS16.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	P	82	Total	C	N	O	S	0	0
			644	403	128	112	1		

- Molecule 22 is a protein called Small ribosomal subunit protein uS17.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	Q	79	Total	C	N	O	S	0	0
			621	390	116	114	1		

- Molecule 23 is a protein called Small ribosomal subunit protein bS18.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	R	66	Total	C	N	O	S	0	0
			545	349	96	99	1		

- Molecule 24 is a protein called Small ribosomal subunit protein uS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	S	84	Total	C	N	O	S	0	0
			657	419	127	109	2		

- Molecule 25 is a protein called Small ribosomal subunit protein bS20.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	T	86	Total	C	N	O	S	0	0
			663	409	139	113	2		

- Molecule 26 is a RNA chain called tRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
26	V	77	Total	C	N	O	P	S	0	0
			1644	734	297	535	77	1		

- Molecule 27 is a RNA chain called Non Stop mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	W	10	Total	C	N	O	P	0	0
			219	97	41	71	10		

- Molecule 28 is a protein called Putative ribosomal subunit interface protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	X	104	Total	C	N	O	S	0	0
			841	519	161	158	3		

- Molecule 29 is a RNA chain called 23S rRNA (2890-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
29	a	2890	Total	C	N	O	P	0	0
			61984	27671	11335	20088	2890		

- Molecule 30 is a RNA chain called 5S rRNA (115-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
30	b	115	Total	C	N	O	P	0	0
			2450	1095	440	800	115		

- Molecule 31 is a protein called Large ribosomal subunit protein uL2.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	c	272	Total	C	N	O	S	0	0
			2111	1302	436	365	8		

- Molecule 32 is a protein called Large ribosomal subunit protein uL3.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	d	211	Total	C	N	O	S	0	0
			1573	973	297	300	3		

- Molecule 33 is a protein called Large ribosomal subunit protein uL4.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	e	199	Total	C	N	O	S	0	0
			1511	950	280	276	5		

- Molecule 34 is a protein called Large ribosomal subunit protein uL5.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	f	177	Total	C	N	O	S	0	0
			1395	886	250	251	8		

- Molecule 35 is a protein called Large ribosomal subunit protein uL6.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	g	175	Total	C	N	O	S	0	0
			1327	838	238	250	1		

- Molecule 36 is a protein called Large ribosomal subunit protein bL9.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	h	60	Total	C	N	O	S	0	0
			458	287	84	86	1		

- Molecule 37 is a protein called Large ribosomal subunit protein uL13.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	i	142	Total	C	N	O	S	0	0
			1125	718	200	203	4		

- Molecule 38 is a protein called Large ribosomal subunit protein uL14.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	j	122	Total	C	N	O	S	0	0
			946	592	180	169	5		

- Molecule 39 is a protein called Large ribosomal subunit protein uL15.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	k	146	Total	C	N	O	S	0	0
			1089	673	215	200	1		

- Molecule 40 is a protein called Large ribosomal subunit protein uL16.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	l	137	Total	C	N	O	S	0	0
			1088	687	210	185	6		

- Molecule 41 is a protein called Large ribosomal subunit protein bL17.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	m	119	Total 942	C 590	N 186	O 163	S 3	0	0

- Molecule 42 is a protein called Large ribosomal subunit protein uL18.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	n	115	Total 865	C 532	N 175	O 157	S 1	0	0

- Molecule 43 is a protein called Large ribosomal subunit protein bL19.

Mol	Chain	Residues	Atoms				AltConf	Trace
43	o	117	Total 919	C 578	N 177	O 164	0	0

- Molecule 44 is a protein called Large ribosomal subunit protein bL20.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	p	117	Total 934	C 589	N 197	O 146	S 2	0	0

- Molecule 45 is a protein called Large ribosomal subunit protein bL21.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	q	103	Total 807	C 506	N 155	O 143	S 3	0	0

- Molecule 46 is a protein called Large ribosomal subunit protein uL22.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	r	109	Total 826	C 514	N 158	O 150	S 4	0	0

- Molecule 47 is a protein called Large ribosomal subunit protein uL23.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	s	92	Total 717	C 457	N 129	O 130	S 1	0	0

- Molecule 48 is a protein called Large ribosomal subunit protein uL24.

Mol	Chain	Residues	Atoms				AltConf	Trace
48	t	103	Total 766	C 476	N 142	O 148	0	0

- Molecule 49 is a protein called Large ribosomal subunit protein bL25.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	u	97	Total 760	C 477	N 143	O 139	S 1	0	0

- Molecule 50 is a protein called Large ribosomal subunit protein bL27.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	v	78	Total 589	C 365	N 113	O 109	S 2	0	0

- Molecule 51 is a protein called Large ribosomal subunit protein bL28.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	w	77	Total 632	C 395	N 130	O 105	S 2	0	0

- Molecule 52 is a protein called Large ribosomal subunit protein uL29.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	x	62	Total 498	C 308	N 96	O 93	S 1	0	0

- Molecule 53 is a protein called Large ribosomal subunit protein uL30.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	y	58	Total 463	C 286	N 88	O 85	S 4	0	0

- Molecule 54 is a protein called Large ribosomal subunit protein bL32.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	z	54	Total 447	C 265	N 100	O 81	S 1	0	0

- Molecule 55 is POTASSIUM ION (CCD ID: K) (formula: K).

Mol	Chain	Residues	Atoms	AltConf
55	1	1	Total K 1 1	0
55	A	45	Total K 45 45	0
55	E	1	Total K 1 1	0
55	L	2	Total K 2 2	0
55	a	111	Total K 111 111	0
55	b	1	Total K 1 1	0
55	c	5	Total K 5 5	0
55	d	1	Total K 1 1	0
55	e	1	Total K 1 1	0
55	t	1	Total K 1 1	0

- Molecule 56 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms	AltConf
56	3	1	Total Zn 1 1	0
56	4	1	Total Zn 1 1	0

- Molecule 57 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms	AltConf
57	A	95	Total Mg 95 95	0
57	J	1	Total Mg 1 1	0
57	K	1	Total Mg 1 1	0
57	X	1	Total Mg 1 1	0
57	a	252	Total Mg 252 252	0
57	b	5	Total Mg 5 5	0

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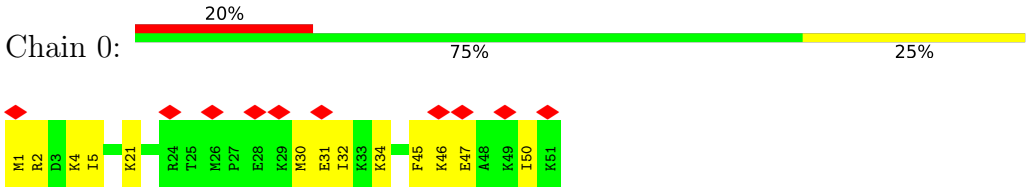
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Mol	Chain	Residues	Atoms	AltConf
57	c	1	Total Mg 1 1	0
57	d	1	Total Mg 1 1	0
57	k	1	Total Mg 1 1	0
57	v	1	Total Mg 1 1	0
57	z	1	Total Mg 1 1	0

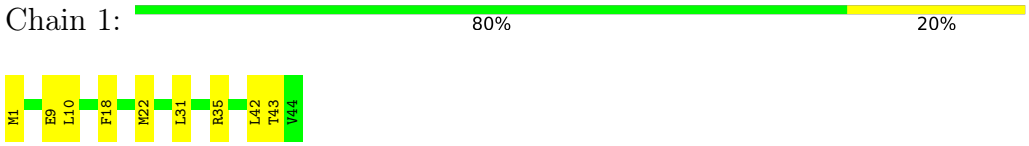
3 Residue-property plots (i)

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

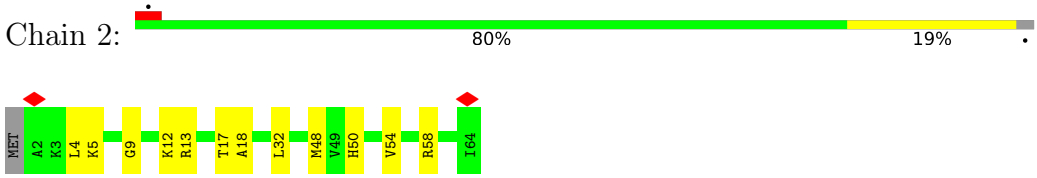
• Molecule 1: Large ribosomal subunit protein bL33



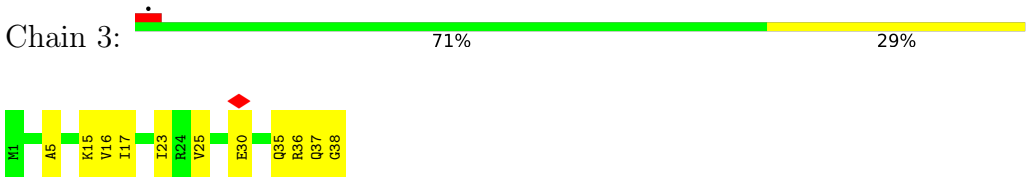
• Molecule 2: Large ribosomal subunit protein bL34



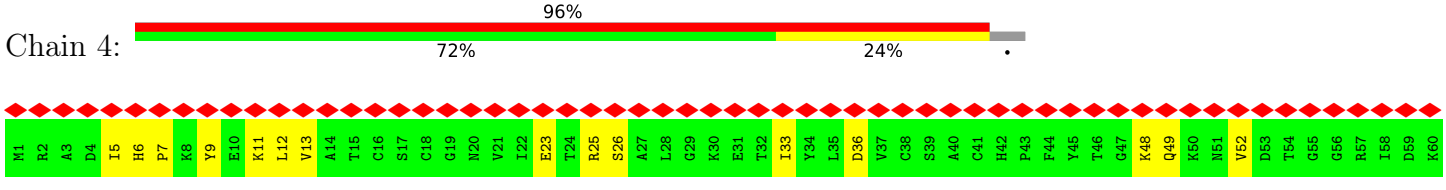
• Molecule 3: Large ribosomal subunit protein bL35

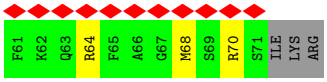


• Molecule 4: Large ribosomal subunit protein bL36



• Molecule 5: Large ribosomal subunit protein bL31

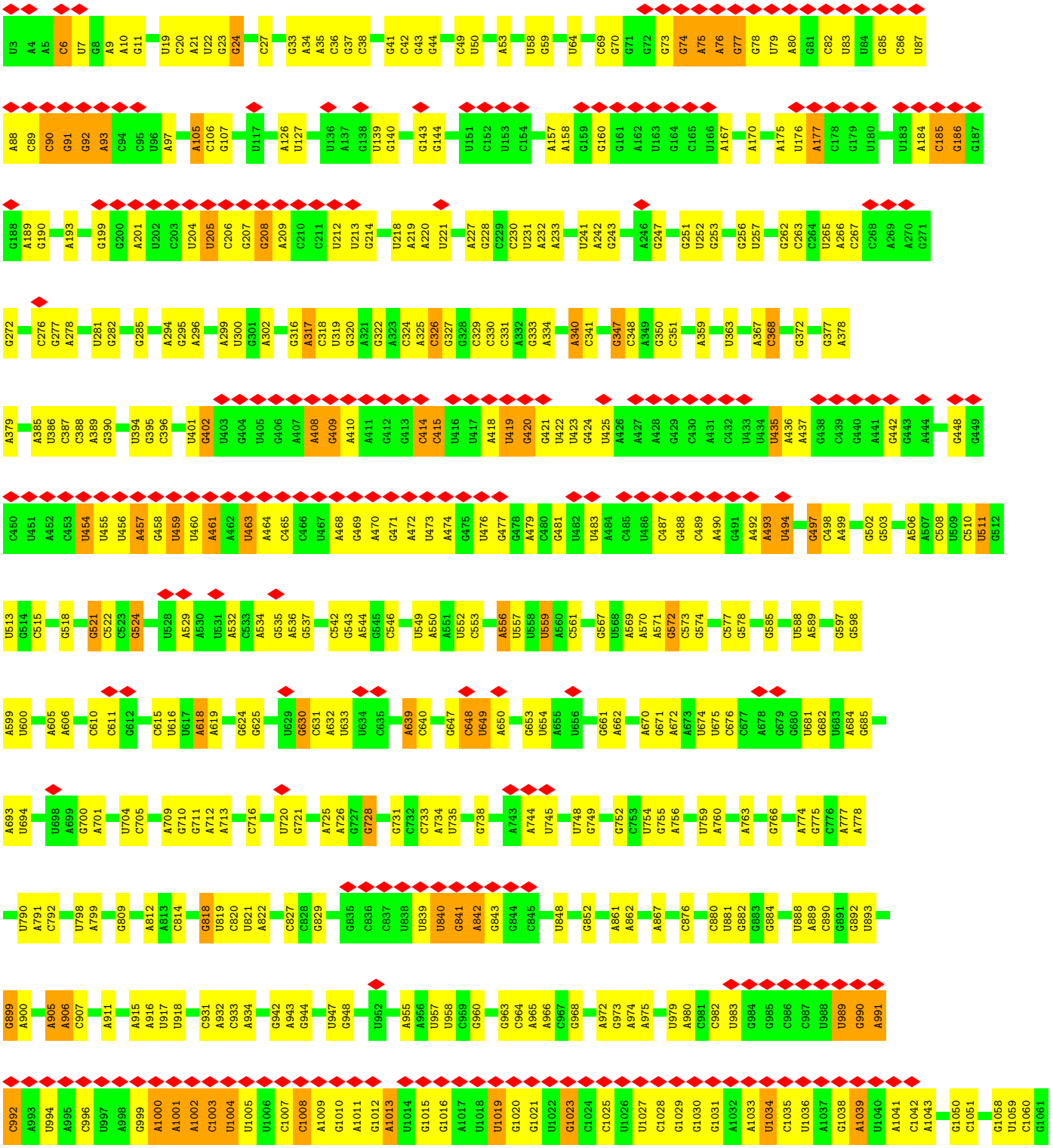


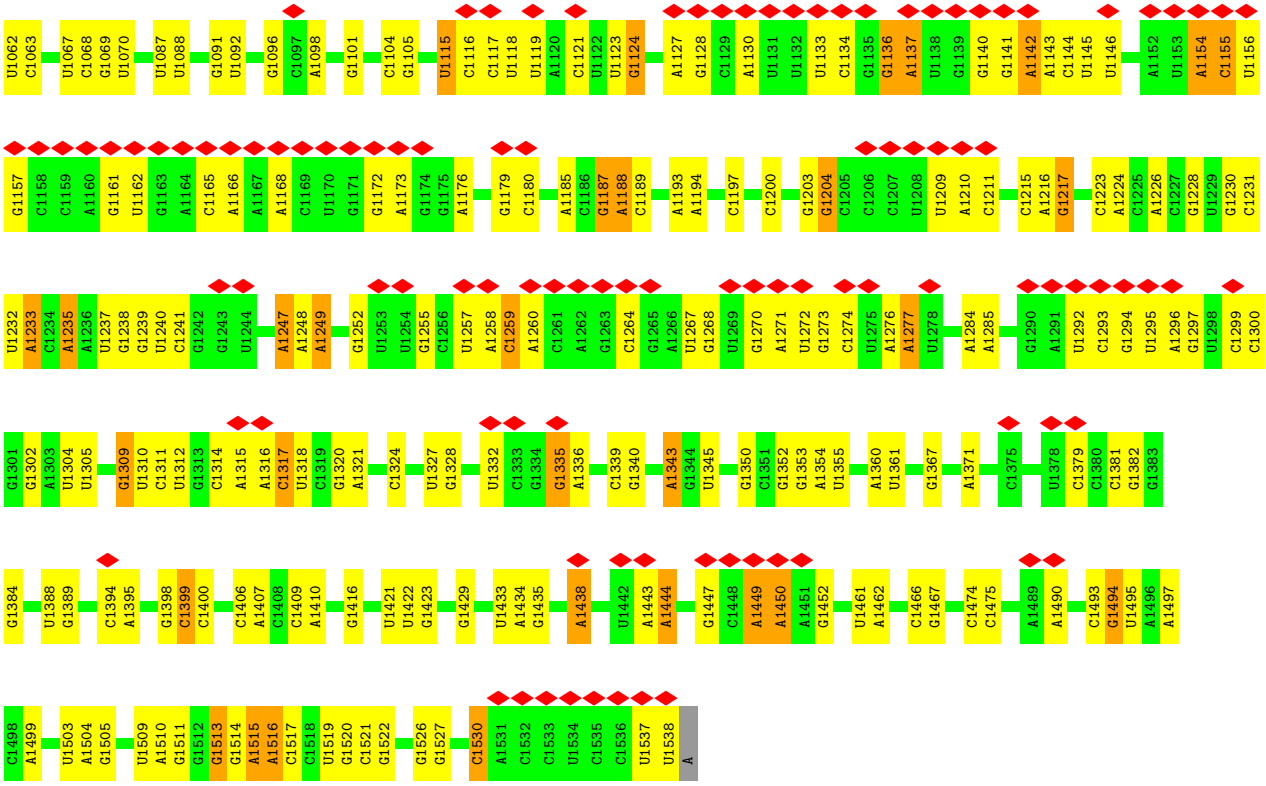


• Molecule 6: 16S rRNA (1536-MER)

Chain A:

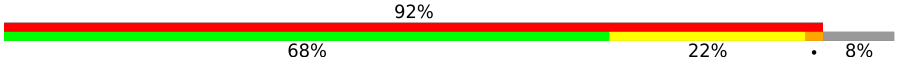


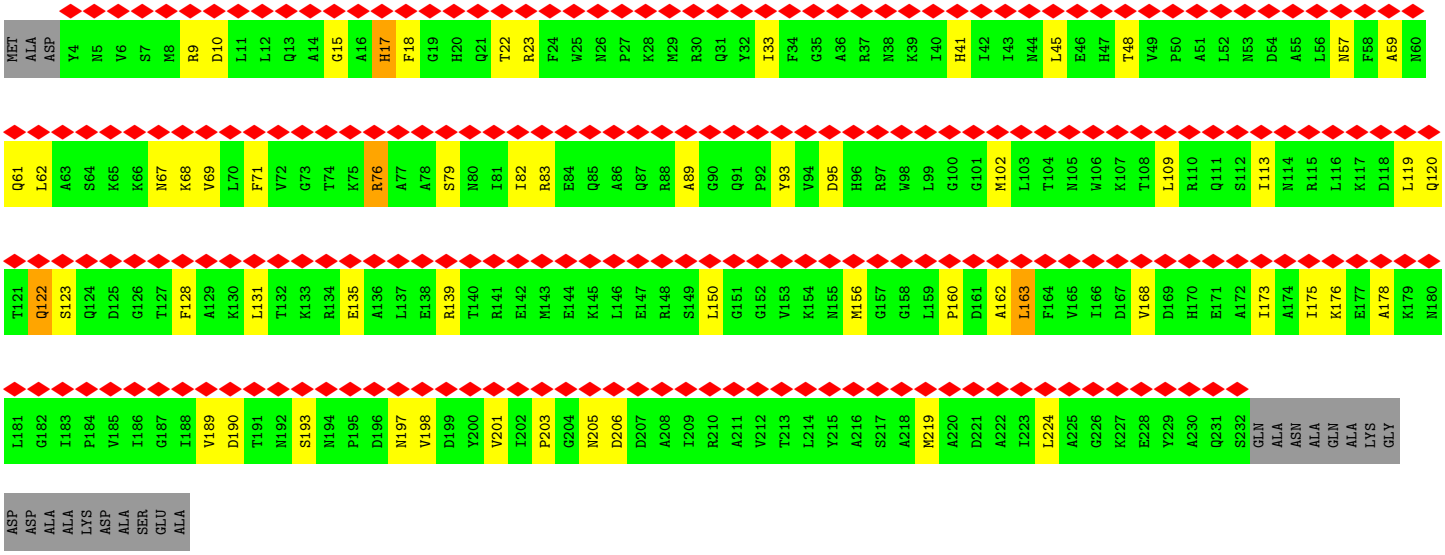




• Molecule 7: Small ribosomal subunit protein uS2

Chain B:

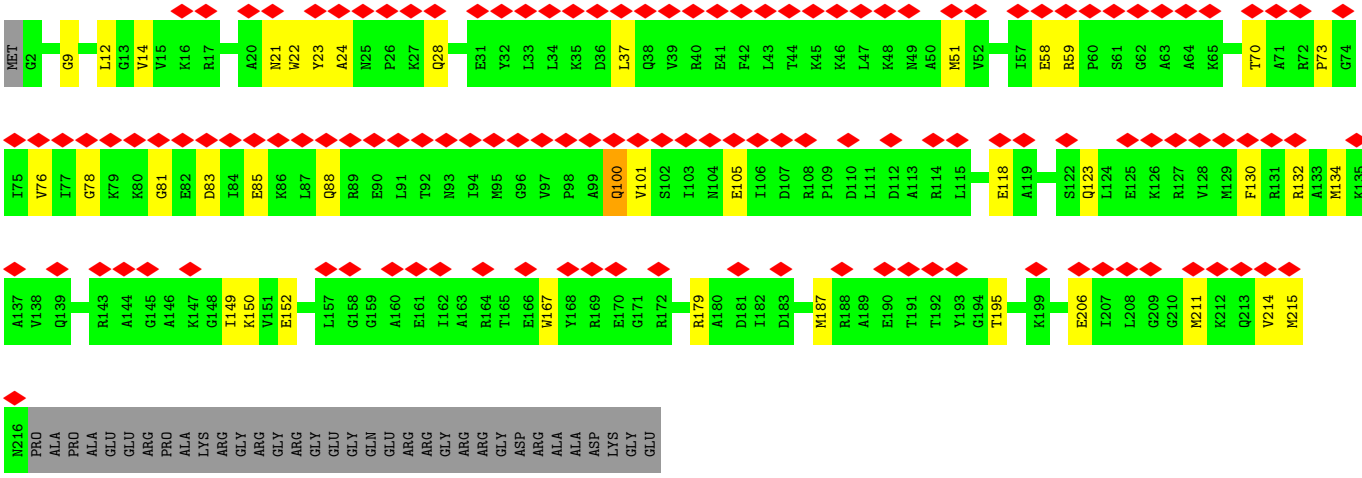




• Molecule 8: Small ribosomal subunit protein uS3

Chain C:

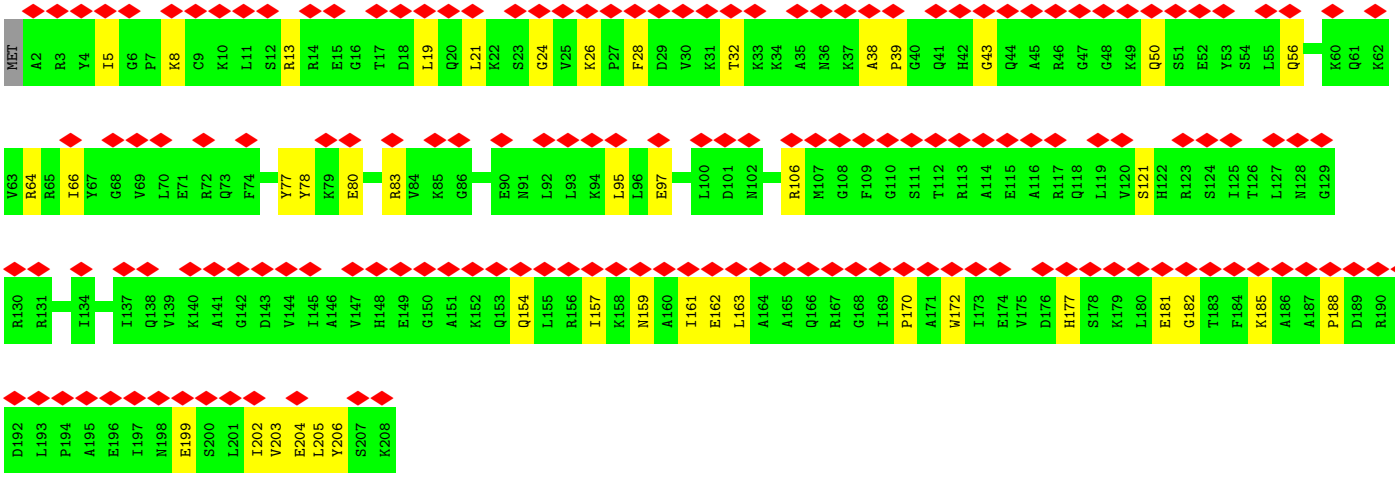




• Molecule 9: Small ribosomal subunit protein uS4

Chain D:

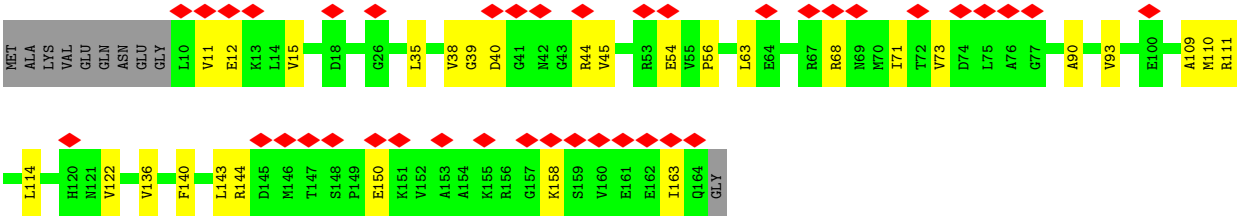




• Molecule 10: Small ribosomal subunit protein uS5

Chain E:

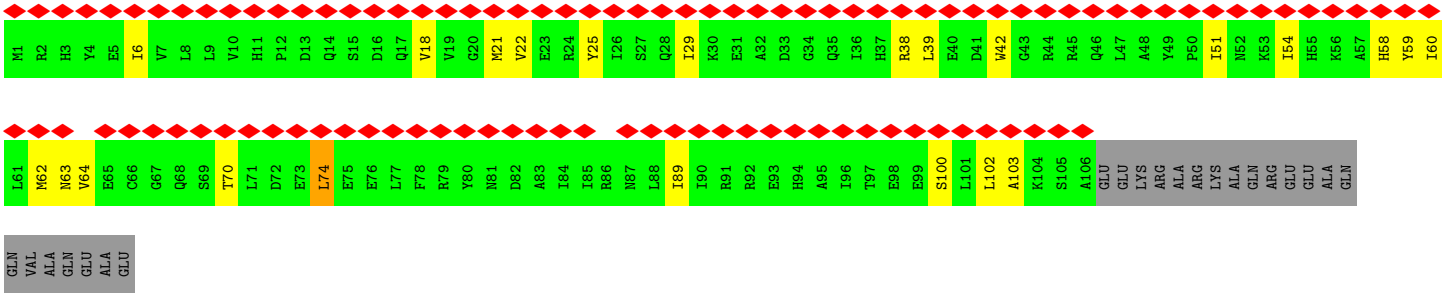




• Molecule 11: Small ribosomal subunit protein bS6

Chain F:

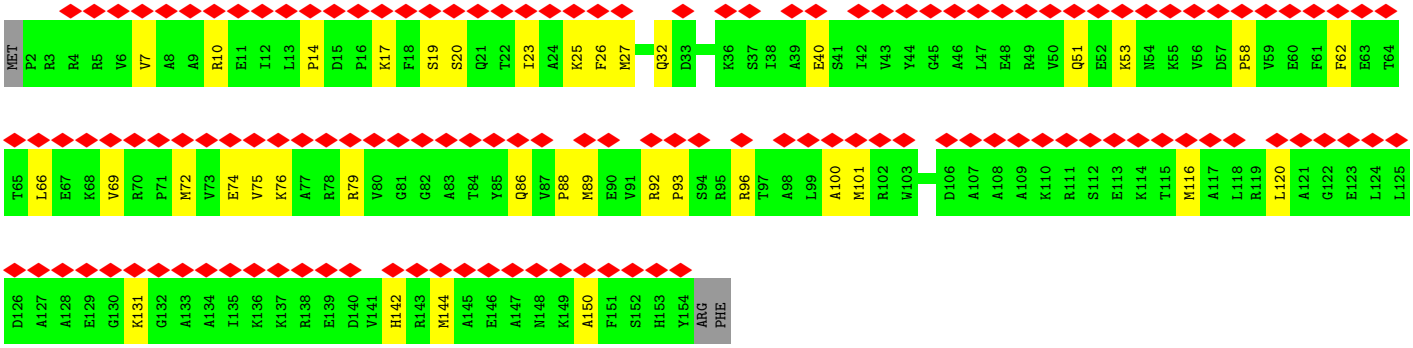




• Molecule 12: Small ribosomal subunit protein uS7

Chain G:

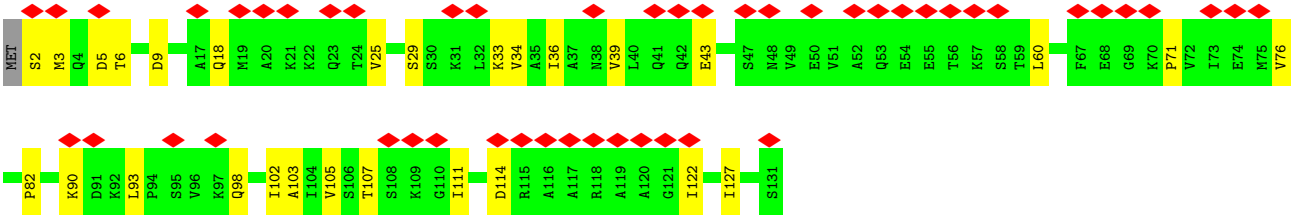




• Molecule 13: Small ribosomal subunit protein uS8

Chain H:

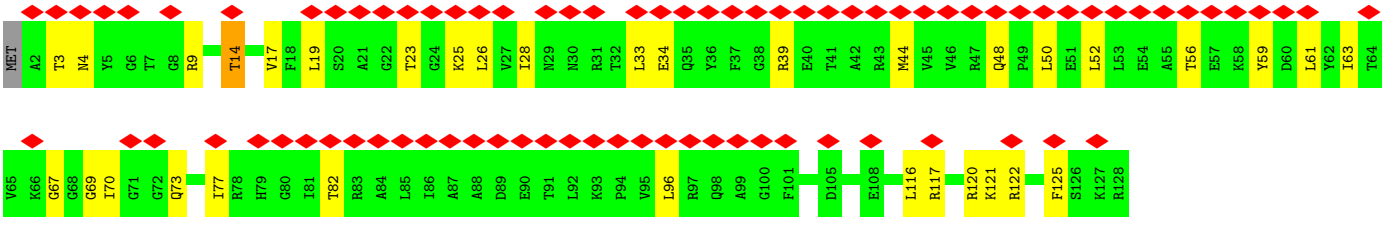




• Molecule 14: Small ribosomal subunit protein uS9

Chain I:

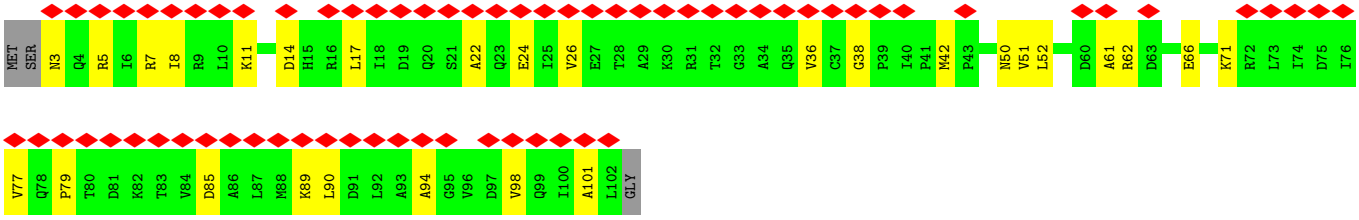




• Molecule 15: Small ribosomal subunit protein uS10

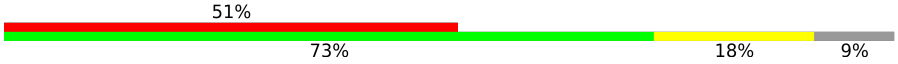
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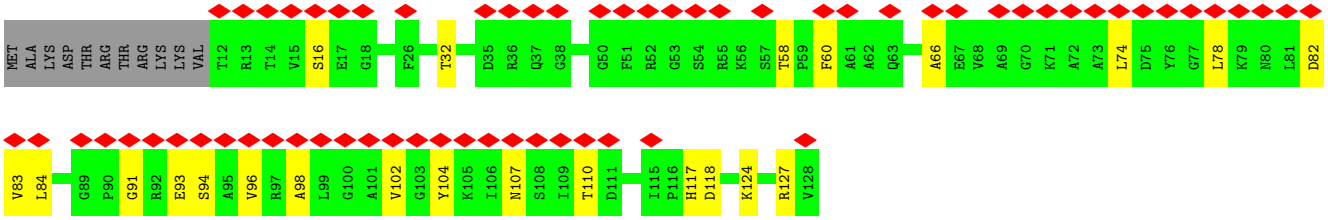




• Molecule 16: Small ribosomal subunit protein uS11

Chain K:

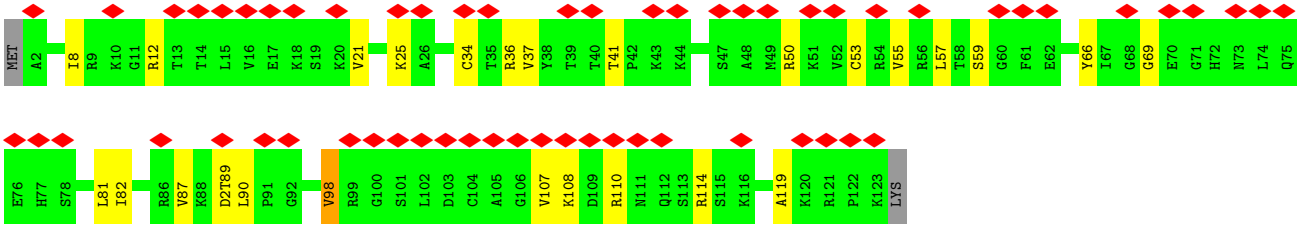




• Molecule 17: Small ribosomal subunit protein uS12

Chain L:

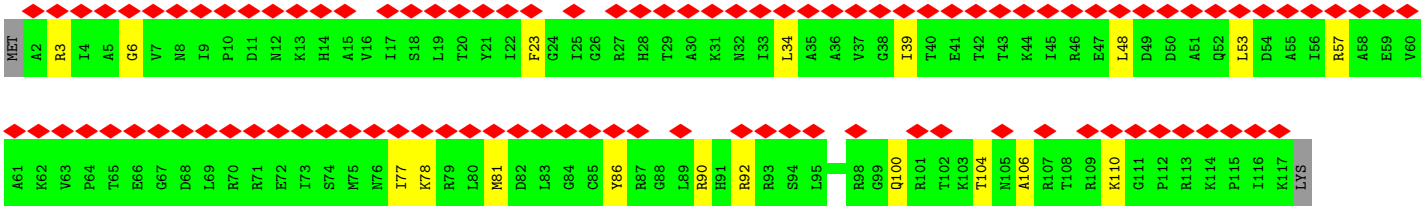




• Molecule 18: Small ribosomal subunit protein uS13

Chain M:

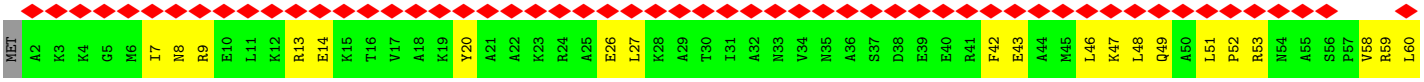


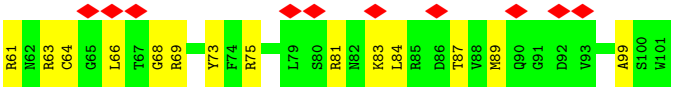


• Molecule 19: Small ribosomal subunit protein uS14

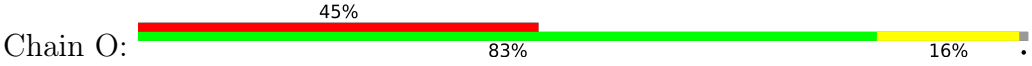
Chain N:

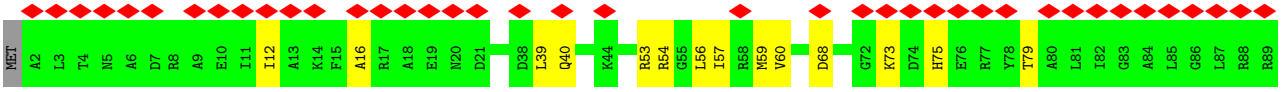




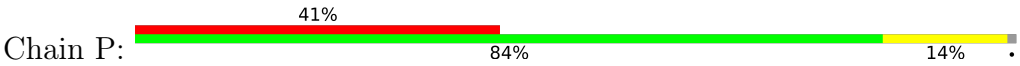


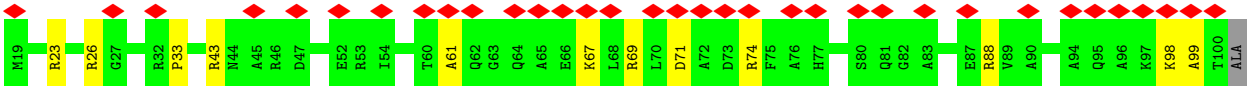
• Molecule 20: Small ribosomal subunit protein uS15





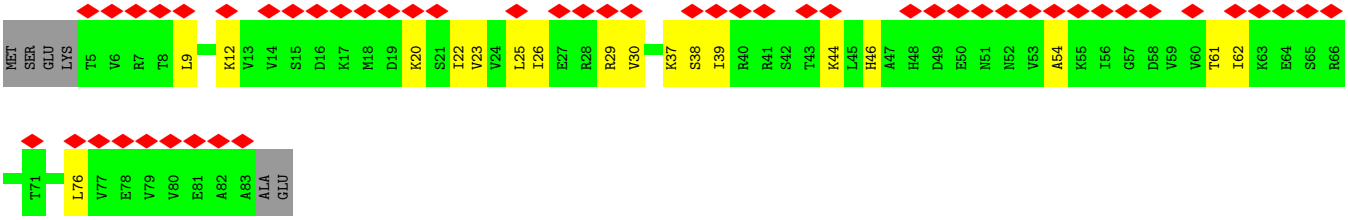
• Molecule 21: Small ribosomal subunit protein bS16



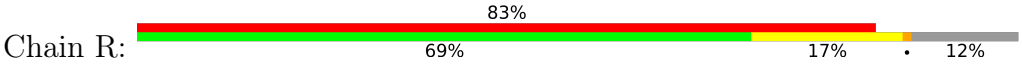


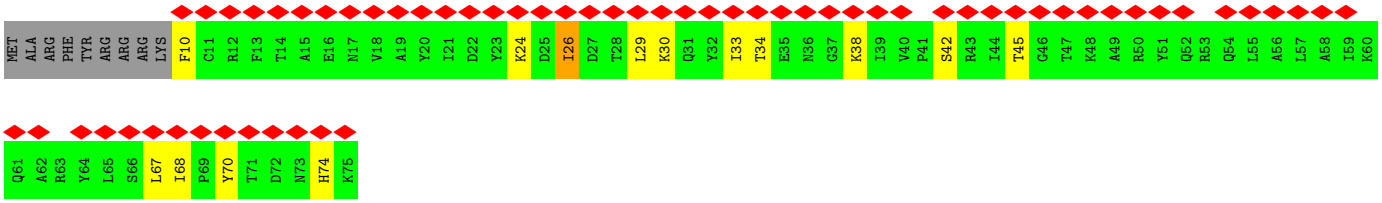
• Molecule 22: Small ribosomal subunit protein uS17



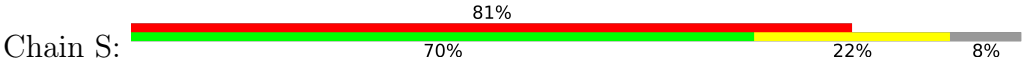


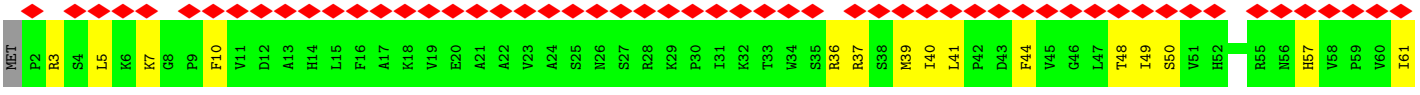
• Molecule 23: Small ribosomal subunit protein bS18

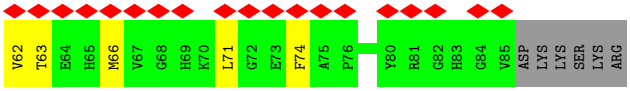




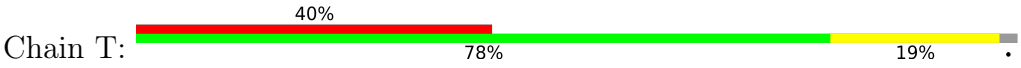
• Molecule 24: Small ribosomal subunit protein uS19

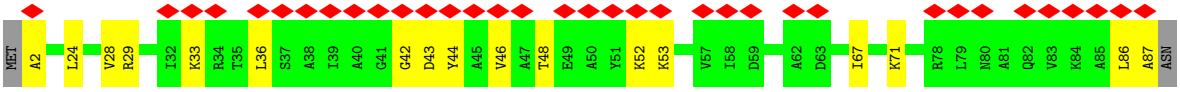






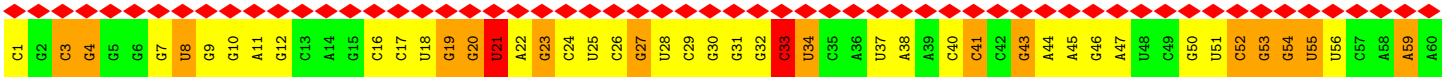
• Molecule 25: Small ribosomal subunit protein bS20





• Molecule 26: tRNA

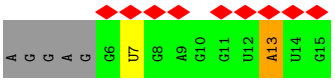




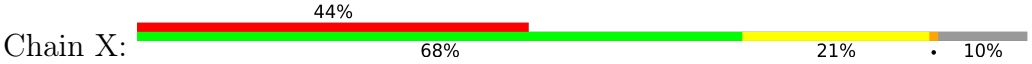


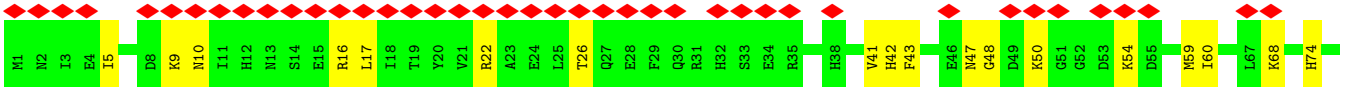
• Molecule 27: Non Stop mRNA

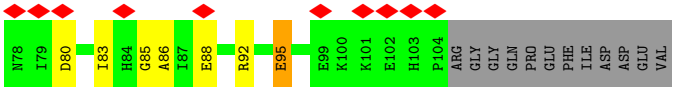




• Molecule 28: Putative ribosomal subunit interface protein

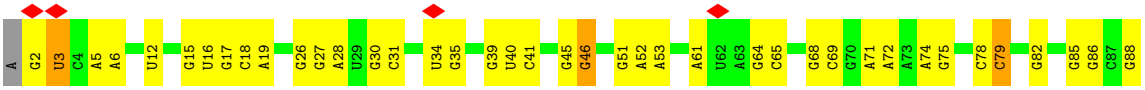


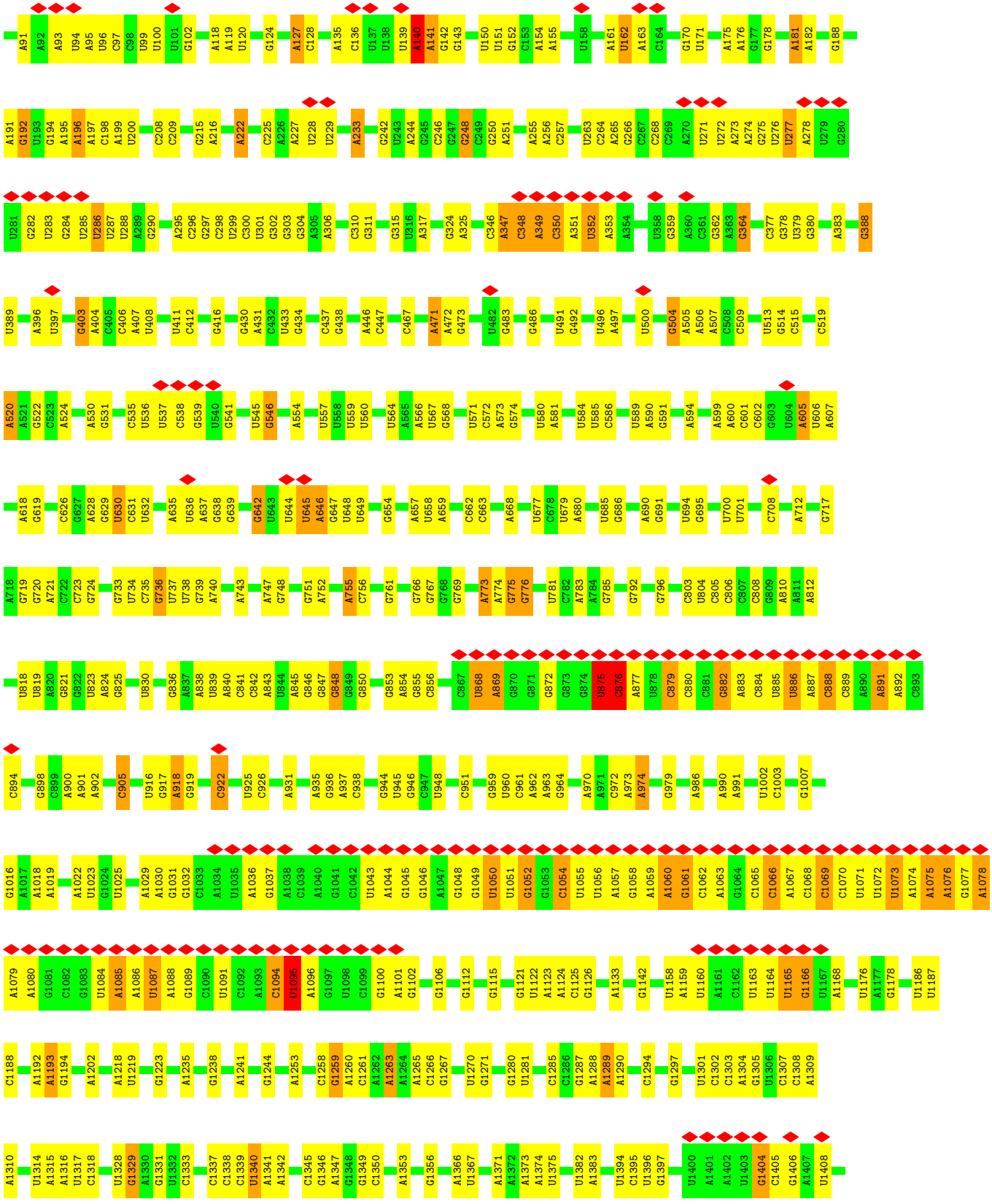


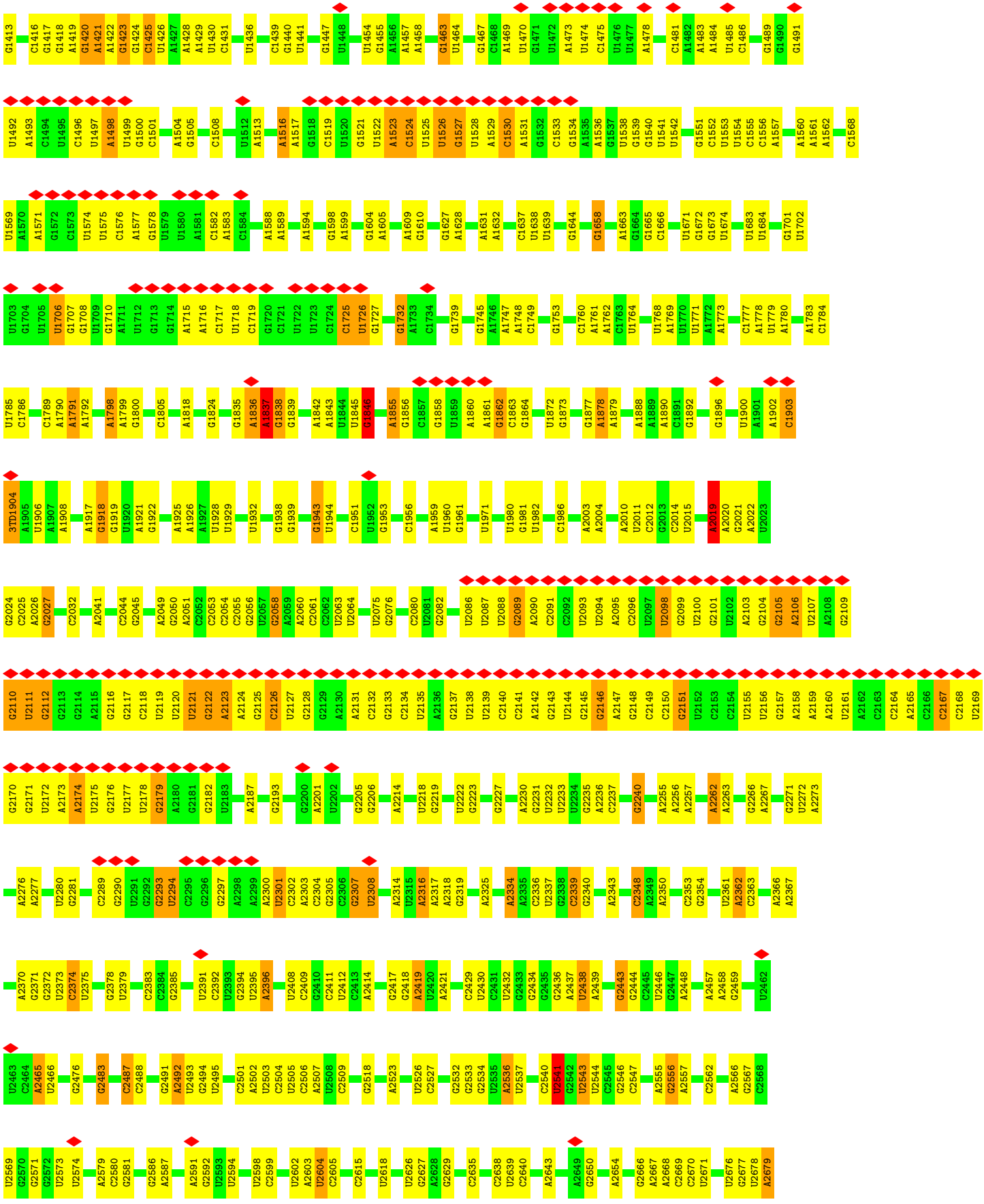


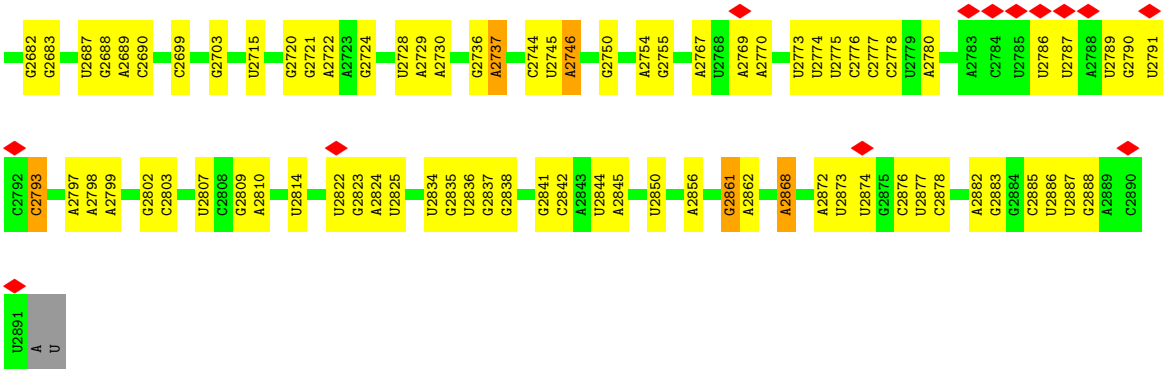
• Molecule 29: 23S rRNA (2890-MER)






A91 A92 A93 U94 A95 U96 C97 C98 U99 U100 U101 G102 A118 A119 U120 G124 A127 C128 A135 C136 U137 U138 U139 A140 A141 G142 G143 U150 U151 G152 C153 A154 A155 U158 A161 U162 A163 C164 G170 U171 A175 A176 G177 G178 A181 A182 G188
A191 G192 U193 G194 A195 A196 A197 C198 A199 U200 C208 C209 G215 A216 A222 C225 A226 A227 U228 U229 A233 G242 U243 A244 G245 C246 G247 G248 C249 G250 A251 A255 A256 C257 U263 C264 A265 C266 C267 C268 C269 A270 U271 U272 A273 A274 G275 U276 U277 A278 U279 G280
U281 G282 U283 G284 U285 U286 U287 U288 A289 G290 A295 C296 G297 C298 U299 C300 U301 G302 G303 G304 A305 A306 C310 G311 G315 U316 A317 G324 A325 C346 A347 C348 A349 C350 A351 U352 A353 A354 U358 G359 A360 C361 G362 A363 G364 C377 G378 U379 G380 A383 G388
U389 A396 U397 G403 A404 C405 C406 A407 U408 U411 C412 G416 G430 A431 C432 U433 G434 C437 G438 A446 C447 C467 A471 A472 G473 U482 G483 G486 U491 G492 U496 A497 U500 G504 A505 A506 A507 C508 C509 U513 G514 C515 C519
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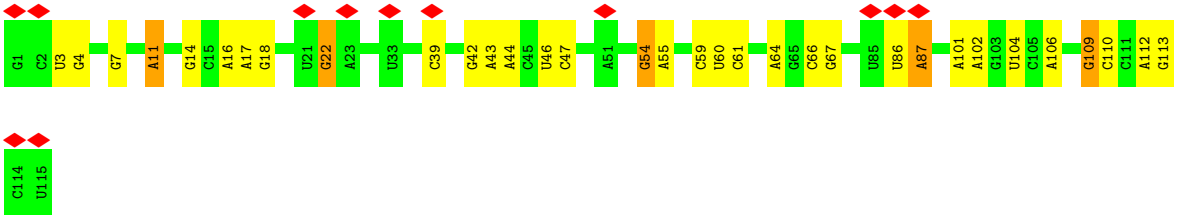

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• Molecule 30: 5S rRNA (115-MER)

Chain b:

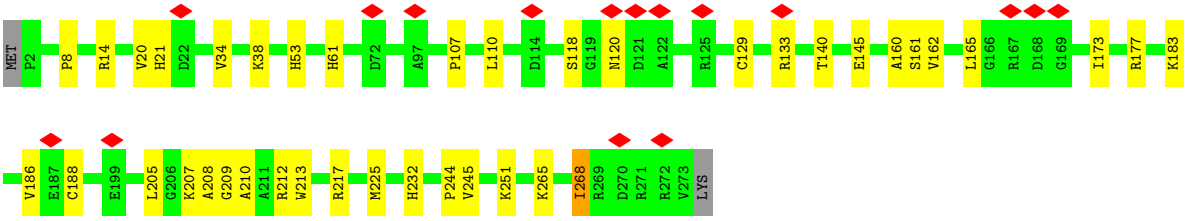




• Molecule 31: Large ribosomal subunit protein uL2

Chain c:

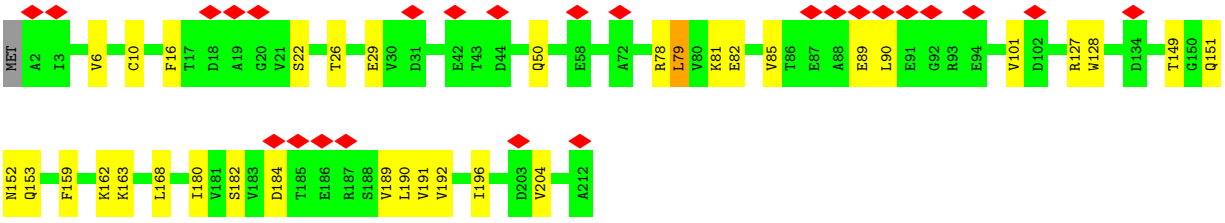




• Molecule 32: Large ribosomal subunit protein uL3

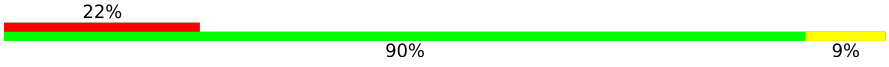
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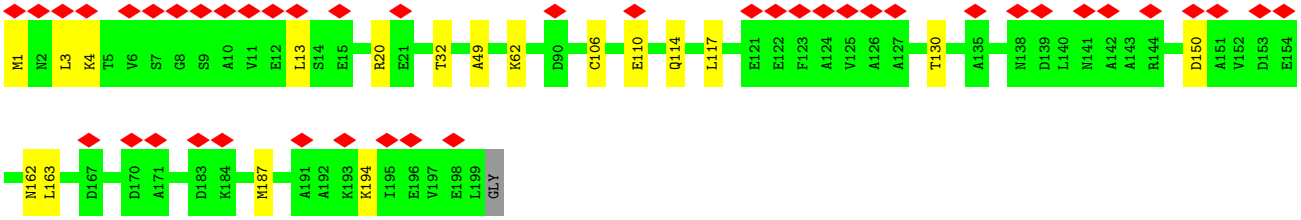




• Molecule 33: Large ribosomal subunit protein uL4

Chain e:

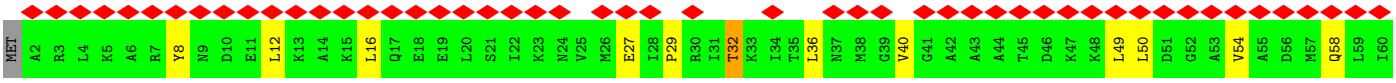


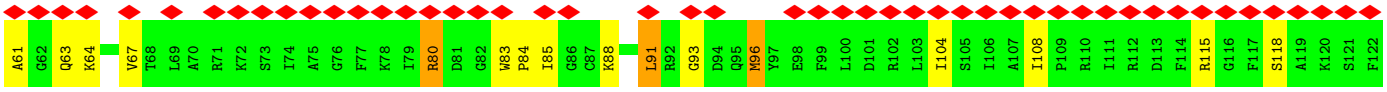


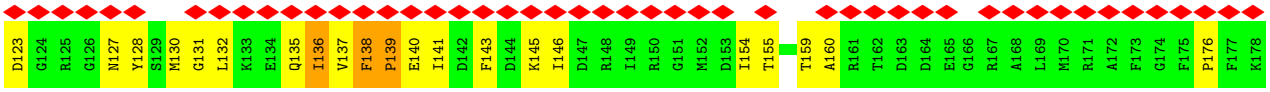
• Molecule 34: Large ribosomal subunit protein uL5

Chain f:





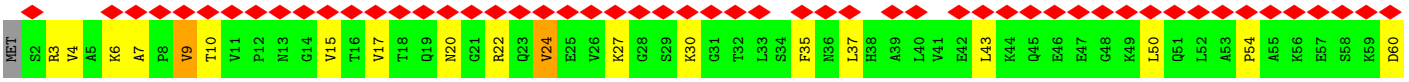


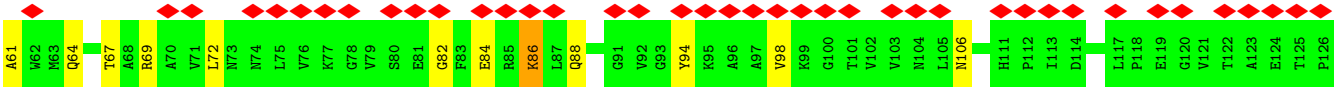


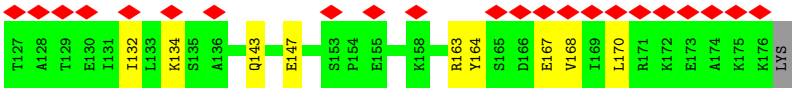
• Molecule 35: Large ribosomal subunit protein uL6

Chain g:





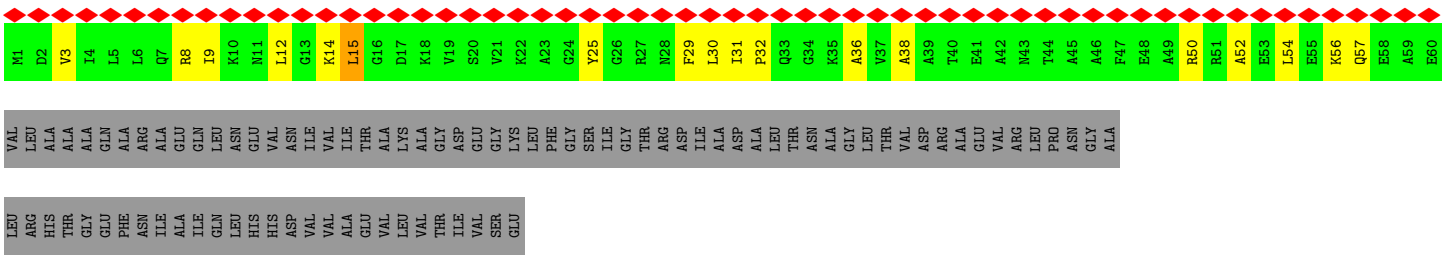




• Molecule 36: Large ribosomal subunit protein bL9

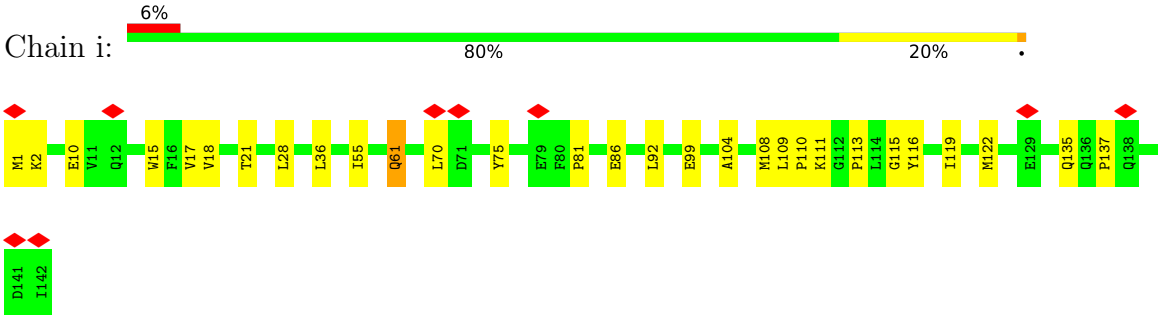
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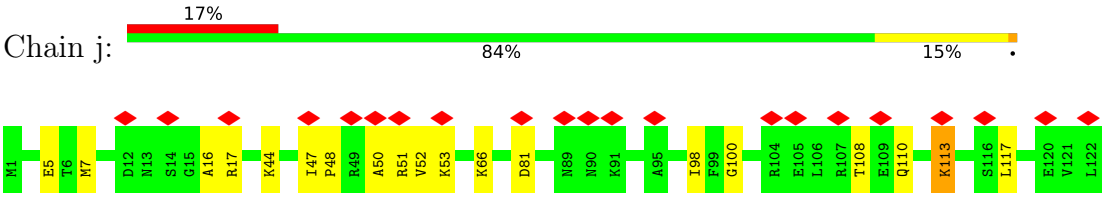
• Molecule 37: Large ribosomal subunit protein uL13

Chain i:



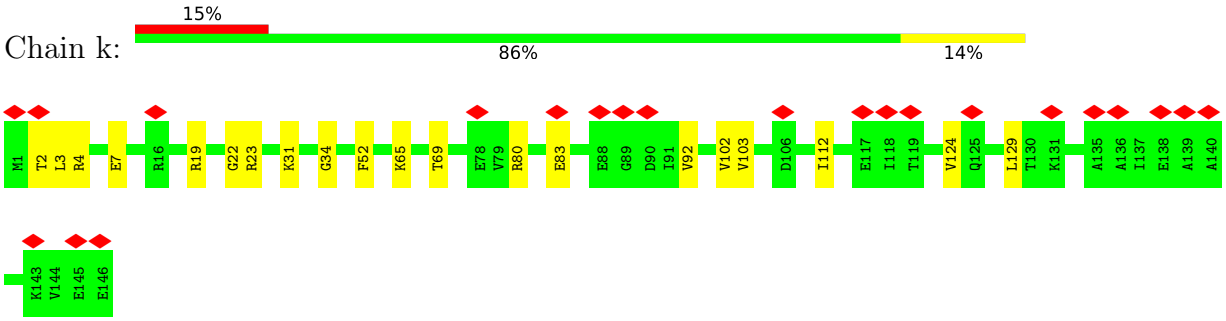
• Molecule 38: Large ribosomal subunit protein uL14

Chain j:



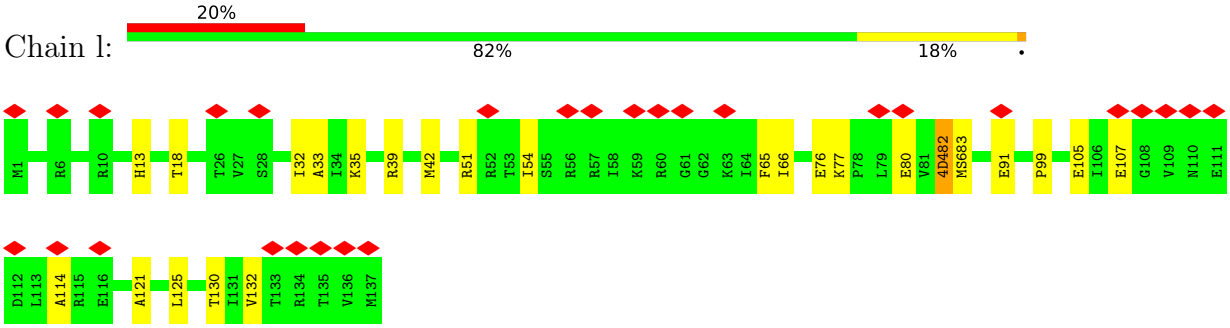
• Molecule 39: Large ribosomal subunit protein uL15

Chain k:



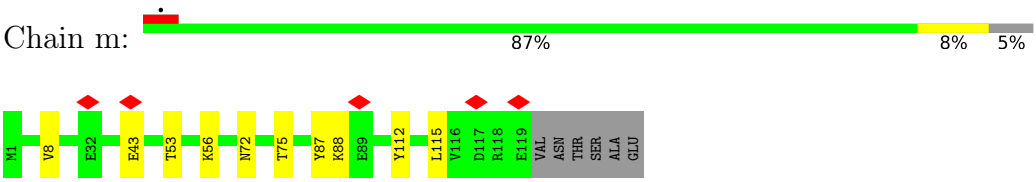
• Molecule 40: Large ribosomal subunit protein uL16

Chain l:



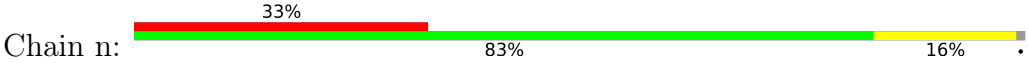
• Molecule 41: Large ribosomal subunit protein bL17

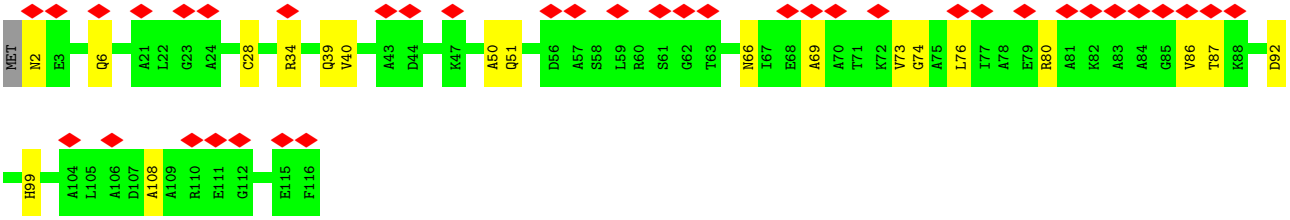
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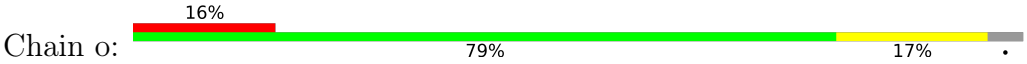
• Molecule 42: Large ribosomal subunit protein uL18

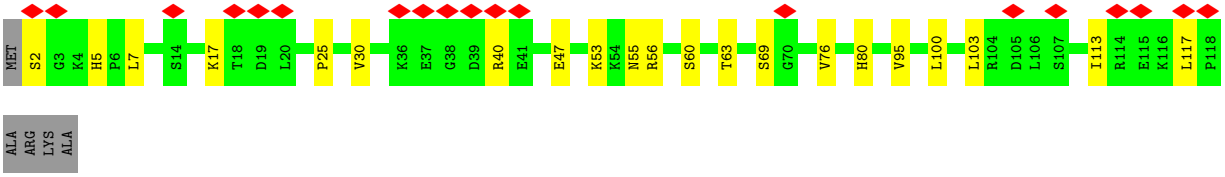
Chain n:



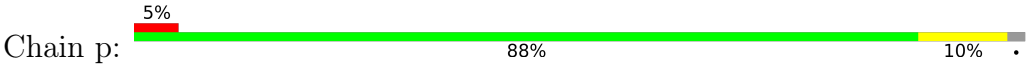


• Molecule 43: Large ribosomal subunit protein bL19



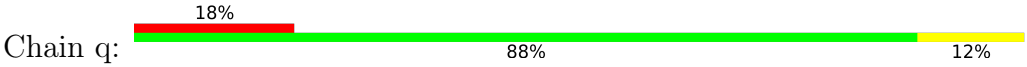


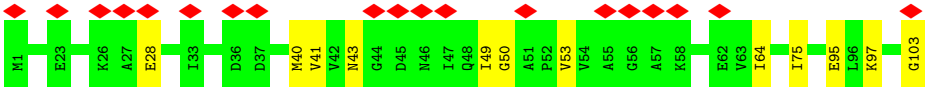
• Molecule 44: Large ribosomal subunit protein bL20



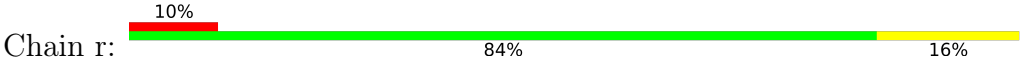


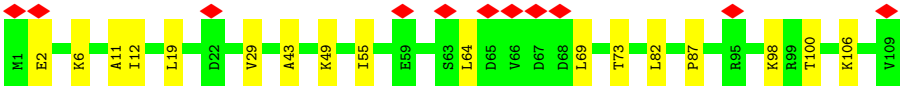
• Molecule 45: Large ribosomal subunit protein bL21



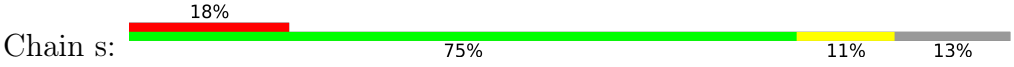


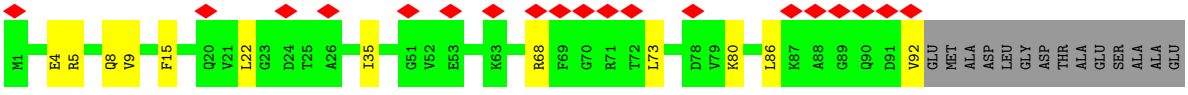
• Molecule 46: Large ribosomal subunit protein uL22





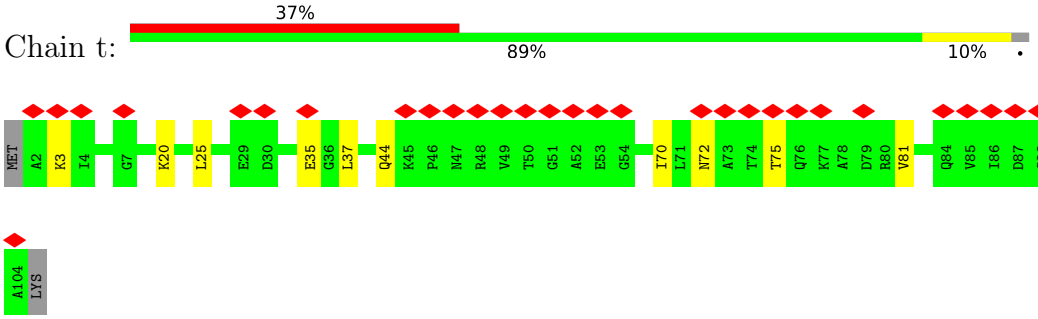
• Molecule 47: Large ribosomal subunit protein uL23





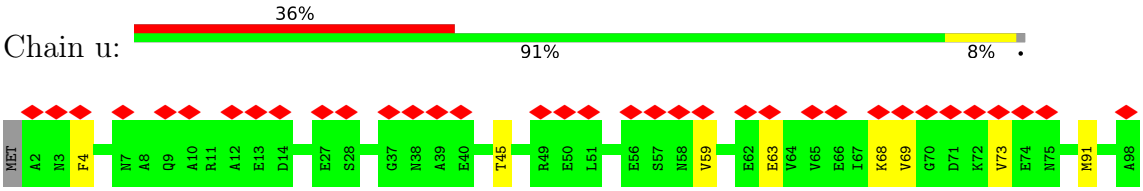
• Molecule 48: Large ribosomal subunit protein uL24

Chain t:



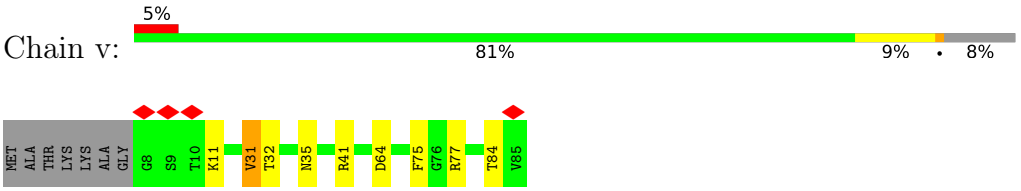
• Molecule 49: Large ribosomal subunit protein bL25

Chain u:



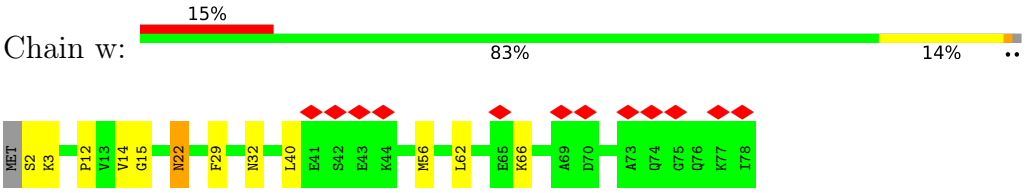
• Molecule 50: Large ribosomal subunit protein bL27

Chain v:



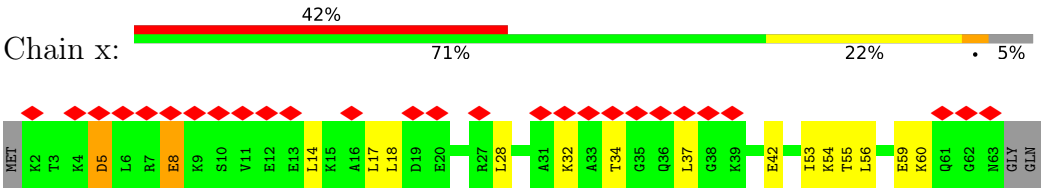
• Molecule 51: Large ribosomal subunit protein bL28

Chain w:



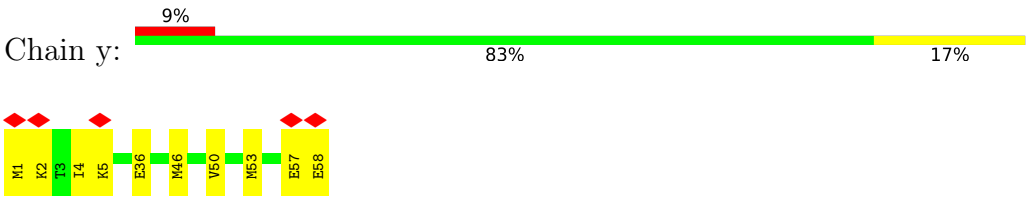
• Molecule 52: Large ribosomal subunit protein uL29

Chain x:



• Molecule 53: Large ribosomal subunit protein uL30

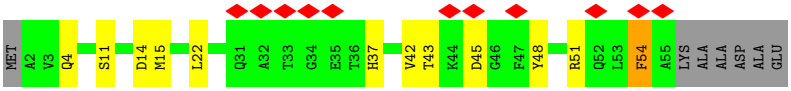
Chain y:



• Molecule 54: Large ribosomal subunit protein bL32

Chain z:




MET
A2
V3
Q4
S11
D14
M15
L22
Q31
A32
T33
G34
E35
T36
H37
V42
T43
K44
D45
G46
F47
Y48
R51
Q52
L53
F54
A55
LYS
ALA
ALA
ASP
ALA
GLU

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	106853	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 ($e^-/Å^2$)	35	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	81000	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	2.403	Depositor
Minimum map value	-1.048	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.063	Depositor
Recommended contour level	0.45	Depositor
Map size (Å)	542.72, 542.72, 542.72	wwPDB
Map dimensions	512, 512, 512	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.06, 1.06, 1.06	Depositor

5 Model quality (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: OMG, H2U, MEQ, MS6, OMC, 1MG, IAS, 2MA, MG, K, 2MG, 5MC, 4OC, PSU, 6MZ, 4SU, ZN, G7M, 3TD, MA6, D2T, OMU, UR3, 4D4, 5MU

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	0.21	0/434	0.38	0/573
2	1	0.24	0/367	0.30	0/481
3	2	0.22	0/515	0.34	0/678
4	3	0.22	0/296	0.33	0/389
5	4	0.14	0/561	0.38	0/750
6	A	0.40	0/36630	0.75	5/57129 (0.0%)
7	B	0.14	0/1832	0.34	0/2474
8	C	0.17	0/1714	0.34	0/2304
9	D	0.15	0/1653	0.32	0/2213
10	E	0.20	0/1141	0.37	0/1537
11	F	0.14	0/893	0.34	0/1204
12	G	0.13	0/1229	0.26	0/1647
13	H	0.18	0/993	0.32	0/1331
14	I	0.16	0/1006	0.31	0/1346
15	J	0.17	0/811	0.33	0/1096
16	K	0.17	0/869	0.34	0/1175
17	L	0.17	0/949	0.39	0/1270
18	M	0.15	0/922	0.33	0/1237
19	N	0.15	0/803	0.32	0/1071
20	O	0.16	0/715	0.29	0/958
21	P	0.17	0/655	0.36	0/879
22	Q	0.16	0/628	0.34	0/847
23	R	0.17	0/555	0.32	0/749
24	S	0.14	0/675	0.32	0/912
25	T	0.18	0/669	0.27	0/892
26	V	0.28	0/1724	0.81	1/2687 (0.0%)
27	W	0.29	0/245	0.74	0/381
28	X	0.18	0/858	0.33	0/1150
29	a	0.51	0/68962	0.77	29/107563 (0.0%)
30	b	0.41	0/2739	0.74	0/4266
31	c	0.22	0/2152	0.31	0/2891

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
32	d	0.22	0/1580	0.33	0/2127
33	e	0.21	0/1532	0.29	0/2068
34	f	0.20	0/1415	0.47	0/1895
35	g	0.15	0/1346	0.27	0/1818
36	h	0.13	0/461	0.36	0/616
37	i	0.21	0/1151	0.32	0/1551
38	j	0.21	0/956	0.31	0/1286
39	k	0.21	0/1097	0.30	0/1461
40	l	0.18	0/1084	0.28	0/1448
41	m	0.22	0/956	0.33	0/1282
42	n	0.18	0/873	0.29	0/1167
43	o	0.20	0/931	0.32	0/1249
44	p	0.23	0/947	0.32	0/1262
45	q	0.22	0/818	0.35	0/1094
46	r	0.21	0/831	0.36	0/1113
47	s	0.19	0/723	0.31	0/967
48	t	0.17	0/770	0.27	0/1034
49	u	0.17	0/770	0.30	0/1036
50	v	0.21	0/597	0.28	0/798
51	w	0.22	0/642	0.30	0/856
52	x	0.17	0/499	0.36	0/662
53	y	0.21	0/468	0.32	0/624
54	z	0.23	0/453	0.32	0/604
All	All	0.41	0/155095	0.68	35/232098 (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
40	l	0	1

There are no bond length outliers.

The worst 5 of 35 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
29	a	1301	U	C2-N1-C1'	7.28	126.43	117.70
29	a	875	U	N3-C2-O2	-7.24	117.13	122.20
6	A	415	C	N3-C2-O2	-6.94	117.04	121.90
29	a	781	U	C2-N1-C1'	6.20	125.14	117.70
29	a	1837	A	O4'-C1'-N9	6.10	113.08	108.20

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
40	l	82	4D4	Mainchain

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	0	427	0	462	11	0
2	1	363	0	401	10	0
3	2	509	0	566	11	0
4	3	295	0	326	7	0
5	4	552	0	552	15	0
6	A	32947	0	16583	362	0
7	B	1801	0	1814	33	0
8	C	1690	0	1774	24	0
9	D	1631	0	1691	29	0
10	E	1129	0	1173	17	0
11	F	878	0	878	15	0
12	G	1210	0	1255	29	0
13	H	985	0	1047	15	0
14	I	995	0	1053	22	0
15	J	801	0	832	22	0
16	K	862	0	873	16	0
17	L	947	0	997	18	0
18	M	912	0	975	14	0
19	N	792	0	833	23	0
20	O	705	0	712	5	0
21	P	644	0	655	10	0
22	Q	621	0	665	9	0
23	R	545	0	556	14	0
24	S	657	0	675	17	0
25	T	663	0	714	11	0
26	V	1644	0	842	40	0
27	W	219	0	108	1	0
28	X	841	0	824	17	0
29	a	61984	0	31153	565	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
30	b	2450	0	1241	21	0
31	c	2111	0	2174	22	0
32	d	1573	0	1612	18	0
33	e	1511	0	1566	11	0
34	f	1395	0	1450	34	0
35	g	1327	0	1386	22	0
36	h	458	0	480	8	0
37	i	1125	0	1148	18	0
38	j	946	0	1007	17	0
39	k	1089	0	1158	14	0
40	l	1088	0	1150	15	0
41	m	942	0	987	5	0
42	n	865	0	905	10	0
43	o	919	0	973	13	0
44	p	934	0	997	7	0
45	q	807	0	842	7	0
46	r	826	0	894	11	0
47	s	717	0	777	7	0
48	t	766	0	816	6	0
49	u	760	0	783	4	0
50	v	589	0	592	5	0
51	w	632	0	667	10	0
52	x	498	0	537	10	0
53	y	463	0	488	5	0
54	z	447	0	435	8	0
55	1	1	0	0	0	0
55	A	45	0	0	0	0
55	E	1	0	0	0	0
55	L	2	0	0	0	0
55	a	111	0	0	1	0
55	b	1	0	0	0	0
55	c	5	0	0	0	0
55	d	1	0	0	0	0
55	e	1	0	0	0	0
55	t	1	0	0	0	0
56	3	1	0	0	0	0
56	4	1	0	0	0	0
57	A	95	0	0	0	0
57	J	1	0	0	0	0
57	K	1	0	0	0	0
57	X	1	0	0	0	0
57	a	252	0	0	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
57	b	5	0	0	0	0
57	c	1	0	0	0	0
57	d	1	0	0	0	0
57	k	1	0	0	0	0
57	v	1	0	0	0	0
57	z	1	0	0	0	0
All	All	144018	0	96054	1569	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 7.

The worst 5 of 1569 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)
26:V:51:U:H3	26:V:65:G:H1	1.02	0.99
29:a:2125:G:H1	29:a:2144:U:H3	1.06	0.96
29:a:140:A:HO2'	29:a:141:A:H8	1.06	0.93
6:A:905:A:HO2'	6:A:906:A:H8	1.07	0.93
13:H:3:MET:HE1	13:H:9:ASP:HB2	1.52	0.90

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	0	49/51 (96%)	48 (98%)	1 (2%)	0	100	100
2	1	42/44 (96%)	41 (98%)	1 (2%)	0	100	100
3	2	61/64 (95%)	57 (93%)	4 (7%)	0	100	100
4	3	36/38 (95%)	35 (97%)	1 (3%)	0	100	100
5	4	69/74 (93%)	59 (86%)	10 (14%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
7	B	227/250 (91%)	213 (94%)	13 (6%)	1 (0%)	30	54
8	C	213/250 (85%)	206 (97%)	7 (3%)	0	100	100
9	D	205/208 (99%)	198 (97%)	7 (3%)	0	100	100
10	E	153/165 (93%)	151 (99%)	2 (1%)	0	100	100
11	F	104/127 (82%)	102 (98%)	2 (2%)	0	100	100
12	G	151/156 (97%)	143 (95%)	8 (5%)	0	100	100
13	H	128/131 (98%)	124 (97%)	4 (3%)	0	100	100
14	I	125/128 (98%)	116 (93%)	9 (7%)	0	100	100
15	J	98/103 (95%)	95 (97%)	3 (3%)	0	100	100
16	K	113/128 (88%)	109 (96%)	4 (4%)	0	100	100
17	L	119/124 (96%)	114 (96%)	5 (4%)	0	100	100
18	M	114/118 (97%)	108 (95%)	6 (5%)	0	100	100
19	N	98/101 (97%)	92 (94%)	6 (6%)	0	100	100
20	O	86/89 (97%)	84 (98%)	2 (2%)	0	100	100
21	P	80/83 (96%)	79 (99%)	1 (1%)	0	100	100
22	Q	77/85 (91%)	73 (95%)	4 (5%)	0	100	100
23	R	64/75 (85%)	64 (100%)	0	0	100	100
24	S	82/91 (90%)	80 (98%)	2 (2%)	0	100	100
25	T	84/88 (96%)	84 (100%)	0	0	100	100
28	X	102/116 (88%)	99 (97%)	3 (3%)	0	100	100
31	c	270/274 (98%)	260 (96%)	10 (4%)	0	100	100
32	d	208/212 (98%)	200 (96%)	7 (3%)	1 (0%)	24	48
33	e	197/200 (98%)	196 (100%)	1 (0%)	0	100	100
34	f	175/178 (98%)	161 (92%)	12 (7%)	2 (1%)	11	29
35	g	173/177 (98%)	168 (97%)	4 (2%)	1 (1%)	21	44
36	h	58/148 (39%)	54 (93%)	4 (7%)	0	100	100
37	i	140/142 (99%)	137 (98%)	3 (2%)	0	100	100
38	j	120/122 (98%)	116 (97%)	4 (3%)	0	100	100
39	k	144/146 (99%)	142 (99%)	2 (1%)	0	100	100
40	l	133/137 (97%)	133 (100%)	0	0	100	100
41	m	117/125 (94%)	114 (97%)	3 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
42	n	113/116 (97%)	110 (97%)	3 (3%)	0	100	100
43	o	115/122 (94%)	113 (98%)	2 (2%)	0	100	100
44	p	115/119 (97%)	115 (100%)	0	0	100	100
45	q	101/103 (98%)	97 (96%)	4 (4%)	0	100	100
46	r	107/109 (98%)	105 (98%)	2 (2%)	0	100	100
47	s	90/106 (85%)	87 (97%)	3 (3%)	0	100	100
48	t	101/105 (96%)	97 (96%)	4 (4%)	0	100	100
49	u	95/98 (97%)	91 (96%)	4 (4%)	0	100	100
50	v	76/85 (89%)	75 (99%)	1 (1%)	0	100	100
51	w	75/78 (96%)	75 (100%)	0	0	100	100
52	x	60/65 (92%)	58 (97%)	2 (3%)	0	100	100
53	y	56/58 (97%)	55 (98%)	1 (2%)	0	100	100
54	z	52/61 (85%)	49 (94%)	3 (6%)	0	100	100
All	All	5571/5973 (93%)	5382 (97%)	184 (3%)	5 (0%)	49	73

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
34	f	136	ILE
7	B	128	PHE
32	d	152	ASN
34	f	139	PRO
35	g	86	LYS

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	47/47 (100%)	47 (100%)	0	100	100
2	1	36/36 (100%)	36 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
3	2	52/53 (98%)	52 (100%)	0	100 100
4	3	33/33 (100%)	31 (94%)	2 (6%)	17 40
5	4	60/63 (95%)	60 (100%)	0	100 100
7	B	188/200 (94%)	178 (95%)	10 (5%)	20 46
8	C	175/198 (88%)	171 (98%)	4 (2%)	44 73
9	D	170/171 (99%)	168 (99%)	2 (1%)	63 84
10	E	113/120 (94%)	112 (99%)	1 (1%)	70 87
11	F	95/111 (86%)	92 (97%)	3 (3%)	34 64
12	G	125/128 (98%)	123 (98%)	2 (2%)	55 80
13	H	108/109 (99%)	104 (96%)	4 (4%)	30 59
14	I	99/100 (99%)	96 (97%)	3 (3%)	36 66
15	J	89/91 (98%)	89 (100%)	0	100 100
16	K	87/97 (90%)	86 (99%)	1 (1%)	65 85
17	L	103/105 (98%)	101 (98%)	2 (2%)	50 77
18	M	96/98 (98%)	94 (98%)	2 (2%)	47 75
19	N	81/82 (99%)	78 (96%)	3 (4%)	30 59
20	O	71/72 (99%)	67 (94%)	4 (6%)	19 44
21	P	63/63 (100%)	63 (100%)	0	100 100
22	Q	71/76 (93%)	68 (96%)	3 (4%)	26 55
23	R	58/66 (88%)	57 (98%)	1 (2%)	53 79
24	S	71/78 (91%)	70 (99%)	1 (1%)	59 82
25	T	65/67 (97%)	65 (100%)	0	100 100
28	X	92/102 (90%)	91 (99%)	1 (1%)	65 85
31	c	218/220 (99%)	214 (98%)	4 (2%)	51 78
32	d	165/166 (99%)	161 (98%)	4 (2%)	43 72
33	e	155/155 (100%)	153 (99%)	2 (1%)	61 83
34	f	146/147 (99%)	136 (93%)	10 (7%)	14 35
35	g	140/142 (99%)	133 (95%)	7 (5%)	22 48
36	h	45/112 (40%)	41 (91%)	4 (9%)	9 23
37	i	118/118 (100%)	115 (98%)	3 (2%)	42 71
38	j	103/103 (100%)	102 (99%)	1 (1%)	68 86

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
39	k	108/108 (100%)	107 (99%)	1 (1%)	70 87
40	l	111/111 (100%)	111 (100%)	0	100 100
41	m	96/101 (95%)	95 (99%)	1 (1%)	68 86
42	n	84/85 (99%)	81 (96%)	3 (4%)	31 60
43	o	99/102 (97%)	98 (99%)	1 (1%)	68 86
44	p	85/86 (99%)	85 (100%)	0	100 100
45	q	84/84 (100%)	83 (99%)	1 (1%)	63 84
46	r	88/88 (100%)	88 (100%)	0	100 100
47	s	78/87 (90%)	77 (99%)	1 (1%)	61 83
48	t	83/85 (98%)	82 (99%)	1 (1%)	63 84
49	u	79/80 (99%)	77 (98%)	2 (2%)	42 71
50	v	60/64 (94%)	58 (97%)	2 (3%)	33 63
51	w	69/70 (99%)	67 (97%)	2 (3%)	37 67
52	x	54/56 (96%)	51 (94%)	3 (6%)	19 44
53	y	54/54 (100%)	53 (98%)	1 (2%)	50 77
54	z	46/50 (92%)	43 (94%)	3 (6%)	15 37
All	All	4616/4840 (95%)	4510 (98%)	106 (2%)	44 73

5 of 106 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
33	e	4	LYS
35	g	20	ASN
52	x	5	ASP
34	f	16	LEU
34	f	118	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 44 such sidechains are listed below:

Mol	Chain	Res	Type
35	g	38	HIS
43	o	5	HIS
35	g	73	ASN
37	i	47	HIS
45	q	87	GLN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
26	V	76/77 (98%)	30 (39%)	1 (1%)
27	W	9/15 (60%)	2 (22%)	0
29	a	2889/2893 (99%)	550 (19%)	0
30	b	114/115 (99%)	13 (11%)	0
6	A	1534/1537 (99%)	276 (17%)	12 (0%)
All	All	4622/4637 (99%)	871 (18%)	13 (0%)

5 of 871 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
6	A	6	C
6	A	9	A
6	A	10	A
6	A	11	G
6	A	24	G

5 of 13 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
6	A	989	U
6	A	1123	U
26	V	20	G
6	A	1187	G
6	A	1449	A

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

39 non-standard protein/DNA/RNA residues are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
17	D2T	L	89	17	7,9,10	1.28	1 (14%)	6,11,13	1.58	1 (16%)
6	4OC	A	1399	6	20,23,24	2.23	3 (15%)	26,32,35	1.03	2 (7%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
32	MEQ	d	153	32	8,9,10	0.87	0	5,10,12	0.55	0
6	5MC	A	964	6	18,22,23	1.88	6 (33%)	26,32,35	1.33	2 (7%)
6	MA6	A	1516	6	23,26,27	1.19	3 (13%)	34,38,41	2.25	9 (26%)
26	4SU	V	8	26	18,21,22	3.75	8 (44%)	26,30,33	2.13	5 (19%)
26	OMC	V	33	26	19,22,23	1.76	3 (15%)	26,31,34	0.89	1 (3%)
29	PSU	a	1900	29	18,21,22	1.99	7 (38%)	22,30,33	1.84	3 (13%)
40	4D4	l	82	40	9,11,12	0.81	0	8,13,15	1.69	2 (25%)
16	IAS	K	118	16	6,7,8	1.79	1 (16%)	6,8,10	2.51	1 (16%)
29	H2U	a	2438	29	18,21,22	4.15	5 (27%)	21,30,33	5.13	7 (33%)
29	PSU	a	1906	29	18,21,22	2.02	7 (38%)	22,30,33	1.85	4 (18%)
26	5MU	V	55	26	19,22,23	2.35	7 (36%)	28,32,35	3.75	10 (35%)
6	2MG	A	1204	6,55	23,26,27	2.56	4 (17%)	32,38,41	2.13	10 (31%)
29	1MG	a	736	29	22,26,27	2.50	5 (22%)	33,39,42	2.02	7 (21%)
29	2MG	a	2434	29	23,26,27	2.59	6 (26%)	32,38,41	2.06	11 (34%)
6	UR3	A	1495	6	19,22,23	2.55	6 (31%)	26,32,35	1.30	2 (7%)
6	G7M	A	524	6,55	23,26,27	2.17	5 (21%)	35,39,42	1.84	7 (20%)
6	2MG	A	1513	6	23,26,27	2.57	6 (26%)	32,38,41	2.13	12 (37%)
29	PSU	a	945	29	18,21,22	2.06	7 (38%)	22,30,33	1.84	4 (18%)
29	PSU	a	737	57,29	18,21,22	2.07	7 (38%)	22,30,33	1.84	3 (13%)
29	G7M	a	2058	29	23,26,27	2.17	5 (21%)	35,39,42	1.89	7 (20%)
29	PSU	a	2446	29	18,21,22	2.14	7 (38%)	22,30,33	1.84	5 (22%)
29	3TD	a	1904	29	18,22,23	2.72	7 (38%)	22,32,35	1.71	2 (9%)
6	MA6	A	1515	6	23,26,27	1.19	3 (13%)	34,38,41	2.23	9 (26%)
26	H2U	V	21	26	18,21,22	4.37	5 (27%)	21,30,33	4.73	7 (33%)
29	PSU	a	2569	29	18,21,22	2.13	8 (44%)	22,30,33	1.96	5 (22%)
40	MS6	l	83	40	5,7,8	0.57	0	2,7,9	1.83	1 (50%)
26	PSU	V	56	26	18,21,22	1.94	7 (38%)	22,30,33	1.80	3 (13%)
29	OMC	a	2487	57,29	19,22,23	1.77	3 (15%)	26,31,34	1.02	2 (7%)
29	PSU	a	2493	55,29	18,21,22	2.07	7 (38%)	22,30,33	1.79	4 (18%)
29	OMU	a	2541	29	19,22,23	2.62	7 (36%)	26,31,34	1.75	5 (19%)
29	6MZ	a	2019	29	22,25,26	2.33	3 (13%)	30,36,39	2.43	10 (33%)
29	OMG	a	2240	55,29	23,26,27	2.35	6 (26%)	33,38,41	1.88	10 (30%)
6	2MG	A	963	6	23,26,27	2.56	4 (17%)	32,38,41	2.09	10 (31%)
6	PSU	A	513	6	18,21,22	2.02	8 (44%)	22,30,33	1.85	4 (18%)
29	2MA	a	2492	55,29	22,25,26	1.35	3 (13%)	33,37,40	2.04	7 (21%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
29	PSU	a	2594	29	18,21,22	2.08	7 (38%)	22,30,33	1.91	3 (13%)
29	5MU	a	1928	55,29	19,22,23	2.51	7 (36%)	28,32,35	3.77	10 (35%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
17	D2T	L	89	17	-	4/7/12/14	-
6	4OC	A	1399	6	-	0/9/29/30	0/2/2/2
32	MEQ	d	153	32	-	3/8/9/11	-
6	5MC	A	964	6	-	0/7/25/26	0/2/2/2
6	MA6	A	1516	6	-	2/11/29/30	0/3/3/3
26	4SU	V	8	26	-	0/7/25/26	0/2/2/2
26	OMC	V	33	26	-	0/9/27/28	0/2/2/2
29	PSU	a	1900	29	-	0/7/25/26	0/2/2/2
40	4D4	l	82	40	-	0/11/12/14	-
16	IAS	K	118	16	-	2/7/7/8	-
29	H2U	a	2438	29	-	4/7/38/39	0/2/2/2
29	PSU	a	1906	29	-	0/7/25/26	0/2/2/2
26	5MU	V	55	26	-	0/7/25/26	0/2/2/2
6	2MG	A	1204	6,55	-	2/9/27/28	0/3/3/3
29	1MG	a	736	29	-	0/7/25/26	0/3/3/3
29	2MG	a	2434	29	-	1/9/27/28	0/3/3/3
6	UR3	A	1495	6	-	0/7/25/26	0/2/2/2
6	G7M	A	524	6,55	-	3/7/25/26	0/3/3/3
6	2MG	A	1513	6	-	0/9/27/28	0/3/3/3
29	PSU	a	945	29	-	0/7/25/26	0/2/2/2
29	PSU	a	737	57,29	-	1/7/25/26	0/2/2/2
29	G7M	a	2058	29	-	2/7/25/26	0/3/3/3
29	PSU	a	2446	29	-	0/7/25/26	0/2/2/2
29	3TD	a	1904	29	-	0/7/25/26	0/2/2/2
6	MA6	A	1515	6	-	0/11/29/30	0/3/3/3
26	H2U	V	21	26	-	4/7/38/39	0/2/2/2
29	PSU	a	2569	29	-	0/7/25/26	0/2/2/2
40	MS6	l	83	40	-	2/4/6/8	-
26	PSU	V	56	26	-	0/7/25/26	0/2/2/2
29	OMC	a	2487	57,29	-	0/9/27/28	0/2/2/2
29	PSU	a	2493	55,29	-	2/7/25/26	0/2/2/2

Continued on next page...

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
29	OMU	a	2541	29	-	2/9/27/28	0/2/2/2
29	6MZ	a	2019	29	-	2/9/27/28	0/3/3/3
29	OMG	a	2240	55,29	-	1/9/27/28	0/3/3/3
6	2MG	A	963	6	-	0/9/27/28	0/3/3/3
6	PSU	A	513	6	-	0/7/25/26	0/2/2/2
29	2MA	a	2492	55,29	-	3/7/25/26	0/3/3/3
29	PSU	a	2594	29	-	0/7/25/26	0/2/2/2
29	5MU	a	1928	55,29	-	0/7/25/26	0/2/2/2

The worst 5 of 194 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
26	V	21	H2U	O4-C4	10.25	1.44	1.23
29	a	2438	H2U	O4-C4	9.92	1.43	1.23
29	a	2019	6MZ	C6-N6	9.58	1.44	1.34
6	A	1204	2MG	O6-C6	9.15	1.41	1.23
6	A	1513	2MG	O6-C6	9.07	1.40	1.23

The worst 5 of 207 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
29	a	2438	H2U	C4-N3-C2	-15.73	112.74	125.79
26	V	21	H2U	C4-N3-C2	-12.97	115.03	125.79
26	V	21	H2U	O2-C2-N1	-11.52	108.64	123.11
29	a	2438	H2U	O2-C2-N1	-10.64	109.75	123.11
29	a	1928	5MU	C4-N3-C2	-8.75	116.02	127.35

There are no chirality outliers.

5 of 40 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	A	524	G7M	C3'-C4'-C5'-O5'
6	A	1204	2MG	N1-C2-N2-CM2
6	A	1204	2MG	N3-C2-N2-CM2
17	L	89	D2T	CA-CB-CG-OD2
26	V	21	H2U	O4'-C4'-C5'-O5'

There are no ring outliers.

14 monomers are involved in 17 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	A	1399	4OC	2	0
32	d	153	MEQ	1	0
26	V	8	4SU	1	0
26	V	33	OMC	3	0
26	V	55	5MU	1	0
6	A	1204	2MG	1	0
29	a	736	1MG	1	0
6	A	1513	2MG	1	0
29	a	1904	3TD	1	0
6	A	1515	MA6	1	0
26	V	21	H2U	1	0
29	a	2541	OMU	1	0
29	a	2019	6MZ	2	0
29	a	2240	OMG	1	0

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 531 ligands modelled in this entry, 531 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)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
6	A	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	A	1530:C	O3'	1531:A	P	4.72

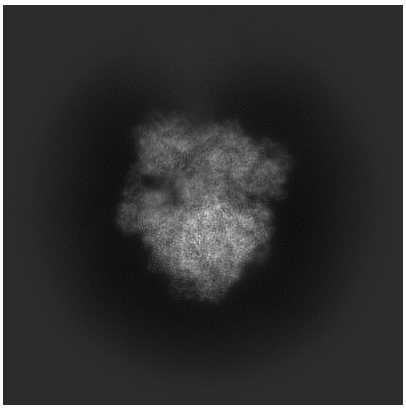
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-59046. These allow visual inspection of the internal detail of the map and identification of artifacts.

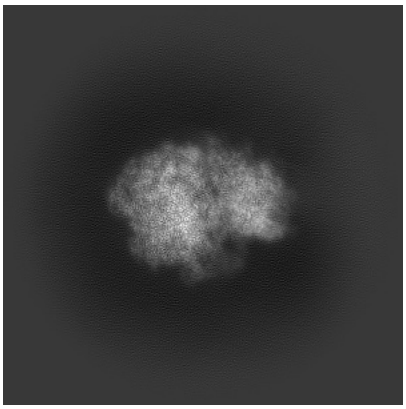
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

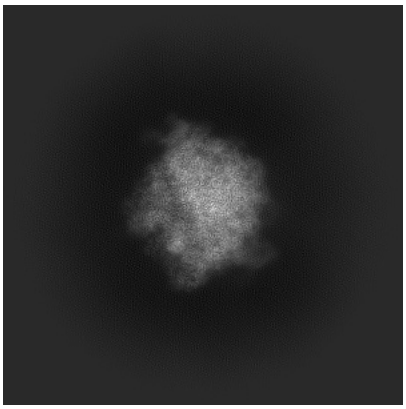
6.1.1 Primary map



X

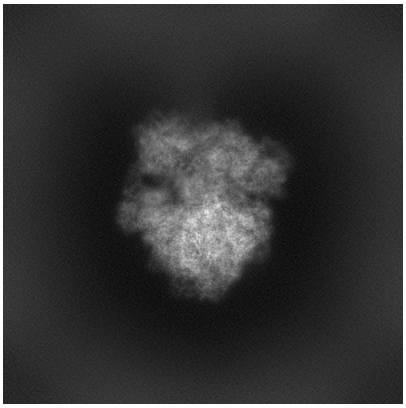


Y

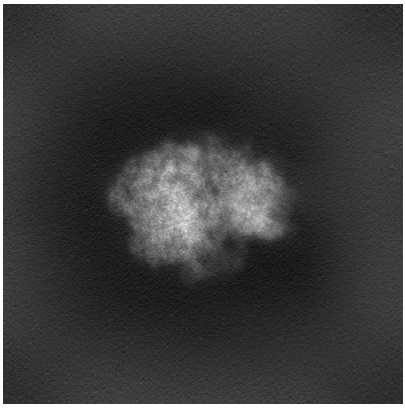


Z

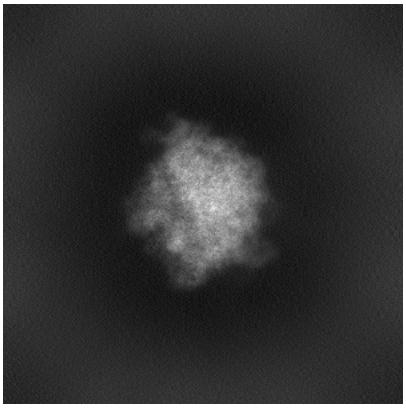
6.1.2 Raw map



X



Y

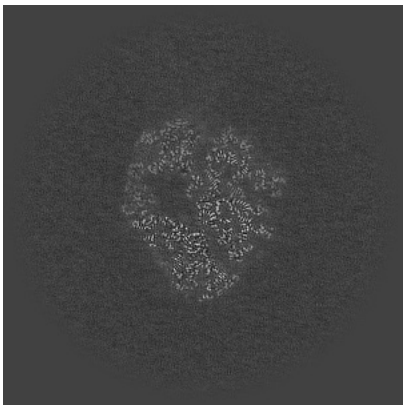


Z

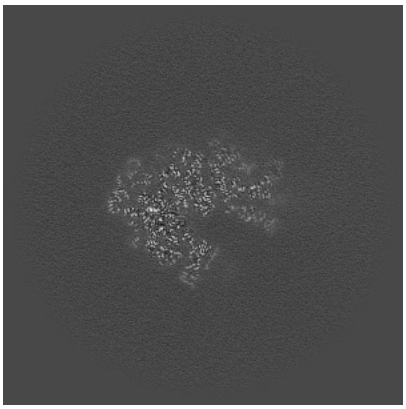
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

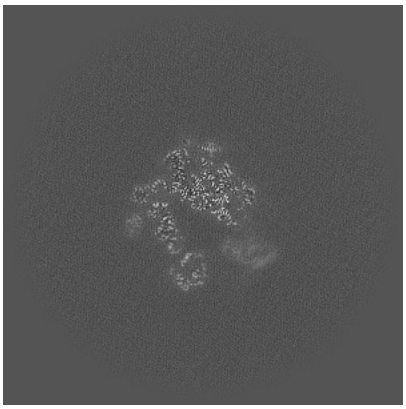
6.2.1 Primary map



X Index: 256

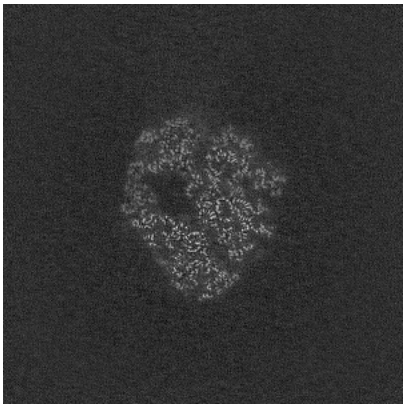


Y Index: 256

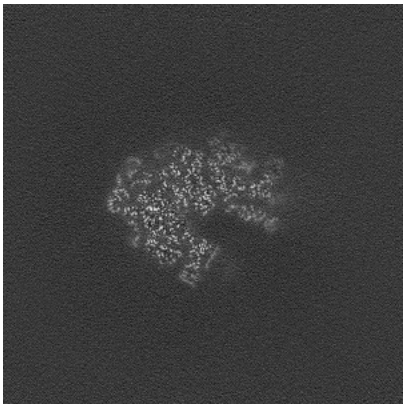


Z Index: 256

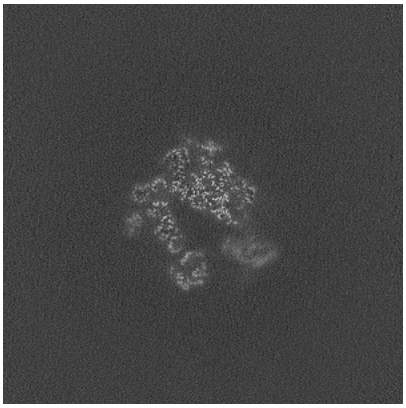
6.2.2 Raw map



X Index: 256



Y Index: 256

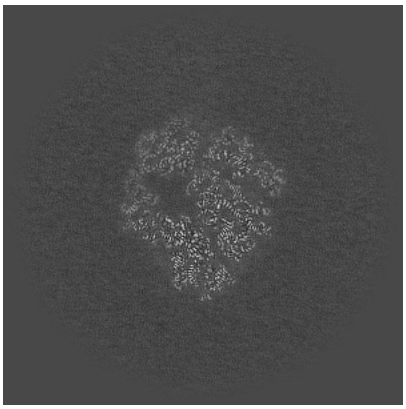


Z Index: 256

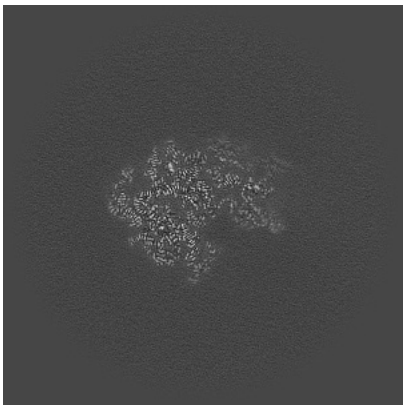
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

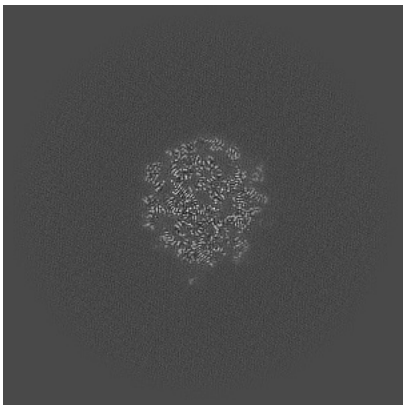
6.3.1 Primary map



X Index: 253

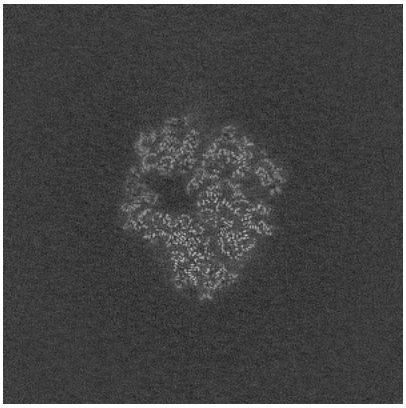


Y Index: 263

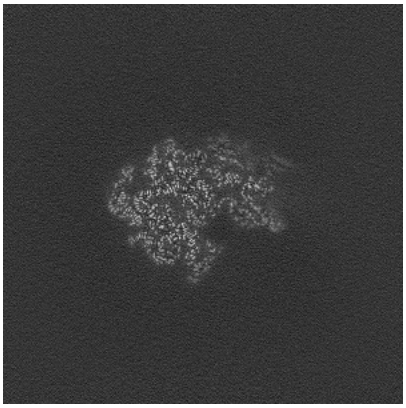


Z Index: 216

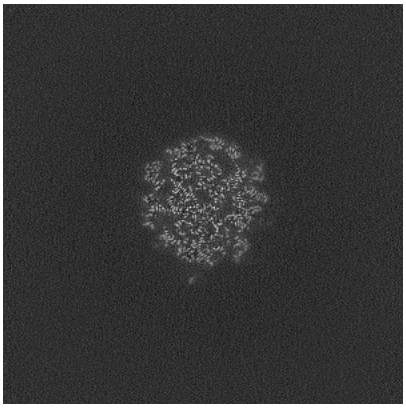
6.3.2 Raw map



X Index: 252



Y Index: 263

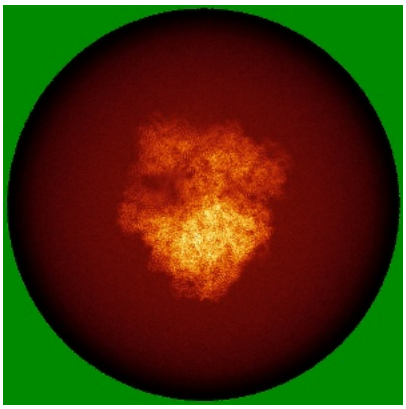


Z Index: 216

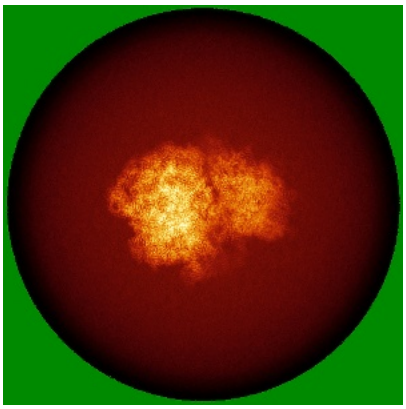
The images above show the largest variance slices of the map in three orthogonal directions.

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

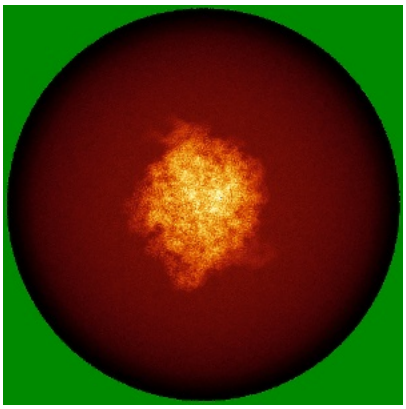
6.4.1 Primary map



X

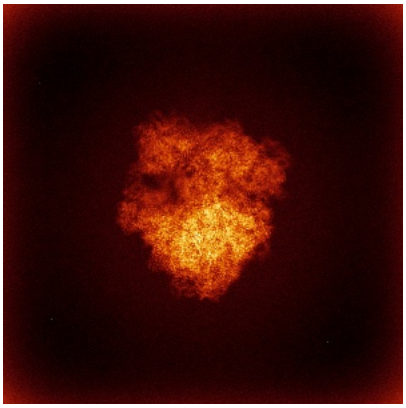


Y

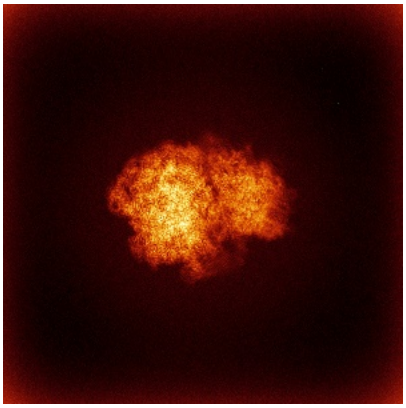


Z

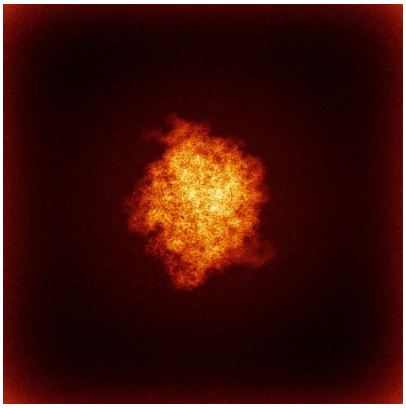
6.4.2 Raw map



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 0.45. 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.

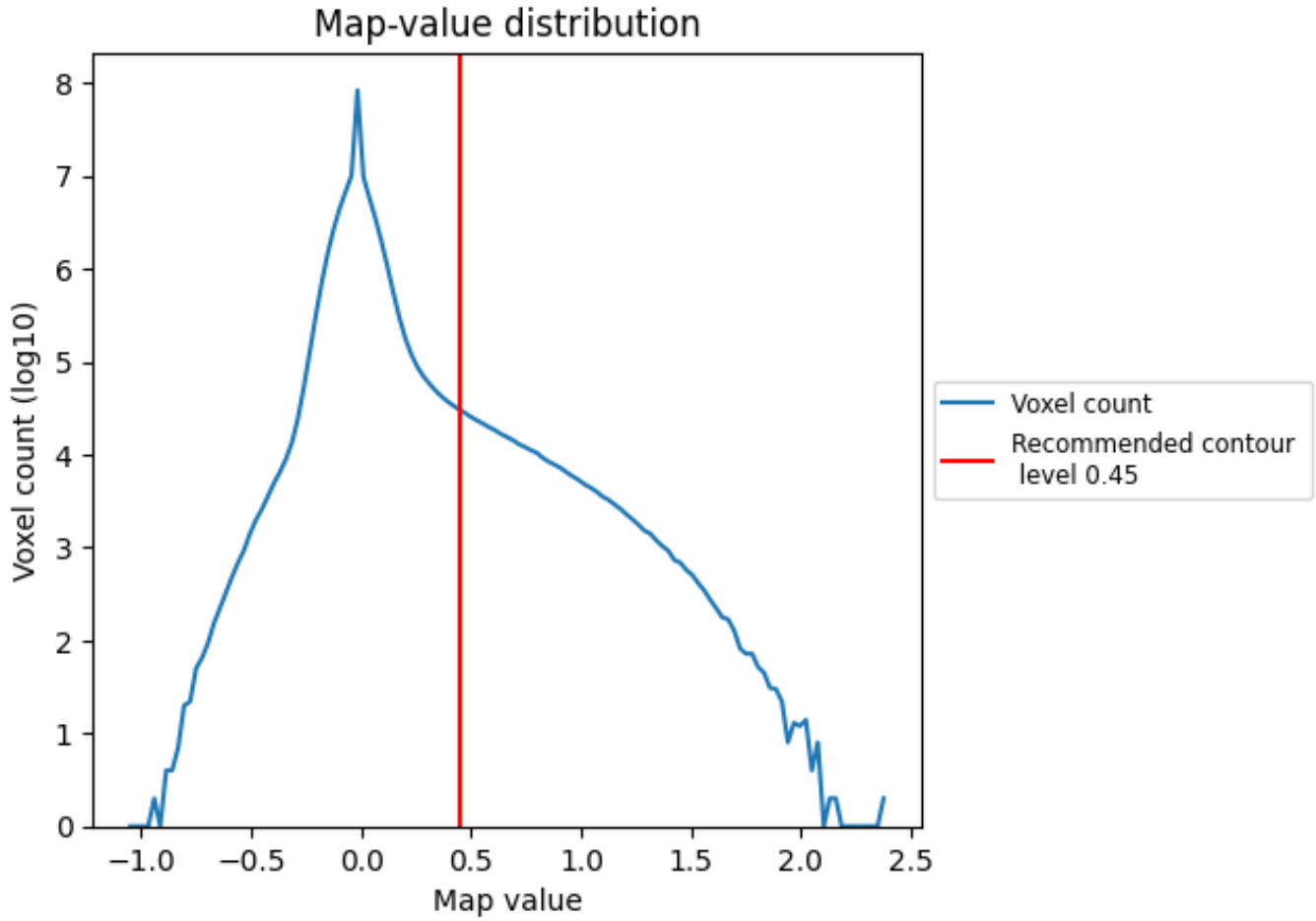
6.6 Mask visualisation (i)

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

7 Map analysis

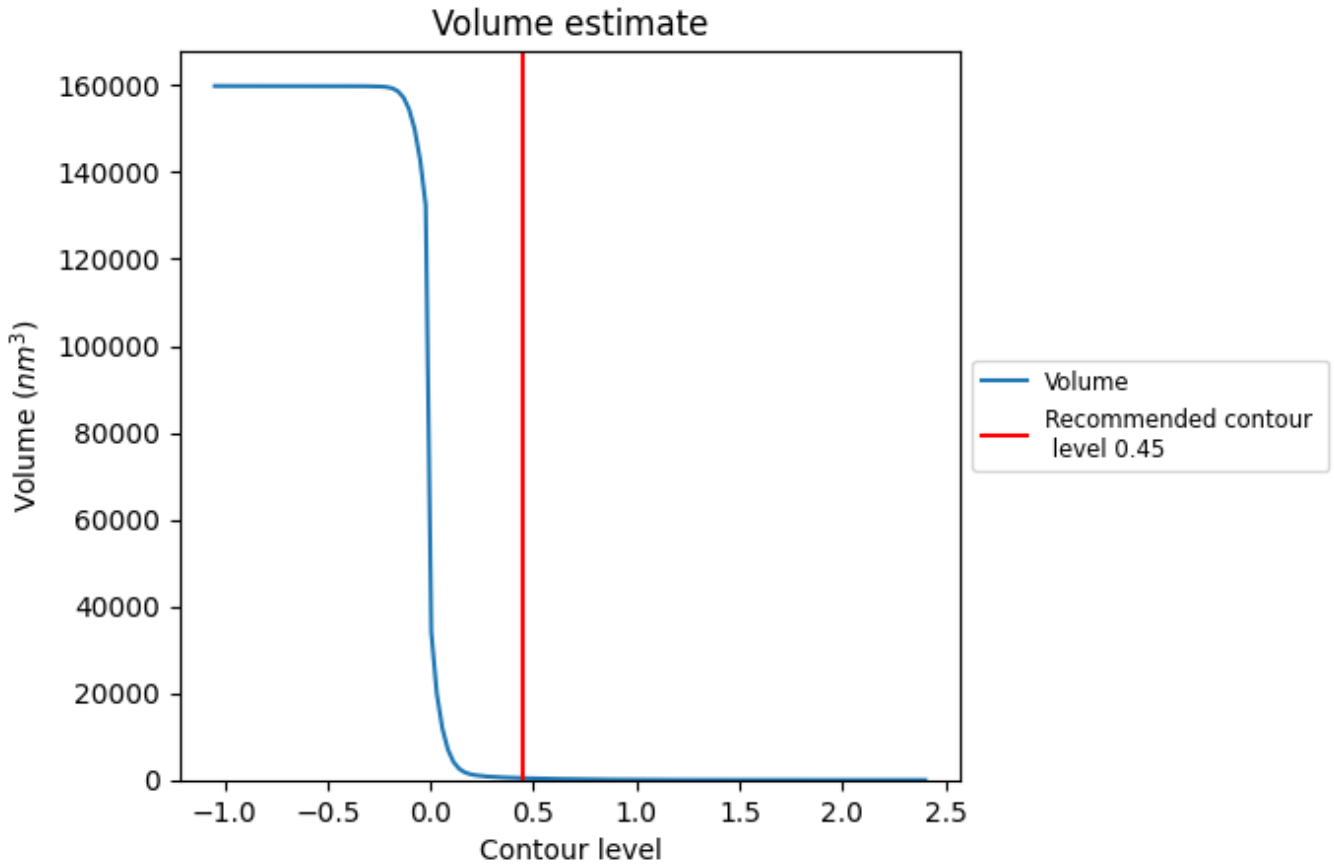
This section contains the results of statistical analysis of the map.

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.

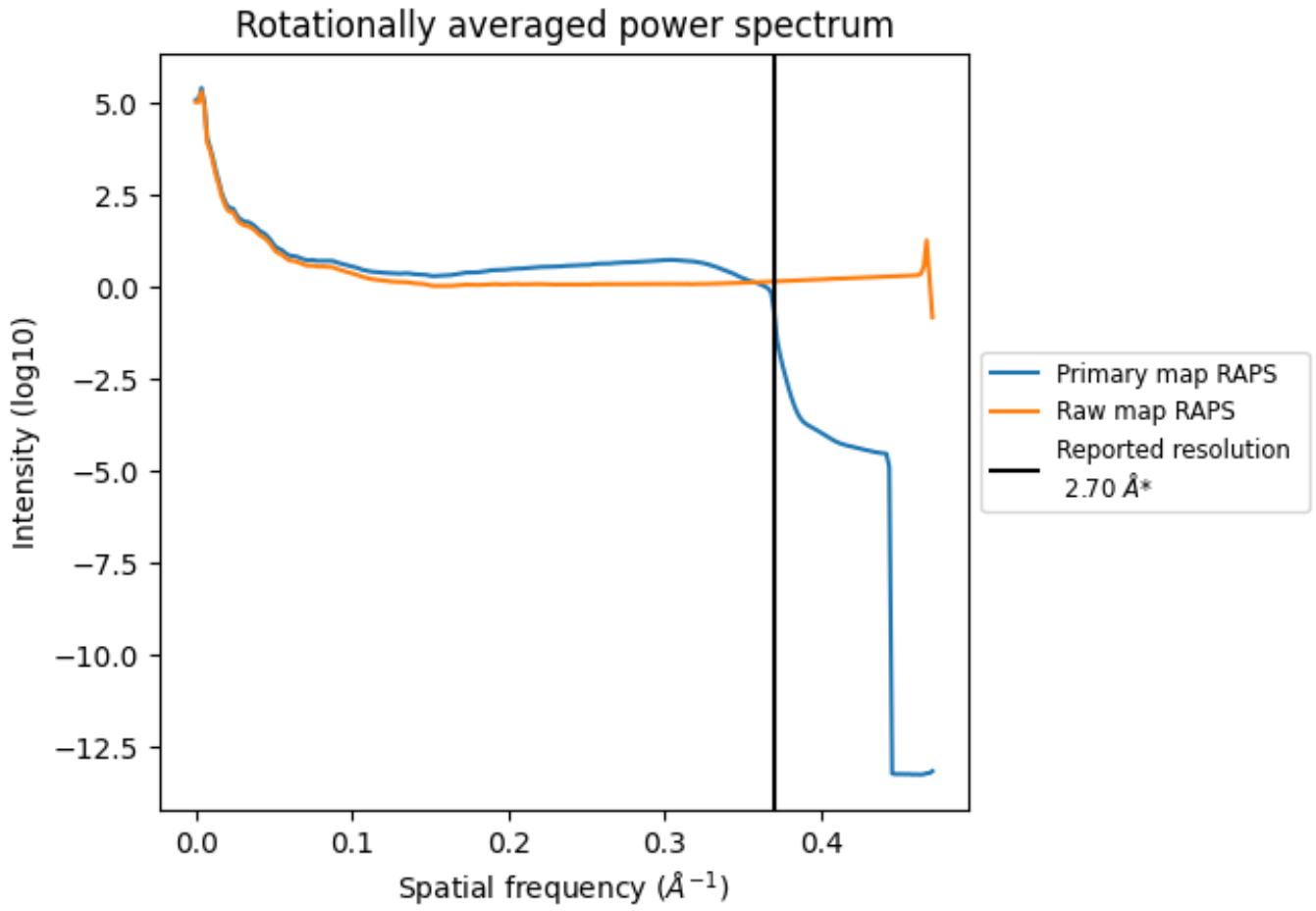
7.2 Volume estimate (i)



The volume at the recommended contour level is 416 nm^3; this corresponds to an approximate mass of 376 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)

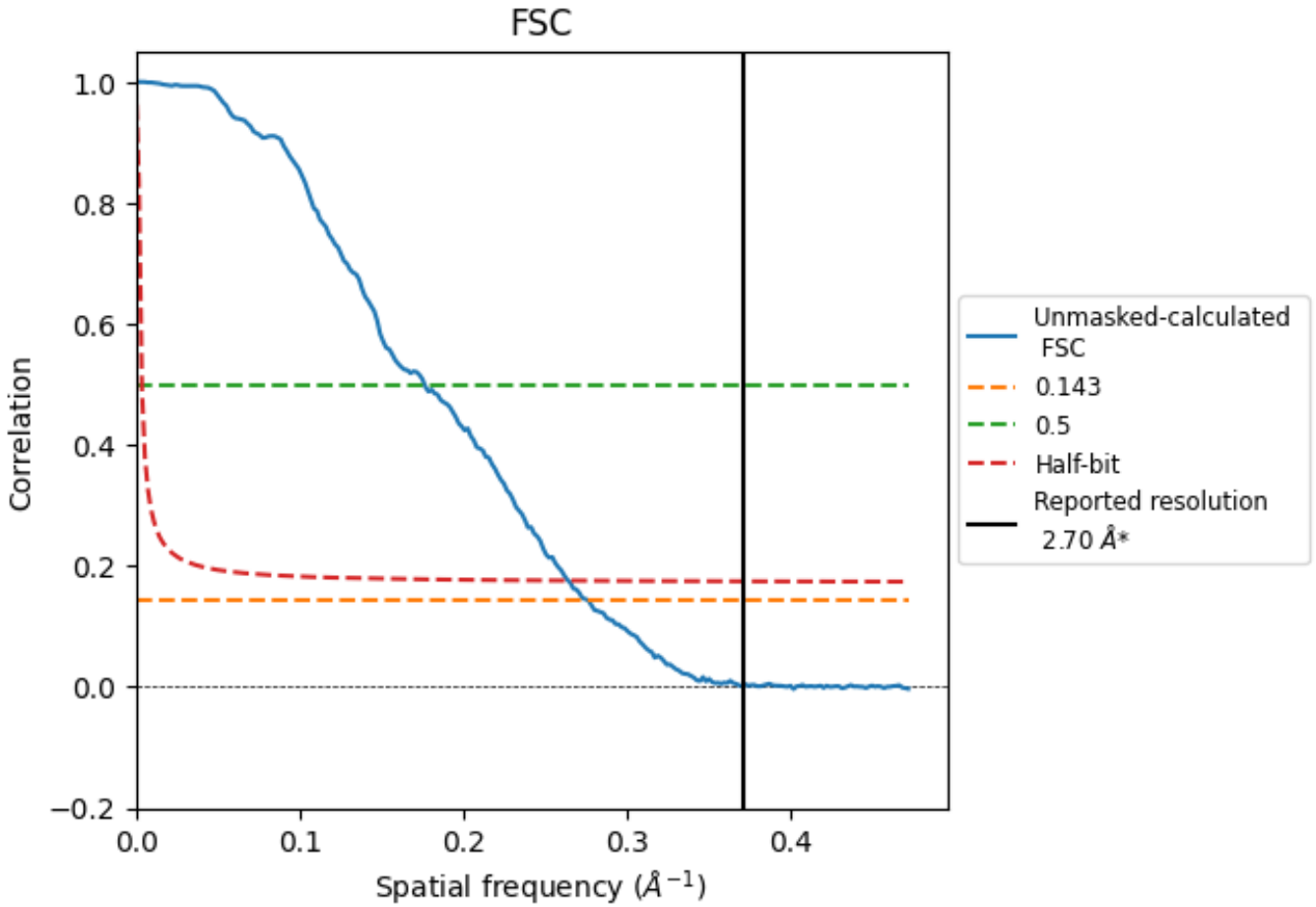


*Reported resolution corresponds to spatial frequency of 0.370 $Å^{-1}$

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 0.370 Å^{-1}

8.2 Resolution estimates (i)

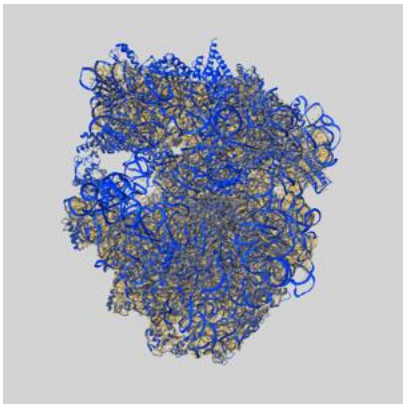
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.70	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	3.62	5.68	3.79

*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 3.62 differs from the reported value 2.7 by more than 10 %

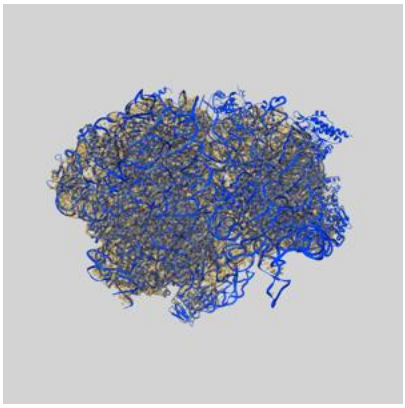
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-59046 and PDB model 32PD. Per-residue inclusion information can be found in section 3 on page 16.

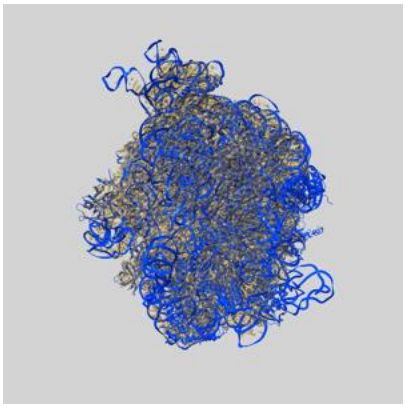
9.1 Map-model overlay



X



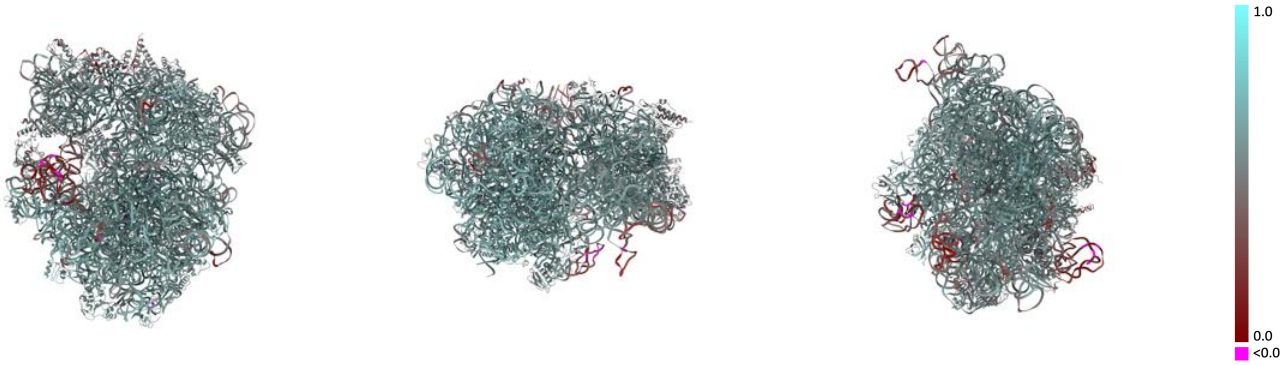
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.45 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

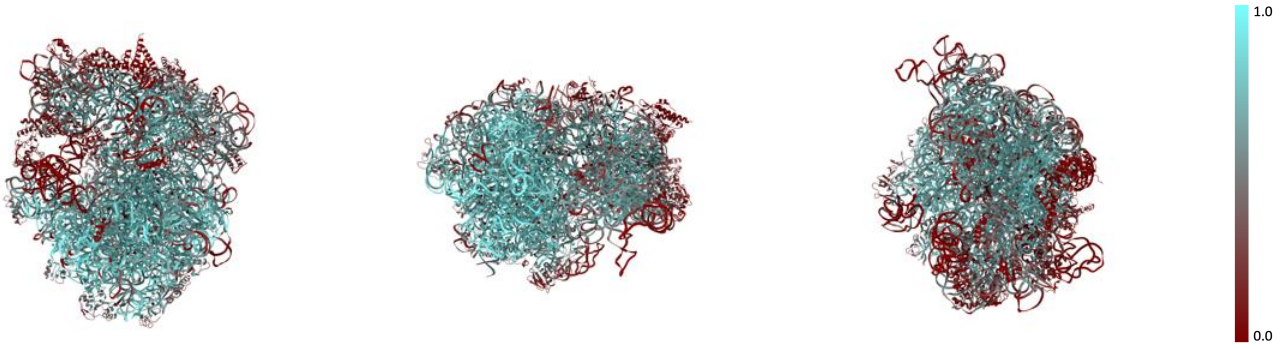
9.2 Q-score mapped to coordinate model (i)



X Y Z

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

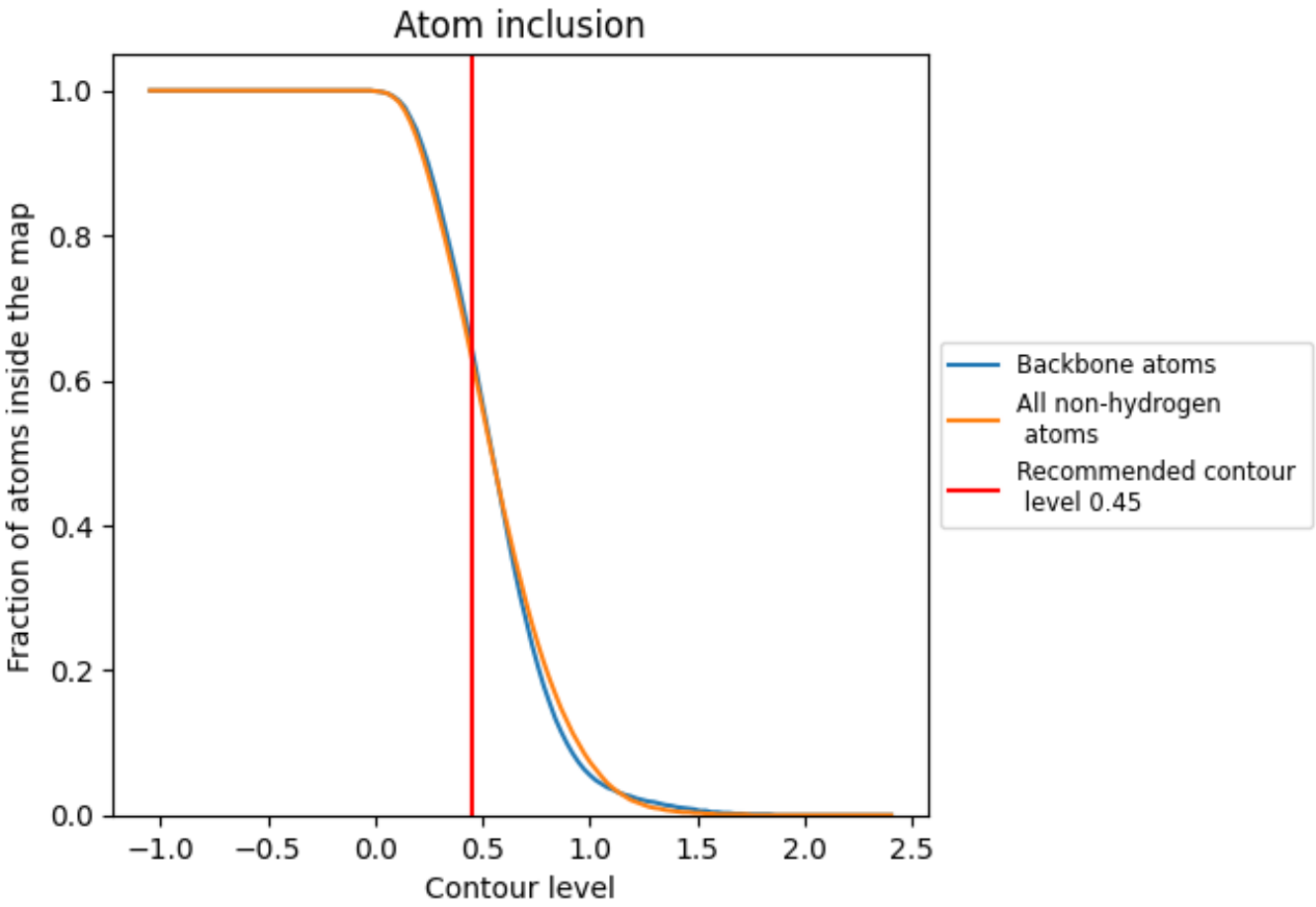
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.45).

9.4 Atom inclusion (i)



At the recommended contour level, 64% of all backbone atoms, 63% 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 (0.45) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.6310	0.5830
0	0.6190	0.6230
1	0.8230	0.6430
2	0.8440	0.6520
3	0.6960	0.6310
4	0.0060	0.4100
A	0.6030	0.5680
B	0.0020	0.4540
C	0.3430	0.5590
D	0.2380	0.5330
E	0.5500	0.6100
F	0.0410	0.5100
G	0.1900	0.5290
H	0.4830	0.6010
I	0.3100	0.5510
J	0.2720	0.5200
K	0.3360	0.5590
L	0.4460	0.5940
M	0.1910	0.5260
N	0.3100	0.5490
O	0.4630	0.5870
P	0.4440	0.5740
Q	0.3410	0.5760
R	0.1120	0.5160
S	0.1470	0.5330
T	0.4410	0.5830
V	0.0320	0.3600
W	0.1870	0.5090
X	0.4150	0.5900
a	0.7750	0.5980
b	0.6740	0.5970
c	0.7460	0.6430
d	0.7350	0.6370
e	0.6320	0.6220
f	0.1680	0.5120



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Chain	Atom inclusion	Q-score
g	0.3150	0.5620
h	0.0070	0.3720
i	0.7250	0.6370
j	0.6460	0.6320
k	0.6840	0.6280
l	0.6420	0.6270
m	0.7780	0.6480
n	0.5400	0.6000
o	0.6400	0.6240
p	0.7960	0.6500
q	0.6860	0.6300
r	0.7310	0.6340
s	0.5790	0.6160
t	0.4470	0.5730
u	0.5130	0.6000
v	0.7690	0.6490
w	0.6720	0.6280
x	0.4450	0.5880
y	0.7020	0.6320
z	0.7000	0.6350