wwPDB EM Validation Summary Report

Mar 6, 2026 – 06:33 AM UTC

PDB ID	:	7JT1 / pdb_00007jt1
EMDB ID	:	EMD-22466
Title	:	70S ribosome stalled on long mRNA with ArfB-1 and ArfB-2 bound (+9-III)
Authors	:	Carbone, C.E.; Korostelev, A.A.
Deposited on	:	2020-08-16
Resolution	:	3.30 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

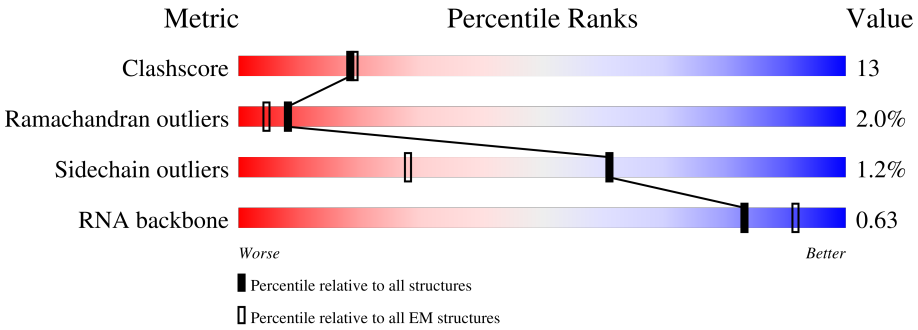
EMDB validation analysis	:	0.0.1.dev132
MolProbity	:	4-5-2 with Phenix2.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh &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

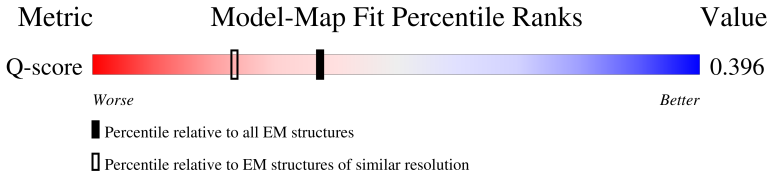
1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.30 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	15087 (2.80 - 3.80)

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	b	271	66% 32% ·
2	c	209	68% 30% ·
3	d	201	65% 31% ·

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Mol	Chain	Length	Quality of chain
4	e	177	66% 31%
5	f	176	69% 28%
6	g	149	62% 32% 5%
7	j	142	75% 23%
8	k	122	65% 32%
9	l	143	70% 29%
10	m	136	70% 28%
11	n	120	73% 24%
12	o	116	74% 25%
13	p	114	68% 30%
14	q	117	75% 24%
15	r	103	62% 36%
16	s	110	65% 32%
17	t	93	70% 28%
18	u	102	77% 22%
19	v	94	57% 43%
20	w	75	80% 20%
21	x	77	78% 22%
22	y	63	71% 29%
23	z	58	74% 26%
24	B	56	62% 36%
25	C	50	72% 28%
26	D	46	63% 33%
27	E	64	62% 34%
28	F	38	63% 32% 5%

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Mol	Chain	Length	Quality of chain
29	G	225	57% 39%
30	H	206	66% 33%
31	I	205	66% 29% 5%
32	J	157	76% 20%
33	K	100	51% 46%
34	L	151	74% 26%
35	M	129	65% 35%
36	N	127	55% 39% 6%
37	O	98	71% 26%
38	P	116	59% 38%
39	Q	123	67% 28%
40	R	114	68% 29%
41	S	100	62% 35%
42	T	88	74% 26%
43	U	82	63% 33%
44	V	80	65% 29% 6%
45	W	65	72% 23% 5%
46	X	79	72% 28%
47	Y	85	64% 34%
48	Z	65	52% 40% 8%
49	3	1539	49% 46% 5%
50	1	2903	46% 47% 7%
51	2	120	50% 43% 7%
52	5	77	47% 48% 5%
53	4	20	45% 40% 15%

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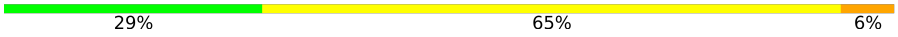
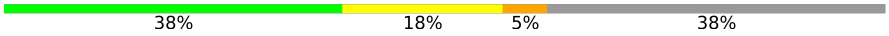
Mol	Chain	Length	Quality of chain
54	8	130	
54	9	130	

2 Entry composition (i)

There are 54 unique types of molecules in this entry. The entry contains 145600 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 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	b	271	2083	1288	423	365	7	0	0

- Molecule 2 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	c	209	1565	979	288	294	4	0	0

- Molecule 3 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	d	201	1552	974	283	290	5	0	0

- Molecule 4 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	e	177	1411	899	249	257	6	0	0

- Molecule 5 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	f	176	1323	832	243	246	2	0	0

- Molecule 6 is a protein called 50S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	g	149	1111	699	197	214	1	0	0

- Molecule 7 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	j	142	Total	C	N	O	S	0	0
			1129	714	212	199	4		

- Molecule 8 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	k	122	Total	C	N	O	S	0	0
			939	587	180	166	6		

- Molecule 9 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	l	143	Total	C	N	O	S	0	0
			1045	649	206	189	1		

- Molecule 10 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	m	136	Total	C	N	O	S	0	0
			1074	686	205	177	6		

- Molecule 11 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	n	120	Total	C	N	O	S	0	0
			961	593	196	167	5		

- Molecule 12 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms				AltConf	Trace
12	o	116	Total	C	N	O	0	0
			892	552	178	162		

- Molecule 13 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	p	114	Total	C	N	O	S	0	0
			917	574	179	163	1		

- Molecule 14 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms				AltConf	Trace
14	q	117	Total 947	C 604	N 192	O 151	0	0

- Molecule 15 is a protein called 50S ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	r	103	Total 816	C 516	N 153	O 145	S 2	0	0

- Molecule 16 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	s	110	Total 857	C 532	N 166	O 156	S 3	0	0

- Molecule 17 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	t	93	Total 739	C 466	N 139	O 132	S 2	0	0

- Molecule 18 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms				AltConf	Trace
18	u	102	Total 780	C 492	N 146	O 142	0	0

- Molecule 19 is a protein called 50S ribosomal protein L25.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	v	94	Total 753	C 479	N 137	O 134	S 3	0	0

- Molecule 20 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	w	75	Total 575	C 356	N 116	O 102	S 1	0	0

- Molecule 21 is a protein called 50S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	x	77	Total	C	N	O	S	0	0
			625	388	129	106	2		

- Molecule 22 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	y	63	Total	C	N	O	S	0	0
			509	313	99	95	2		

- Molecule 23 is a protein called 50S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	z	58	Total	C	N	O	S	0	0
			449	281	87	79	2		

- Molecule 24 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	B	56	Total	C	N	O	S	0	0
			444	269	94	80	1		

- Molecule 25 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms				AltConf	Trace
25	C	50	Total	C	N	O	0	0
			410	263	75	72		

- Molecule 26 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	D	46	Total	C	N	O	S	0	0
			377	228	90	57	2		

- Molecule 27 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	E	64	Total	C	N	O	S	0	0
			504	323	105	74	2		

- Molecule 28 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	F	38	Total	C	N	O	S	0	0
			302	185	65	48	4		

- Molecule 29 is a protein called 30S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	G	225	Total	C	N	O	S	0	0
			1757	1111	315	323	8		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
30	H	206	Total	C	N	O	S	0	0
			1625	1028	305	289	3		

- Molecule 31 is a protein called 30S ribosomal protein S4.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	I	205	Total	C	N	O	S	0	0
			1643	1026	315	298	4		

- Molecule 32 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	J	157	Total	C	N	O	S	0	0
			1157	719	218	214	6		

- Molecule 33 is a protein called 30S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	K	100	Total	C	N	O	S	0	0
			818	515	148	149	6		

- Molecule 34 is a protein called 30S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	L	151	Total	C	N	O	S	0	0
			1182	735	227	216	4		

- Molecule 35 is a protein called 30S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	M	129	Total	C	N	O	S	0	0
			979	616	173	184	6		

- Molecule 36 is a protein called 30S ribosomal protein S9.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	N	127	Total	C	N	O	S	0	0
			1022	634	206	179	3		

- Molecule 37 is a protein called 30S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	O	98	Total	C	N	O	S	0	0
			787	493	150	143	1		

- Molecule 38 is a protein called 30S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	P	116	Total	C	N	O	S	0	0
			870	535	173	159	3		

- Molecule 39 is a protein called 30S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	Q	123	Total	C	N	O	S	0	0
			955	590	196	165	4		

- Molecule 40 is a protein called 30S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	R	114	Total	C	N	O	S	0	0
			884	546	178	157	3		

- Molecule 41 is a protein called 30S ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	S	100	Total	C	N	O	S	0	0
			805	499	164	139	3		

- Molecule 42 is a protein called 30S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	T	88	Total	C	N	O	S	0	0
			714	439	144	130	1		

- Molecule 43 is a protein called 30S ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	U	82	Total	C	N	O	S	0	0
			649	406	128	114	1		

- Molecule 44 is a protein called 30S ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	V	80	Total	C	N	O	S	0	0
			649	411	121	114	3		

- Molecule 45 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	W	65	Total	C	N	O	S	0	0
			536	339	100	96	1		

- Molecule 46 is a protein called 30S ribosomal protein S19.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	X	79	Total	C	N	O	S	0	0
			638	408	120	108	2		

- Molecule 47 is a protein called 30S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	Y	85	Total	C	N	O	S	0	0
			665	411	137	114	3		

- Molecule 48 is a protein called 30S ribosomal protein S21.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	Z	65	Total	C	N	O	S	0	0
			545	335	117	92	1		

- Molecule 49 is a RNA chain called 16S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	3	1539	Total	C	N	O	P	0	0
			33012	14725	6053	10696	1538		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
3	1490	C	U	conflict	GB 1789840096

- Molecule 50 is a RNA chain called 23S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	1	2903	Total	C	N	O	P	0	0
			62315	27801	11468	20144	2902		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
1	747	C	U	conflict	GB 802133627

- Molecule 51 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	2	120	Total	C	N	O	P	0	0
			2568	1145	471	833	119		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
2	120	A	-	insertion	GB 1266961702

- Molecule 52 is a RNA chain called tRNAfMet.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	5	77	Total	C	N	O	P	0	0
			1640	732	297	535	76		

- Molecule 53 is a RNA chain called mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	4	20	Total	C	N	O	P	0	0
			439	197	91	131	20		

- Molecule 54 is a protein called Peptidyl-tRNA hydrolase ArfB.

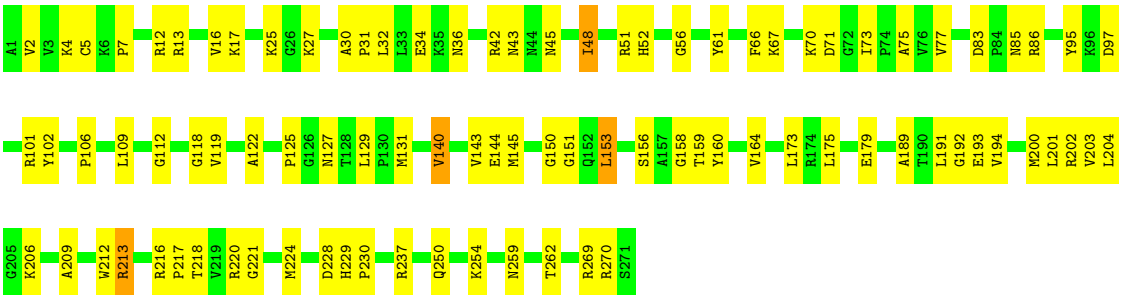
Mol	Chain	Residues	Atoms					AltConf	Trace
54	8	130	Total	C	N	O	S	0	0
			1016	627	202	185	2		
54	9	81	Total	C	N	O	S	0	0
			641	405	116	119	1		

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.

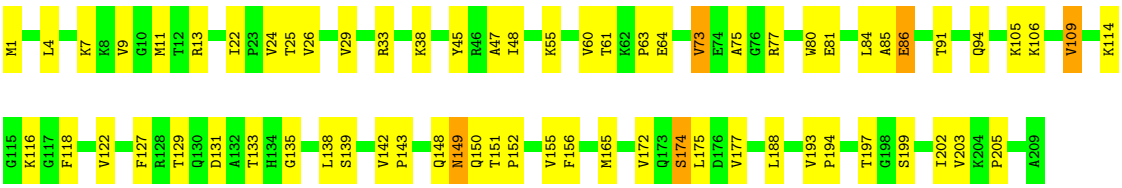
• Molecule 1: 50S ribosomal protein L2

Chain b:



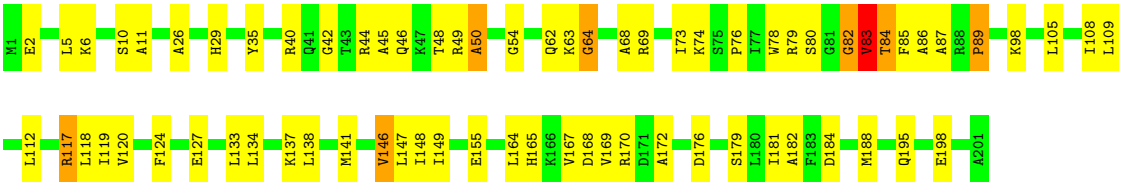
• Molecule 2: 50S ribosomal protein L3

Chain c:



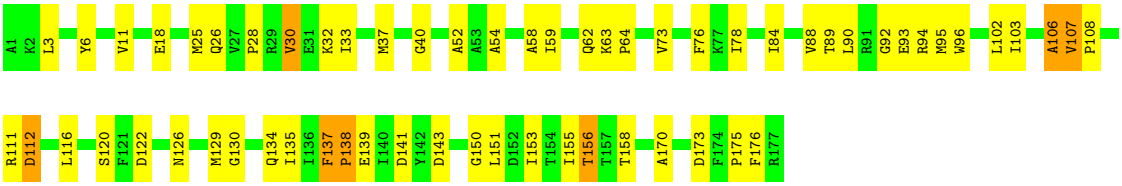
• Molecule 3: 50S ribosomal protein L4

Chain d:

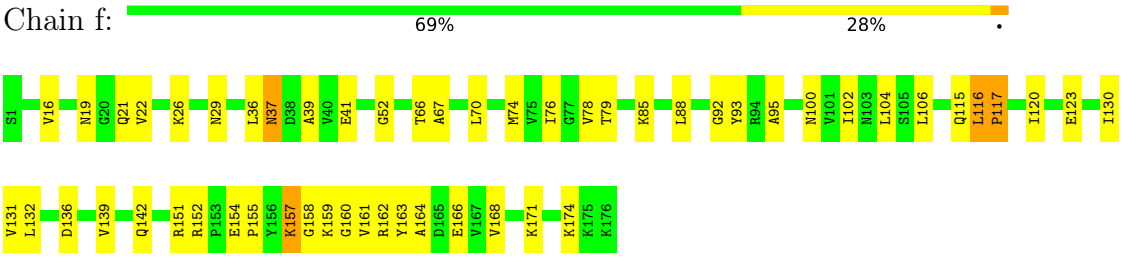


• Molecule 4: 50S ribosomal protein L5

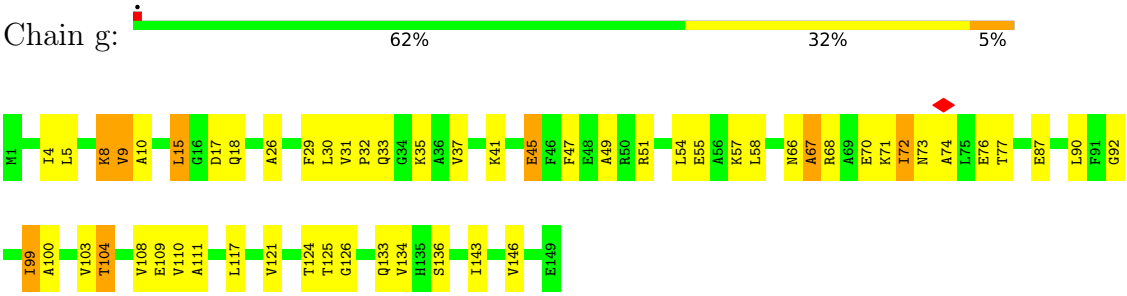
Chain e:



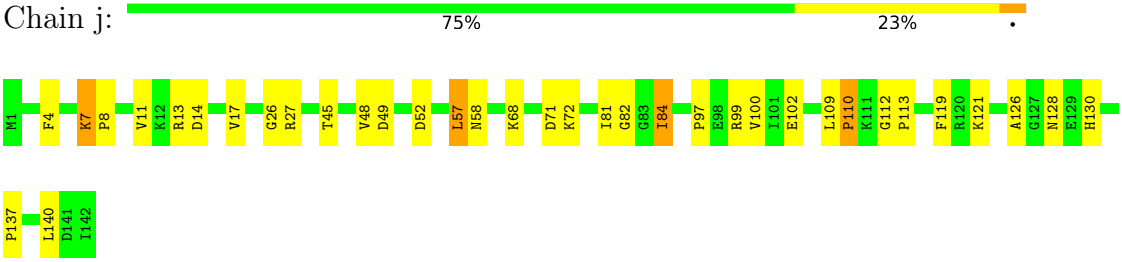
• Molecule 5: 50S ribosomal protein L6



• Molecule 6: 50S ribosomal protein L9



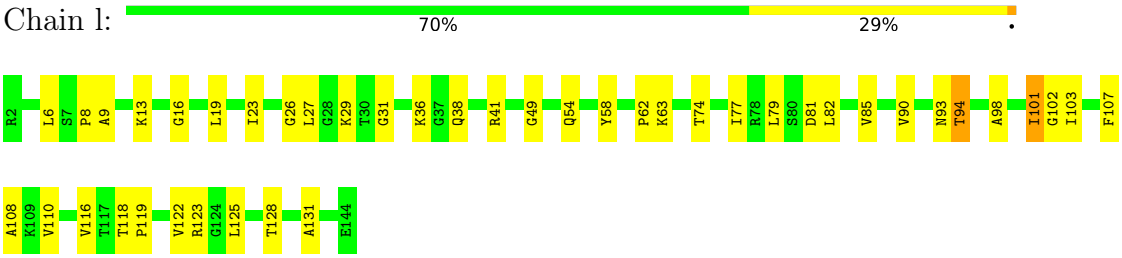
• Molecule 7: 50S ribosomal protein L13



• Molecule 8: 50S ribosomal protein L14

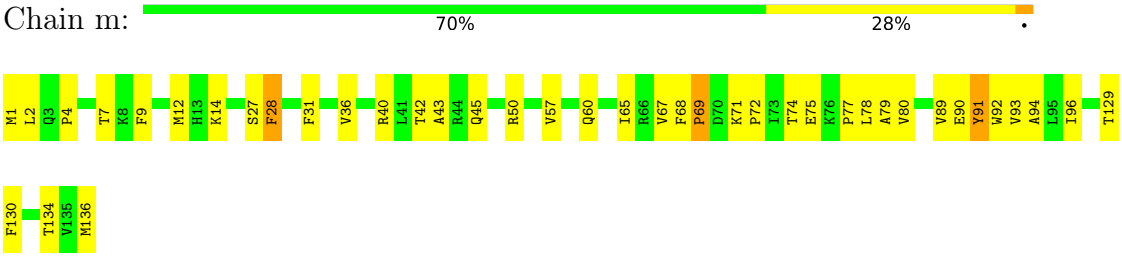
• Molecule 9: 50S ribosomal protein L15

Chain l:



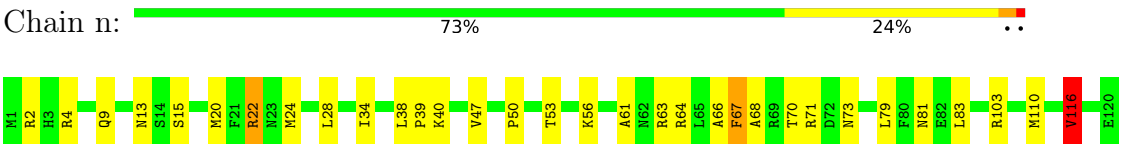
• Molecule 10: 50S ribosomal protein L16

Chain m:



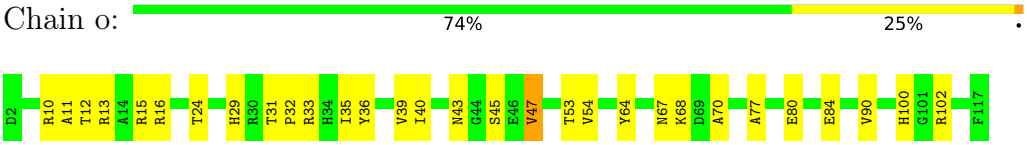
• Molecule 11: 50S ribosomal protein L17

Chain n:



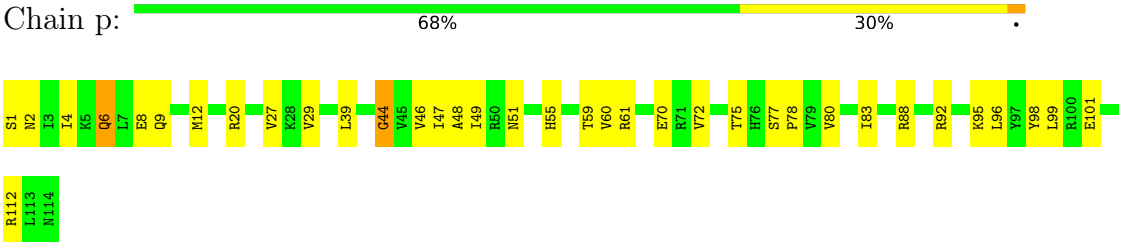
• Molecule 12: 50S ribosomal protein L18

Chain o:



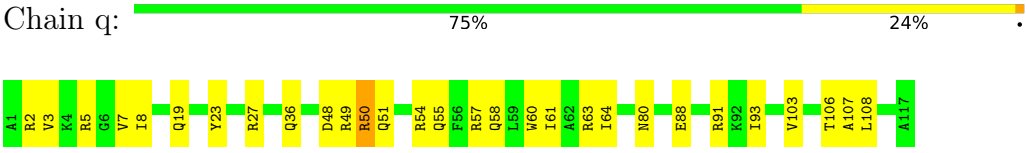
• Molecule 13: 50S ribosomal protein L19

Chain p:



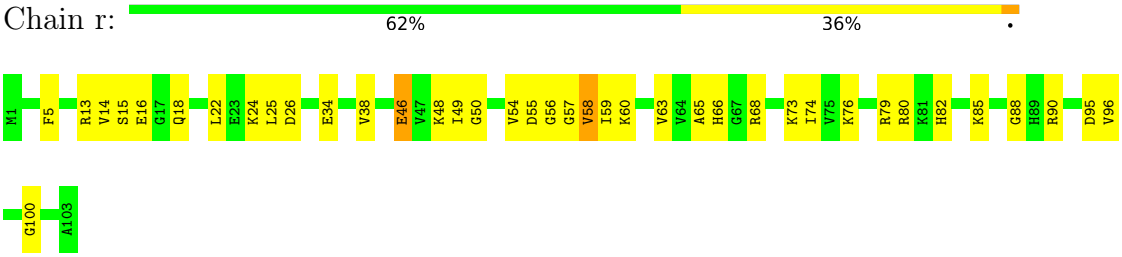
• Molecule 14: 50S ribosomal protein L20

Chain q:



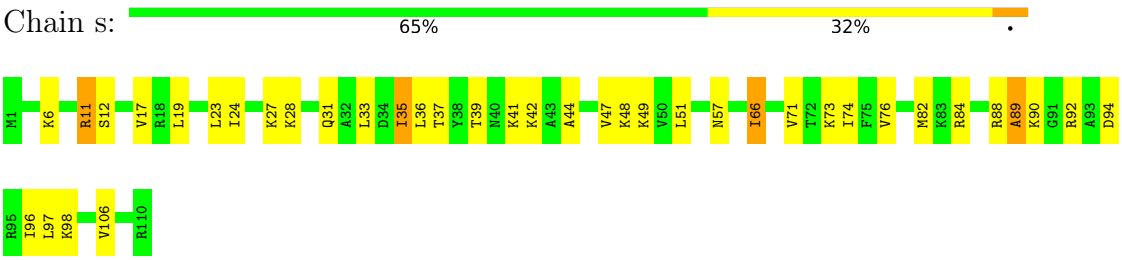
• Molecule 15: 50S ribosomal protein L21

Chain r:



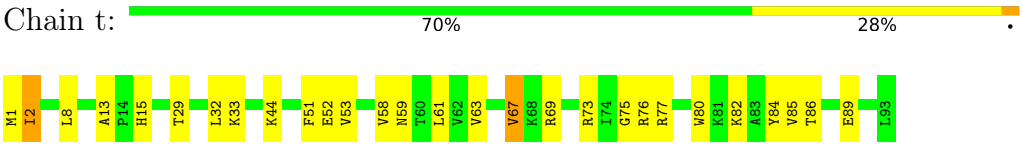
• Molecule 16: 50S ribosomal protein L22

Chain s:



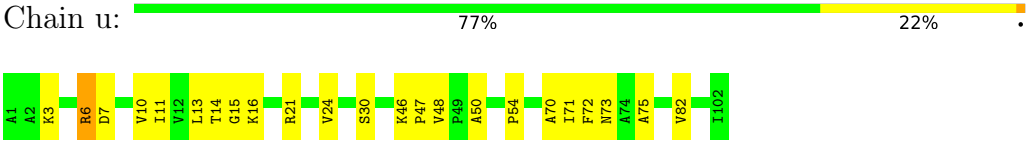
• Molecule 17: 50S ribosomal protein L23

Chain t:



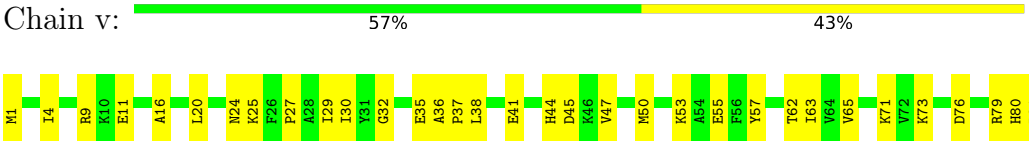
• Molecule 18: 50S ribosomal protein L24

Chain u:



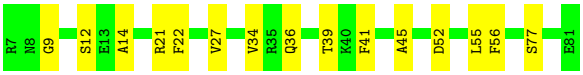
• Molecule 19: 50S ribosomal protein L25

Chain v:



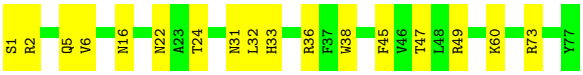
• Molecule 20: 50S ribosomal protein L27

Chain w:



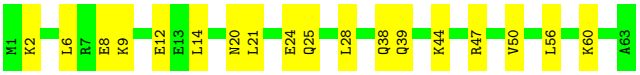
• Molecule 21: 50S ribosomal protein L28

Chain x:



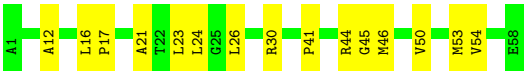
• Molecule 22: 50S ribosomal protein L29

Chain y:



• Molecule 23: 50S ribosomal protein L30

Chain z:

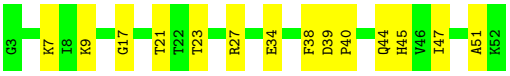


• Molecule 24: 50S ribosomal protein L32

Chain B:

• Molecule 25: 50S ribosomal protein L33

Chain C:

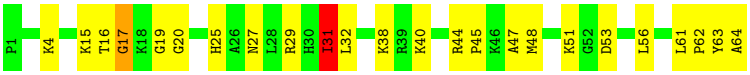


• Molecule 26: 50S ribosomal protein L34

Chain D:

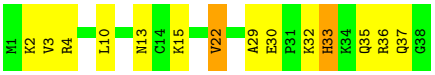
• Molecule 27: 50S ribosomal protein L35

Chain E:



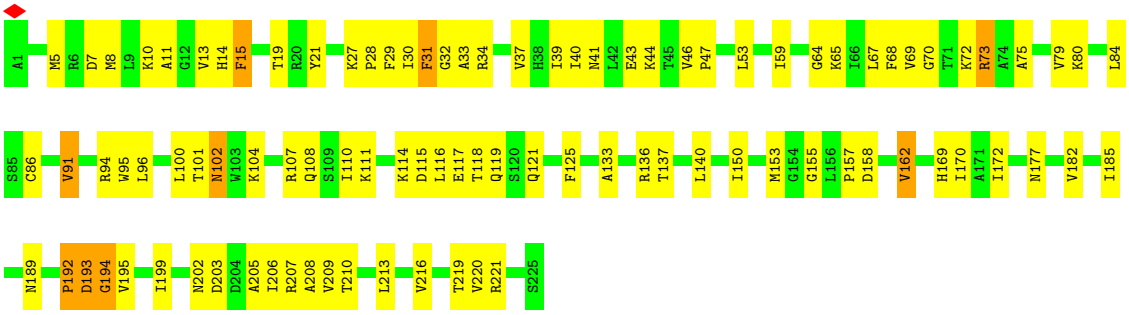
• Molecule 28: 50S ribosomal protein L36

Chain F:



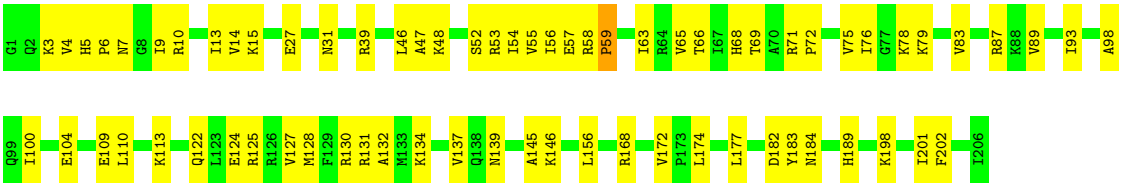
• Molecule 29: 30S ribosomal protein S2

Chain G:



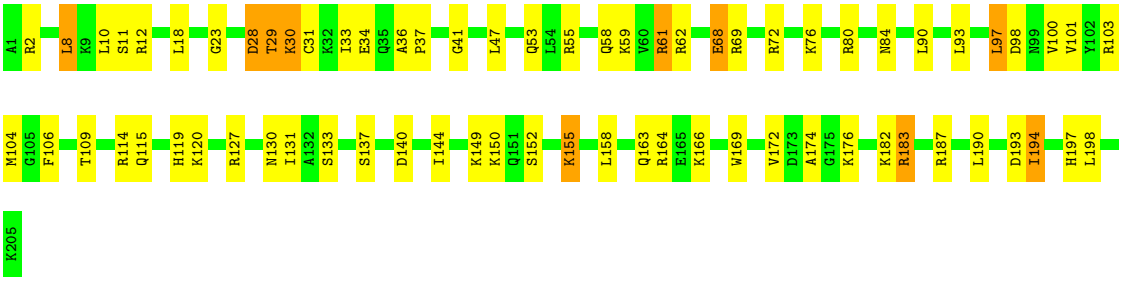
• Molecule 30: 30S ribosomal protein S3

Chain H:



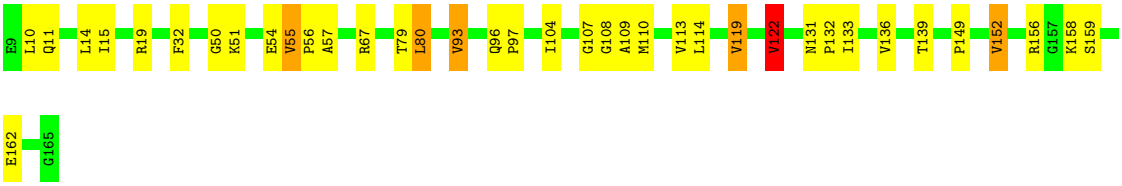
• Molecule 31: 30S ribosomal protein S4

Chain I:



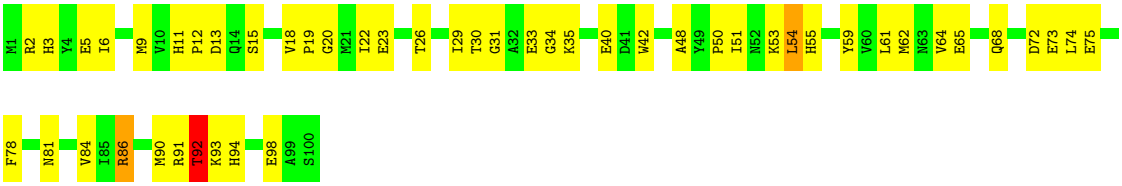
• Molecule 32: 30S ribosomal protein S5

Chain J:



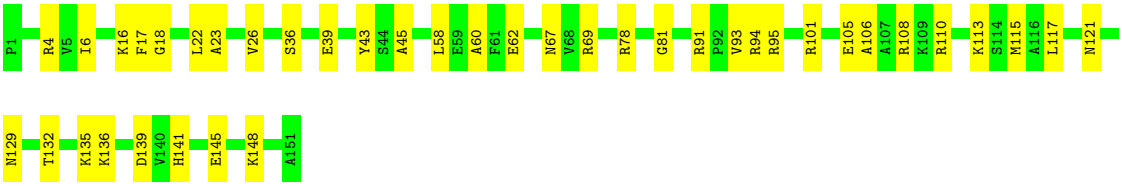
• Molecule 33: 30S ribosomal protein S6

Chain K:



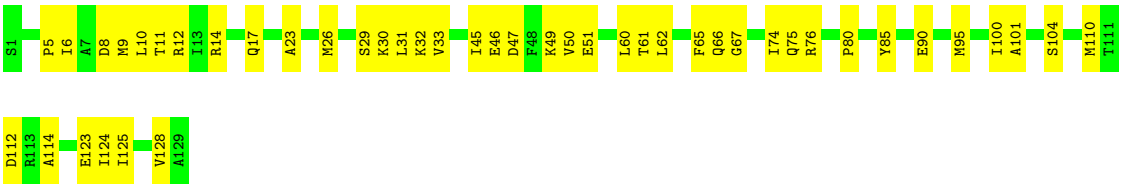
• Molecule 34: 30S ribosomal protein S7

Chain L:



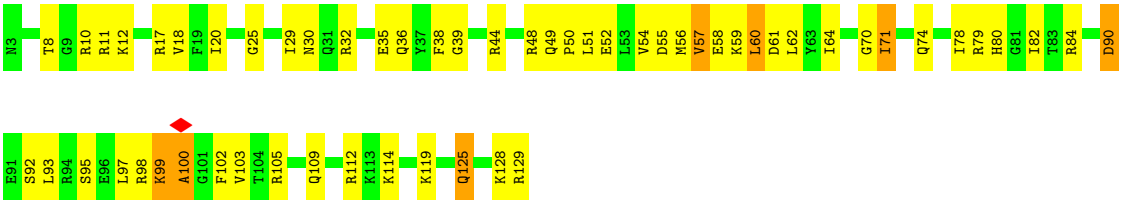
• Molecule 35: 30S ribosomal protein S8

Chain M:



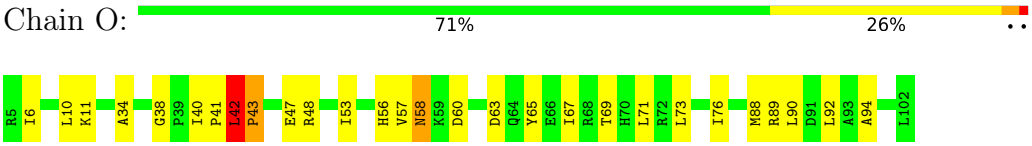
• Molecule 36: 30S ribosomal protein S9

Chain N:



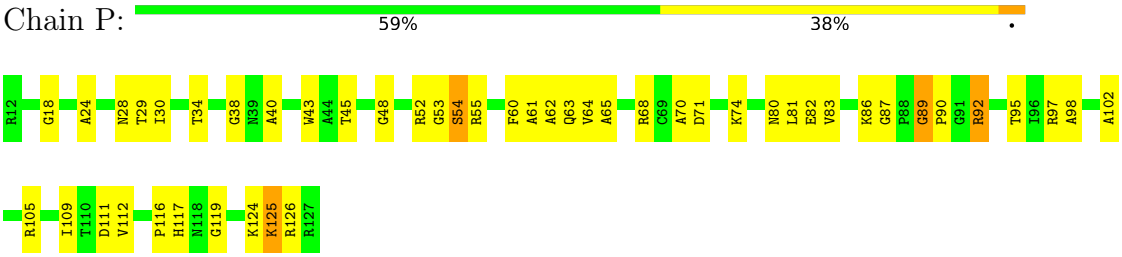
• Molecule 37: 30S ribosomal protein S10

Chain O:



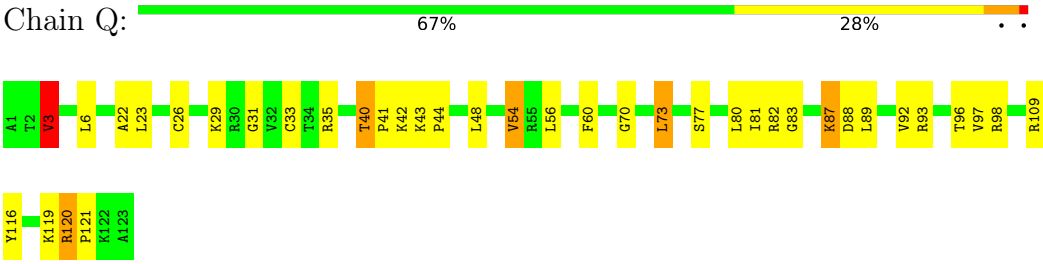
• Molecule 38: 30S ribosomal protein S11

Chain P:



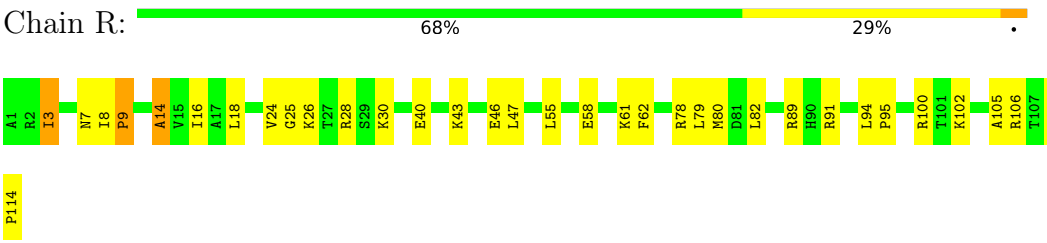
• Molecule 39: 30S ribosomal protein S12

Chain Q:



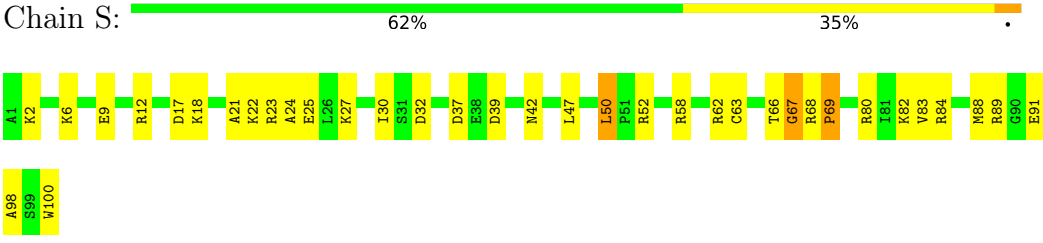
• Molecule 40: 30S ribosomal protein S13

Chain R:



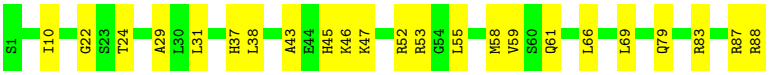
• Molecule 41: 30S ribosomal protein S14

Chain S:

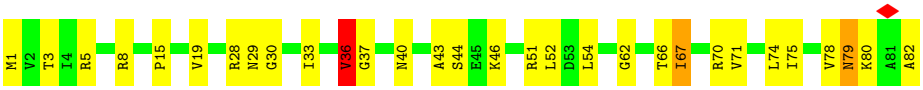


• Molecule 42: 30S ribosomal protein S15

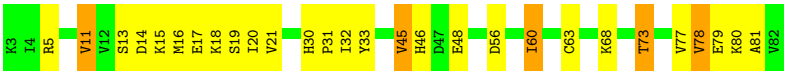
Chain T:



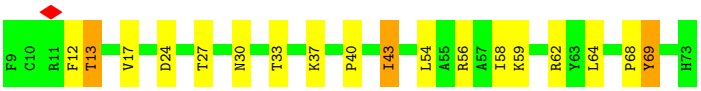
• Molecule 43: 30S ribosomal protein S16



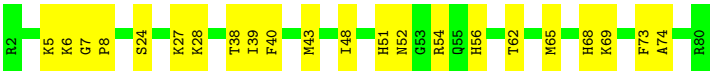
• Molecule 44: 30S ribosomal protein S17



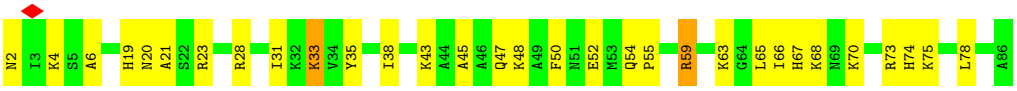
• Molecule 45: 30S ribosomal protein S18



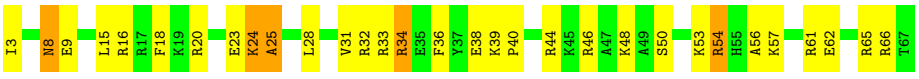
• Molecule 46: 30S ribosomal protein S19



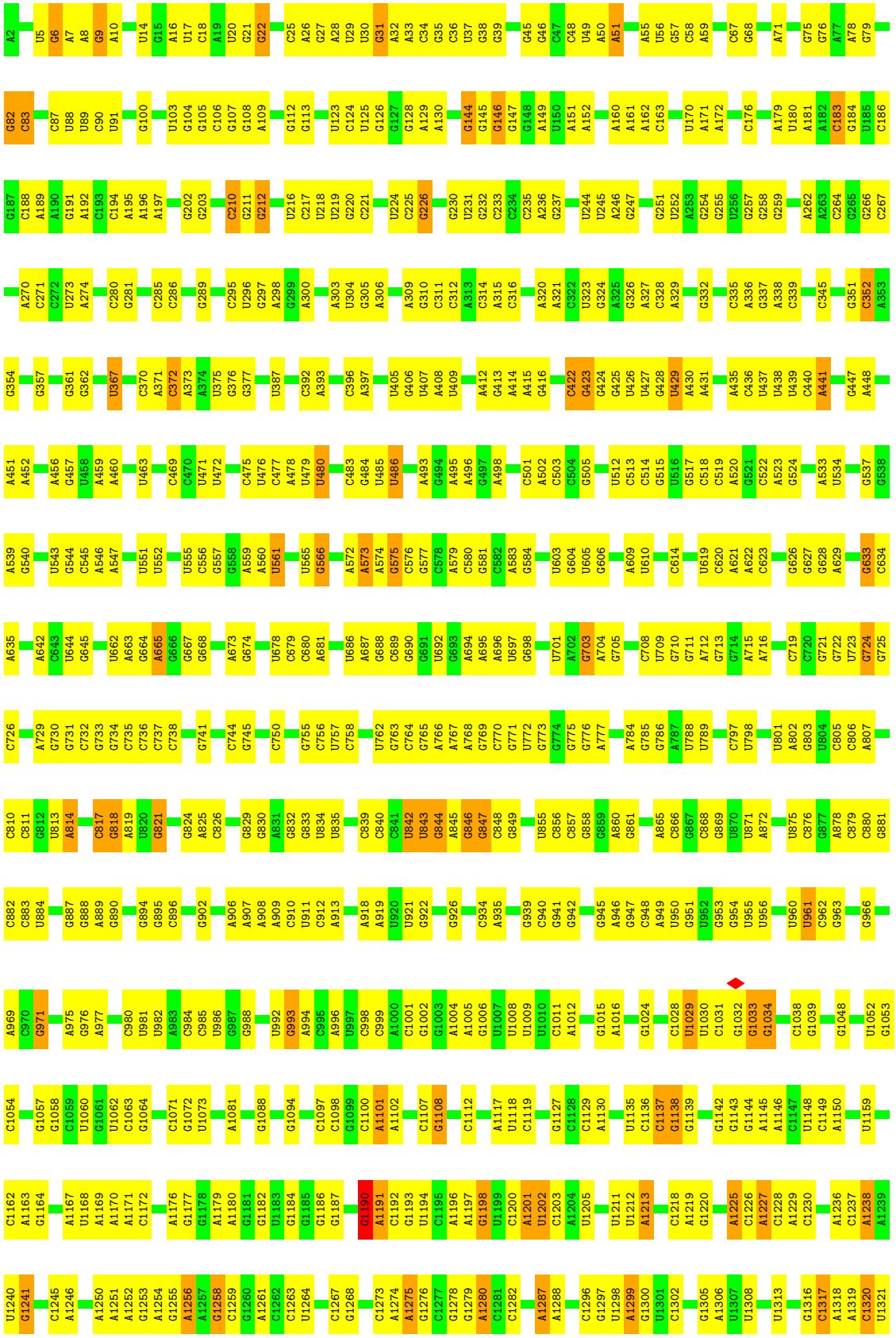
• Molecule 47: 30S ribosomal protein S20

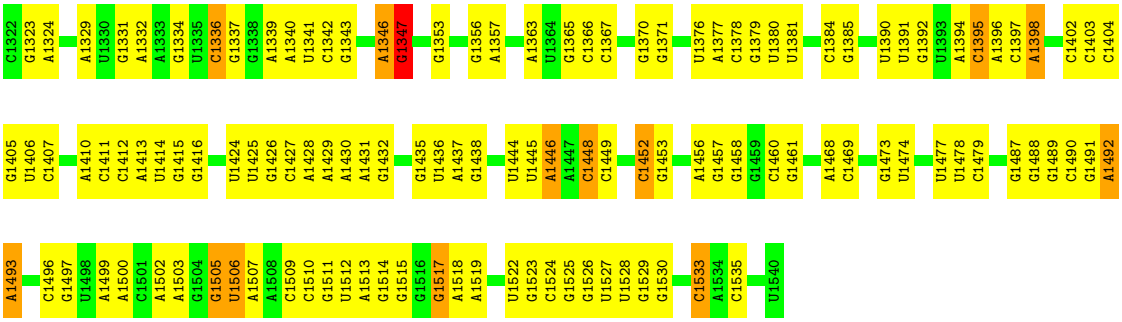


• Molecule 48: 30S ribosomal protein S21



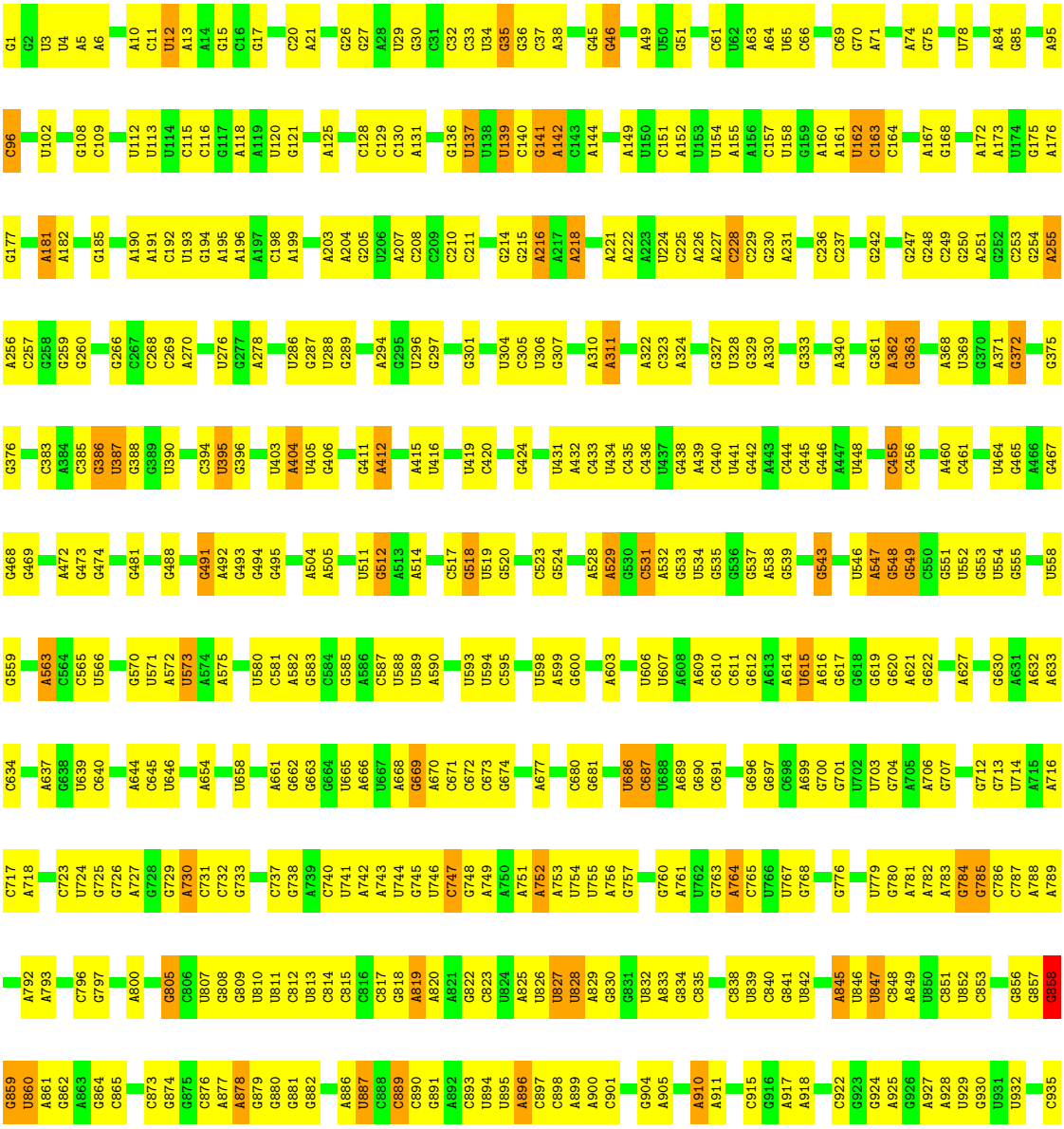
• Molecule 49: 16S ribosomal RNA

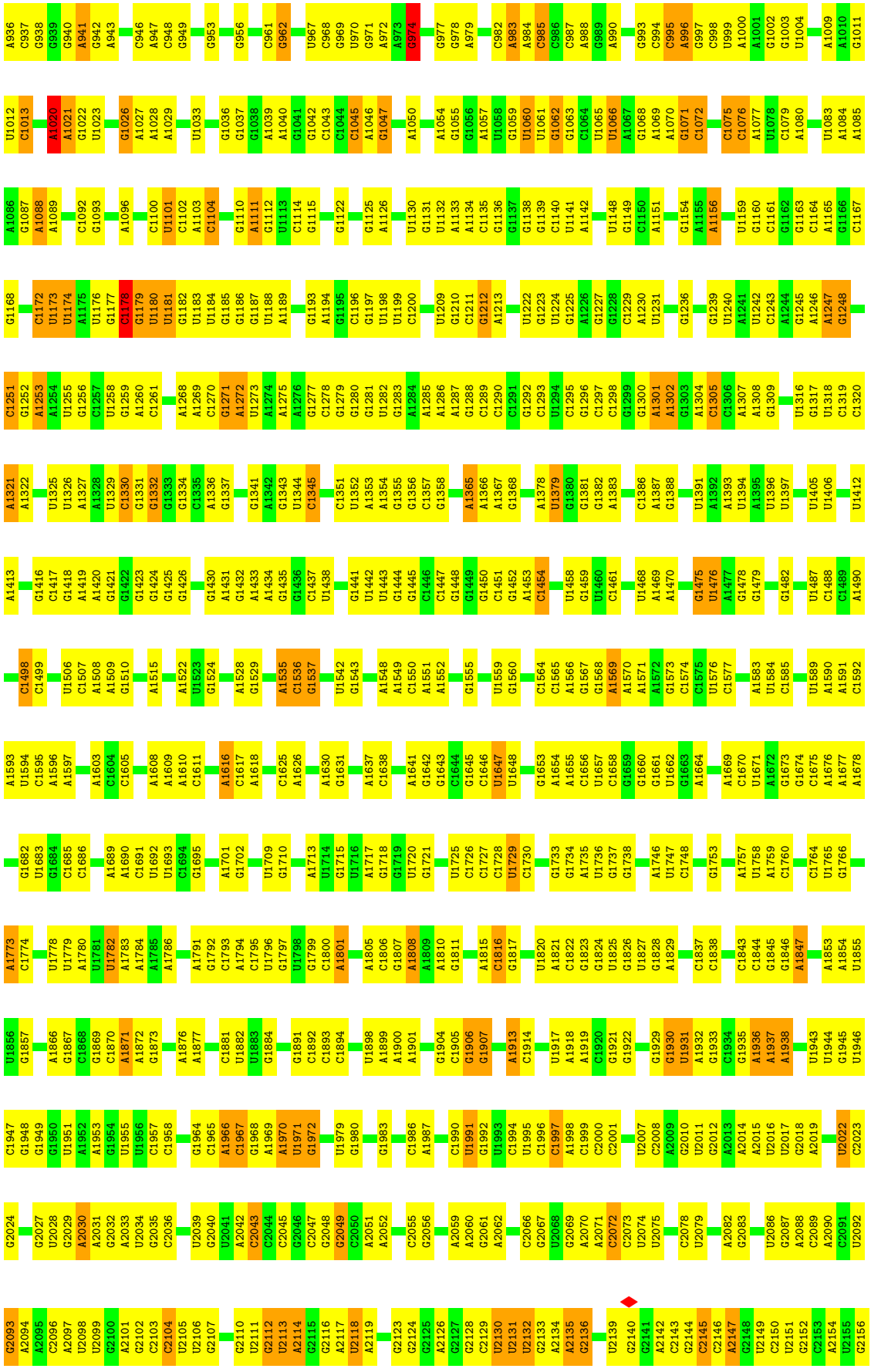




• Molecule 50: 23S ribosomal RNA

Chain 1:

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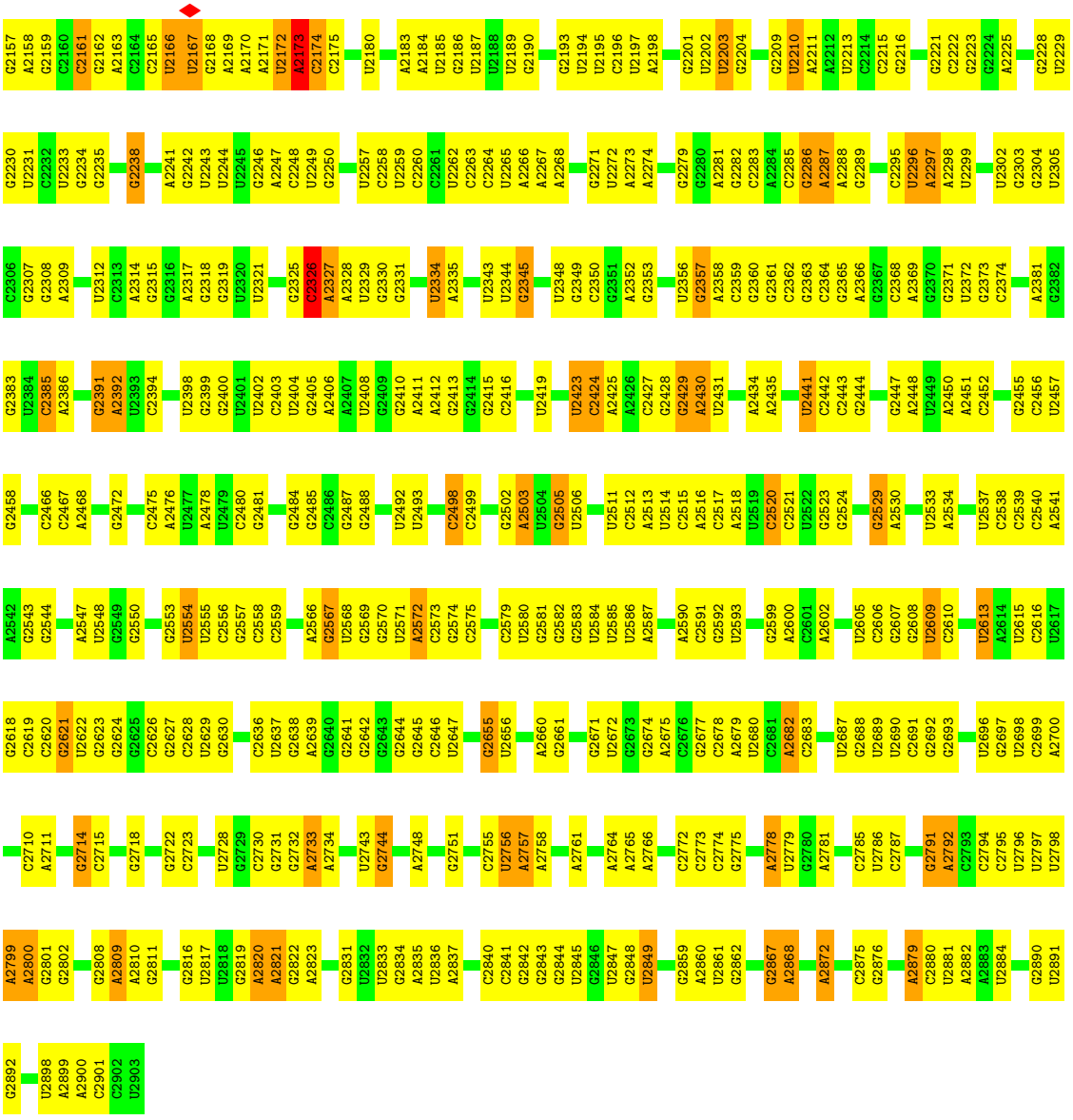
U1012 C1013 A1020 A1021 G1022 U1023 G1026 A1027 A1028 A1029 U1033 G1036 G1037 G1038 A1039 A1040 G1041 G1042 C1043 C1044 C1045 A1046 G1047 A1050 A1054 G1055 G1056 A1057 U1058 G1059 U1060 U1061 G1062 G1063 C1064 U1065 U1066 A1067 G1068 A1069 A1070 G1071 C1072 C1075 C1076 A1077 U1078 C1079 A1080 U1083 A1084 A1085
A1086 G1087 A1088 A1089 C1092 G1093 A1096 C1100 U1101 C1102 A1103 C1104 G1110 A1111 G1112 U1113 C1114 G1115 G1122 G1125 A1126 U1130 G1131 U1132 A1133 A1134 C1135 G1136 G1137 G1138 G1139 C1140 U1141 A1142 U1148 G1149 C1150 A1151 G1154 A1155 A1156 U1159 G1160 C1161 G1162 G1163 C1164 A1165 G1166 C1167
G1168 C1172 U1173 U1174 A1175 U1176 G1177 C1178 G1179 U1180 U1181 G1182 U1183 U1184 G1185 G1186 G1187 U1188 A1189 G1193 A1194 G1195 C1196 G1197 U1198 U1199 C1200 U1209 G1210 C1211 G1212 A1213 U1222 G1223 U1224 G1225 A1226 G1227 G1228 C1229 A1230 U1231 G1236 G1239 U1240 A1241 U1242 C1243 A1244 G1245 A1246 A1247 G1248
C1251 G1252 A1253 A1254 U1255 G1256 C1257 U1258 G1259 A1260 C1261 A1268 A1269 C1270 G1271 A1272 U1273 A1274 A1275 A1276 G1277 C1278 G1279 G1280 G1281 U1282 G1283 A1284 A1285 A1286 A1287 G1288 C1289 C1290 C1291 G1292 C1293 U1294 C1295 G1296 C1297 C1298 G1299 G1300 A1301 A1302 G1303 A1304 C1305 C1306 A1307 A1308 G1309 U1316 G1317 U1318 C1319 C1320
A1321 A1322 U1325 U1326 A1327 A1328 U1329 C1330 G1331 G1332 G1333 G1334 C1335 A1336 G1337 G1341 A1342 G1343 U1344 C1345 C1351 U1352 A1353 A1354 G1355 G1356 C1357 G1358 A1365 A1366 A1367 G1368 A1378 U1379 G1380 G1381 G1382 A1383 C1386 A1387 G1388 U1391 A1392 A1393 U1394 A1395 U1396 U1397 U1405 U1406 U1412
A1413 G1416 C1417 G1418 A1419 A1420 G1421 G1422 G1423 G1424 G1425 G1426 G1430 A1431 G1432 A1433 A1434 G1435 G1436 C1437 U1438 G1441 U1442 U1443 G1444 G1445 C1446 C1447 G1448 G1449 G1450 C1451 G1452 A1453 C1454 U1458 G1459 U1460 C1461 U1468 A1469 A1470 G1475 U1476 A1477 G1478 G1479 G1482 U1487 C1488 C1489 A1490
C1498 C1499 U1506 C1507 A1508 A1509 C1510 A1515 A1522 U1523 G1524 A1528 G1529 A1535 C1536 G1537 U1542 G1543 A1548 A1549 C1550 A1551 A1552 G1555 U1559 G1560 C1564 C1565 A1566 G1567 G1568 A1569 A1570 A1571 A1572 G1573 C1574 C1575 U1576 C1577 A1583 U1584 C1585 U1589 A1590 A1591 C1592
A1593 U1594 C1595 A1596 A1597 A1603 C1604 C1605 A1608 A1609 A1610 C1611 A1616 C1617 A1618 C1625 A1626 A1630 G1631 A1637 C1638 A1641 G1642 G1643 C1644 G1645 C1646 U1647 U1648 G1653 A1654 A1655 C1656 U1657 C1658 G1659 G1660 G1661 U1662 G1663 A1664 A1669 C1670 U1671 A1672 G1673 G1674 C1675 A1676 A1677 A1678
G1682 U1683 G1684 C1685 C1686 A1689 A1690 C1691 U1692 U1693 C1694 G1695 A1701 G1702 U1709 G1710 A1713 U1714 G1715 U1716 A1717 G1718 G1719 U1720 G1721 U1725 C1726 C1727 C1728 U1729 C1730 G1733 G1734 A1735 U1736 G1737 G1738 A1746 U1747 C1748 G1753 A1757 U1758 A1759 C1760 C1764 U1765 G1766
A1773 C1774 U1778 U1779 A1780 U1781 U1782 A1783 A1784 A1785 A1786 A1791 G1792 C1793 A1794 C1795 U1796 G1797 U1798 G1799 C1800 A1801 A1805 C1806 G1807 A1808 A1809 A1810 G1811 A1815 C1816 G1817 U1820 A1821 C1822 G1823 G1824 U1825 G1826 U1827 G1828 A1829 C1837 C1838 C1843 C1844 G1845 G1846 A1847 A1853 A1854 U1855
U1856 G1857 A1866 G1867 C1868 G1869 C1870 A1871 A1872 G1873 A1876 A1877 C1881 U1882 U1883 G1884 G1891 C1892 C1893 C1894 U1898 A1899 A1900 A1901 G1904 C1905 G1906 G1907 A1913 C1914 U1917 A1918 A1919 C1920 G1921 G1922 G1929 G1930 U1931 A1932 G1933 C1934 G1935 A1936 A1937 A1938 U1943 U1944 G1945 U1946
C1947 G1948 G1949 G1950 U1951 A1952 A1953 G1954 U1955 U1956 C1957 C1958 G1964 C1965 A1966 C1967 G1968 A1969 A1970 U1971 G1972 U1979 G1980 G1983 C1986 A1987 C1990 U1991 G1992 U1993 C1994 U1995 C1996 C1997 A1998 C1999 C2000 C2001 U2007 C2008 A2009 G2010 U2011 G2012 A2013 A2014 A2015 U2016 U2017 G2018 A2019 U2022 C2023
G2024 G2027 U2028 G2029 A2030 A2031 G2032 A2033 U2034 G2035 C2036 U2039 G2040 U2041 A2042 C2043 C2044 C2045 G2046 C2047 G2048 G2049 C2050 A2051 A2052 C2055 G2056 A2059 A2060 G2061 A2062 C2066 G2067 U2068 G2069 A2070 A2071 C2072 C2073 U2074 U2075 C2078 U2079 A2082 G2083 U2086 G2087 A2088 C2089 A2090 C2091 U2092
G2093 A2094 A2095 C2096 A2097 U2098 U2099 G2100 A2101 G2102 C2103 C2104 U2105 U2106 G2107 G2110 U2111 G2112 U2113 A2114 G2115 G2116 A2117 U2118 A2119 G2123 G2124 C2125 A2126 G2127 C2128 C2129 U2130 U2131 U2132 G2133 A2134 A2135 G2136 U2139 G2140 G2141 A2142 C2143 G2144 C2145 C2146 A2147 G2148 U2149 C2150 U2151 G2152 C2153 A2154 U2155 G2156

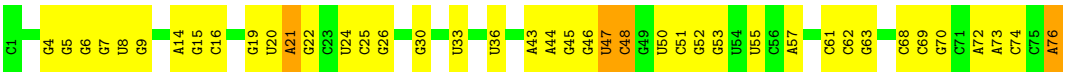


• Molecule 51: 5S ribosomal RNA

Chain 2:

• Molecule 52: tRNAfMet

Chain 5:

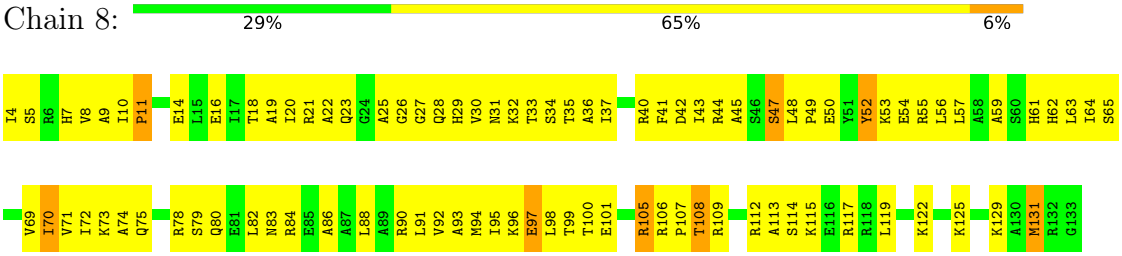


• Molecule 53: mRNA

Chain 4:

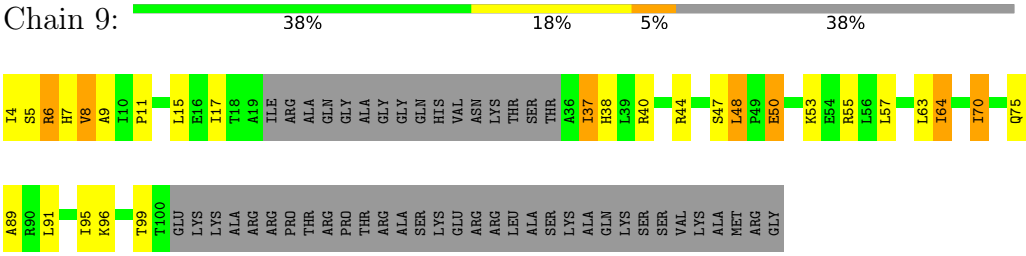
• Molecule 54: Peptidyl-tRNA hydrolase ArfB

Chain 8:



• Molecule 54: Peptidyl-tRNA hydrolase ArfB

Chain 9:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	14367	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING ONLY	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	49.6	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	12.124	Depositor
Minimum map value	-4.894	Depositor
Average map value	0.097	Depositor
Map value standard deviation	0.600	Depositor
Recommended contour level	0.6	Depositor
Map size (Å)	375.12003, 375.12003, 375.12003	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.042, 1.042, 1.042	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	b	0.37	0/2122	0.95	6/2852 (0.2%)
2	c	0.38	0/1586	0.92	2/2134 (0.1%)
3	d	0.34	0/1571	0.93	10/2113 (0.5%)
4	e	0.40	1/1435 (0.1%)	1.00	10/1926 (0.5%)
5	f	0.35	0/1343	0.93	7/1816 (0.4%)
6	g	0.37	0/1122	1.10	7/1515 (0.5%)
7	j	0.36	0/1152	0.94	6/1551 (0.4%)
8	k	0.42	0/948	0.97	5/1268 (0.4%)
9	l	0.38	0/1054	1.03	4/1403 (0.3%)
10	m	0.40	0/1093	0.88	1/1460 (0.1%)
11	n	0.40	0/974	0.97	5/1301 (0.4%)
12	o	0.31	0/902	0.95	3/1209 (0.2%)
13	p	0.36	0/929	0.86	2/1242 (0.2%)
14	q	0.36	0/960	0.94	2/1278 (0.2%)
15	r	0.37	0/829	0.97	2/1107 (0.2%)
16	s	0.37	0/864	1.03	6/1156 (0.5%)
17	t	0.32	0/745	0.83	1/994 (0.1%)
18	u	0.33	0/788	0.86	0/1051
19	v	0.32	0/766	0.87	2/1025 (0.2%)
20	w	0.34	0/582	0.86	1/769 (0.1%)
21	x	0.37	0/635	0.90	0/848
22	y	0.30	0/510	0.96	2/677 (0.3%)
23	z	0.33	0/453	0.81	0/605
24	B	0.38	0/450	0.88	0/599
25	C	0.37	0/417	0.90	3/554 (0.5%)
26	D	0.43	0/380	1.19	5/498 (1.0%)
27	E	0.39	0/513	0.82	1/676 (0.1%)
28	F	0.35	0/303	0.92	1/397 (0.3%)
29	G	0.35	0/1788	1.06	9/2408 (0.4%)
30	H	0.35	0/1652	0.93	6/2225 (0.3%)
31	I	0.36	0/1665	1.05	14/2227 (0.6%)
32	J	0.39	0/1170	0.95	3/1573 (0.2%)
33	K	0.37	0/836	0.96	5/1128 (0.4%)
34	L	0.33	0/1196	0.91	4/1602 (0.2%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
35	M	0.34	0/989	0.96	1/1326 (0.1%)
36	N	0.34	0/1034	1.08	5/1375 (0.4%)
37	O	0.40	0/797	0.96	3/1077 (0.3%)
38	P	0.39	0/886	1.01	8/1195 (0.7%)
39	Q	0.34	0/969	1.07	6/1300 (0.5%)
40	R	0.36	0/893	0.97	2/1193 (0.2%)
41	S	0.31	0/817	0.96	3/1088 (0.3%)
42	T	0.33	0/722	1.08	7/964 (0.7%)
43	U	0.35	0/659	0.96	3/884 (0.3%)
44	V	0.33	0/658	0.97	4/881 (0.5%)
45	W	0.38	0/545	1.03	4/731 (0.5%)
46	X	0.36	0/653	0.94	2/877 (0.2%)
47	Y	0.32	0/671	1.03	3/888 (0.3%)
48	Z	0.39	0/551	1.06	4/728 (0.5%)
49	3	0.43	0/36963	0.49	2/57662 (0.0%)
50	1	0.44	0/69794	0.51	6/108883 (0.0%)
51	2	0.44	0/2872	0.47	0/4479
52	5	0.43	0/1832	0.47	0/2855
53	4	0.49	0/495	0.62	0/771
54	8	0.34	0/1028	0.91	2/1378 (0.1%)
54	9	0.38	0/649	1.19	8/875 (0.9%)
All	All	0.42	1/158210 (0.0%)	0.66	208/236597 (0.1%)

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
50	1	0	1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	e	107	VAL	CA-CB	6.22	1.58	1.53

The worst 5 of 208 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
29	G	32	GLY	N-CA-C	18.33	132.49	112.33
54	9	63	LEU	N-CA-C	-10.89	99.51	113.12
36	N	97	LEU	N-CA-C	-10.54	100.16	113.23

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	c	149	ASN	N-CA-C	9.73	124.48	109.60
6	g	8	LYS	N-CA-C	-9.34	100.01	111.40

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
50	1	512	G	Sidechain

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	b	2083	0	2157	78	0
2	c	1565	0	1616	55	0
3	d	1552	0	1619	51	0
4	e	1411	0	1447	42	0
5	f	1323	0	1374	37	0
6	g	1111	0	1148	38	0
7	j	1129	0	1162	27	0
8	k	939	0	1012	29	0
9	l	1045	0	1117	28	0
10	m	1074	0	1157	31	0
11	n	961	0	1000	24	0
12	o	892	0	923	22	0
13	p	917	0	965	25	0
14	q	947	0	1022	32	0
15	r	816	0	839	33	0
16	s	857	0	922	27	0
17	t	739	0	807	26	0
18	u	780	0	834	15	0
19	v	753	0	780	25	0
20	w	575	0	592	14	0
21	x	625	0	655	12	0
22	y	509	0	543	13	0
23	z	449	0	491	13	0
24	B	444	0	461	23	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
25	C	410	0	440	8	0
26	D	377	0	418	15	0
27	E	504	0	574	19	0
28	F	302	0	343	11	0
29	G	1757	0	1787	64	0
30	H	1625	0	1699	46	0
31	I	1643	0	1710	49	0
32	J	1157	0	1199	26	0
33	K	818	0	808	36	0
34	L	1182	0	1240	23	0
35	M	979	0	1034	32	0
36	N	1022	0	1070	49	0
37	O	787	0	828	25	0
38	P	870	0	878	29	0
39	Q	955	0	1019	32	0
40	R	884	0	944	29	0
41	S	805	0	847	28	0
42	T	714	0	737	11	0
43	U	649	0	666	27	0
44	V	649	0	691	23	0
45	W	536	0	552	10	0
46	X	638	0	665	16	0
47	Y	665	0	714	25	0
48	Z	545	0	579	37	0
49	3	33012	0	16619	672	0
50	1	62315	0	31346	1273	0
51	2	2568	0	1303	61	0
52	5	1640	0	837	31	0
53	4	439	0	218	11	0
54	8	1016	0	1067	101	0
54	9	641	0	659	26	0
All	All	145600	0	98134	3192	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 13.

The worst 5 of 3192 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)
3:d:76:PRO:HA	3:d:82:GLY:HA2	1.20	1.11
44:V:5:ARG:NH2	49:3:128:G:H5'	1.71	1.06

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
50:1:45:G:H5"	50:1:46:G:H5'	1.31	1.06
50:1:2092:U:H4'	50:1:2093:G:H5"	1.36	1.03
54:8:40:ARG:HH22	54:8:91:LEU:HB2	1.22	1.01

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	b	269/271 (99%)	244 (91%)	25 (9%)	0	100	100
2	c	207/209 (99%)	192 (93%)	12 (6%)	3 (1%)	9	33
3	d	199/201 (99%)	182 (92%)	11 (6%)	6 (3%)	3	20
4	e	175/177 (99%)	156 (89%)	15 (9%)	4 (2%)	5	25
5	f	174/176 (99%)	160 (92%)	12 (7%)	2 (1%)	11	39
6	g	147/149 (99%)	119 (81%)	24 (16%)	4 (3%)	4	22
7	j	140/142 (99%)	126 (90%)	12 (9%)	2 (1%)	9	33
8	k	120/122 (98%)	104 (87%)	13 (11%)	3 (2%)	4	23
9	l	141/143 (99%)	120 (85%)	18 (13%)	3 (2%)	5	26
10	m	134/136 (98%)	118 (88%)	14 (10%)	2 (2%)	8	32
11	n	118/120 (98%)	103 (87%)	14 (12%)	1 (1%)	16	45
12	o	114/116 (98%)	104 (91%)	10 (9%)	0	100	100
13	p	112/114 (98%)	97 (87%)	15 (13%)	0	100	100
14	q	115/117 (98%)	109 (95%)	5 (4%)	1 (1%)	14	43
15	r	101/103 (98%)	84 (83%)	15 (15%)	2 (2%)	6	27
16	s	108/110 (98%)	96 (89%)	11 (10%)	1 (1%)	14	43
17	t	91/93 (98%)	84 (92%)	7 (8%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
18	u	100/102 (98%)	88 (88%)	9 (9%)	3 (3%)	3 20
19	v	92/94 (98%)	80 (87%)	12 (13%)	0	100 100
20	w	73/75 (97%)	66 (90%)	6 (8%)	1 (1%)	9 33
21	x	75/77 (97%)	69 (92%)	5 (7%)	1 (1%)	9 35
22	y	61/63 (97%)	57 (93%)	4 (7%)	0	100 100
23	z	56/58 (97%)	49 (88%)	7 (12%)	0	100 100
24	B	54/56 (96%)	51 (94%)	2 (4%)	1 (2%)	6 28
25	C	48/50 (96%)	46 (96%)	2 (4%)	0	100 100
26	D	44/46 (96%)	38 (86%)	6 (14%)	0	100 100
27	E	62/64 (97%)	52 (84%)	7 (11%)	3 (5%)	2 12
28	F	36/38 (95%)	32 (89%)	4 (11%)	0	100 100
29	G	223/225 (99%)	190 (85%)	27 (12%)	6 (3%)	4 22
30	H	204/206 (99%)	188 (92%)	14 (7%)	2 (1%)	12 40
31	I	203/205 (99%)	175 (86%)	24 (12%)	4 (2%)	6 27
32	J	155/157 (99%)	132 (85%)	18 (12%)	5 (3%)	3 19
33	K	98/100 (98%)	75 (76%)	19 (19%)	4 (4%)	2 15
34	L	149/151 (99%)	138 (93%)	10 (7%)	1 (1%)	18 49
35	M	127/129 (98%)	113 (89%)	13 (10%)	1 (1%)	16 45
36	N	125/127 (98%)	101 (81%)	18 (14%)	6 (5%)	2 12
37	O	96/98 (98%)	75 (78%)	16 (17%)	5 (5%)	1 11
38	P	114/116 (98%)	92 (81%)	17 (15%)	5 (4%)	2 13
39	Q	121/123 (98%)	98 (81%)	18 (15%)	5 (4%)	2 15
40	R	112/114 (98%)	97 (87%)	13 (12%)	2 (2%)	6 29
41	S	98/100 (98%)	84 (86%)	13 (13%)	1 (1%)	12 40
42	T	86/88 (98%)	76 (88%)	9 (10%)	1 (1%)	10 37
43	U	80/82 (98%)	72 (90%)	7 (9%)	1 (1%)	9 35
44	V	78/80 (98%)	56 (72%)	18 (23%)	4 (5%)	1 11
45	W	63/65 (97%)	56 (89%)	4 (6%)	3 (5%)	2 12
46	X	77/79 (98%)	66 (86%)	11 (14%)	0	100 100
47	Y	83/85 (98%)	79 (95%)	3 (4%)	1 (1%)	10 37
48	Z	63/65 (97%)	42 (67%)	16 (25%)	5 (8%)	1 5

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
54	8	128/130 (98%)	103 (80%)	18 (14%)	7 (6%)	1 10
54	9	77/130 (59%)	55 (71%)	17 (22%)	5 (6%)	1 8
All	All	5726/5877 (97%)	4989 (87%)	620 (11%)	117 (2%)	8 27

5 of 117 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	d	49	ARG
3	d	84	THR
6	g	9	VAL
9	l	31	GLY
10	m	28	PHE

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	b	216/216 (100%)	213 (99%)	3 (1%)	59 73
2	c	164/164 (100%)	162 (99%)	2 (1%)	63 75
3	d	165/165 (100%)	162 (98%)	3 (2%)	51 70
4	e	148/148 (100%)	145 (98%)	3 (2%)	48 68
5	f	137/137 (100%)	135 (98%)	2 (2%)	57 72
6	g	114/114 (100%)	114 (100%)	0	100 100
7	j	116/116 (100%)	114 (98%)	2 (2%)	53 71
8	k	103/103 (100%)	101 (98%)	2 (2%)	50 68
9	l	102/102 (100%)	100 (98%)	2 (2%)	48 68
10	m	109/109 (100%)	108 (99%)	1 (1%)	70 78
11	n	100/100 (100%)	99 (99%)	1 (1%)	68 76
12	o	86/86 (100%)	85 (99%)	1 (1%)	63 75
13	p	99/99 (100%)	98 (99%)	1 (1%)	68 76
14	q	89/89 (100%)	89 (100%)	0	100 100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
15	r	84/84 (100%)	83 (99%)	1 (1%)	63	75
16	s	93/93 (100%)	91 (98%)	2 (2%)	45	66
17	t	80/80 (100%)	79 (99%)	1 (1%)	61	74
18	u	83/83 (100%)	83 (100%)	0	100	100
19	v	78/78 (100%)	77 (99%)	1 (1%)	61	74
20	w	57/57 (100%)	57 (100%)	0	100	100
21	x	67/67 (100%)	67 (100%)	0	100	100
22	y	55/55 (100%)	55 (100%)	0	100	100
23	z	48/48 (100%)	48 (100%)	0	100	100
24	B	47/47 (100%)	47 (100%)	0	100	100
25	C	45/45 (100%)	45 (100%)	0	100	100
26	D	38/38 (100%)	36 (95%)	2 (5%)	20	49
27	E	51/51 (100%)	50 (98%)	1 (2%)	48	68
28	F	34/34 (100%)	33 (97%)	1 (3%)	37	62
29	G	186/186 (100%)	184 (99%)	2 (1%)	65	76
30	H	170/170 (100%)	169 (99%)	1 (1%)	78	81
31	I	172/172 (100%)	171 (99%)	1 (1%)	78	81
32	J	119/119 (100%)	117 (98%)	2 (2%)	53	71
33	K	87/87 (100%)	87 (100%)	0	100	100
34	L	124/124 (100%)	124 (100%)	0	100	100
35	M	104/104 (100%)	102 (98%)	2 (2%)	50	68
36	N	105/105 (100%)	104 (99%)	1 (1%)	68	76
37	O	86/86 (100%)	83 (96%)	3 (4%)	32	58
38	P	89/89 (100%)	89 (100%)	0	100	100
39	Q	103/103 (100%)	102 (99%)	1 (1%)	68	76
40	R	92/92 (100%)	92 (100%)	0	100	100
41	S	83/83 (100%)	82 (99%)	1 (1%)	63	75
42	T	76/76 (100%)	76 (100%)	0	100	100
43	U	65/65 (100%)	63 (97%)	2 (3%)	35	60
44	V	74/74 (100%)	72 (97%)	2 (3%)	39	63
45	W	56/56 (100%)	55 (98%)	1 (2%)	51	70

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
46	X	70/70 (100%)	70 (100%)	0	100 100
47	Y	65/65 (100%)	65 (100%)	0	100 100
48	Z	55/55 (100%)	55 (100%)	0	100 100
54	8	106/106 (100%)	104 (98%)	2 (2%)	50 68
54	9	68/106 (64%)	64 (94%)	4 (6%)	18 46
All	All	4763/4801 (99%)	4706 (99%)	57 (1%)	61 75

5 of 57 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
26	D	9	VAL
54	9	37	ILE
31	I	8	LEU
54	9	8	VAL
44	V	77	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 120 such sidechains are listed below:

Mol	Chain	Res	Type
20	w	36	GLN
48	Z	63	ASN
30	H	40	GLN
47	Y	83	ASN
54	9	75	GLN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
49	3	1538/1539 (99%)	155 (10%)	1 (0%)
50	1	2902/2903 (99%)	378 (13%)	10 (0%)
51	2	119/120 (99%)	13 (10%)	0
52	5	76/77 (98%)	9 (11%)	0
53	4	19/20 (95%)	4 (21%)	0
All	All	4654/4659 (99%)	559 (12%)	11 (0%)

5 of 559 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
49	3	6	G
49	3	9	G
49	3	22	G
49	3	31	G
49	3	32	A

5 of 11 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
50	1	2296	U
50	1	2326	C
50	1	2756	U
50	1	2391	G
50	1	1475	G

5.4 Non-standard residues in protein, DNA, RNA chains

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

5.5 Carbohydrates

There are no oligosaccharides in this entry.

5.6 Ligand geometry

There are no ligands in this entry.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

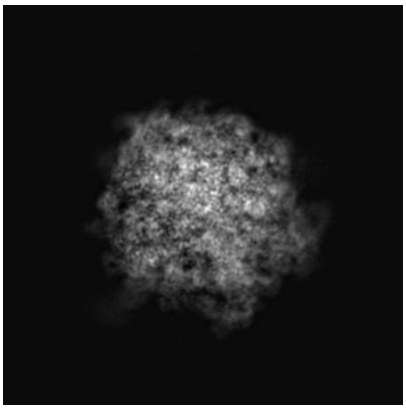
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-22466. These allow visual inspection of the internal detail of the map and identification of artifacts.

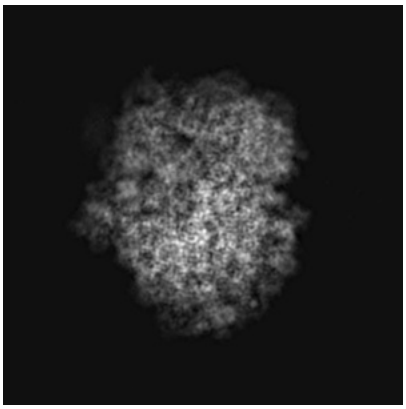
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

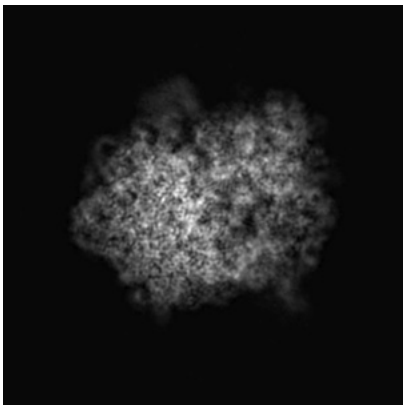
6.1.1 Primary map



X

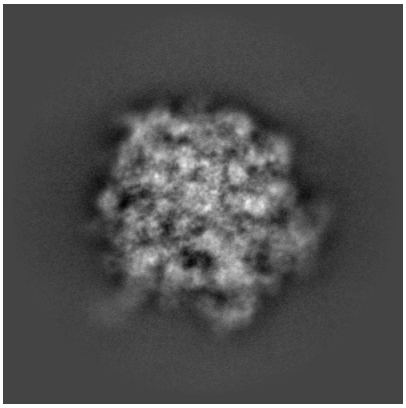


Y

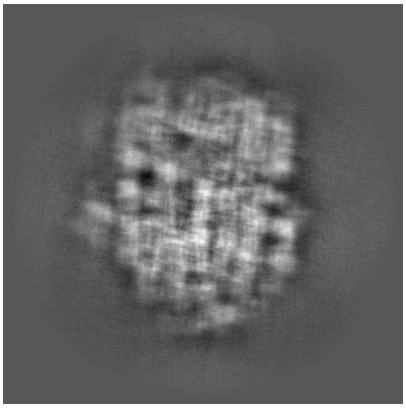


Z

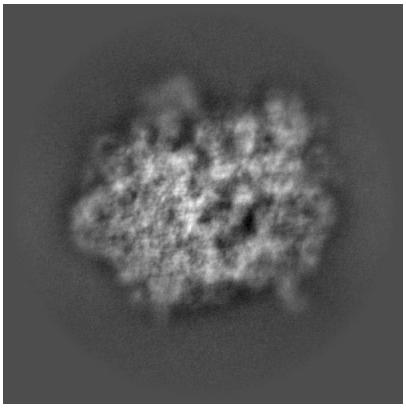
6.1.2 Raw map



X



Y

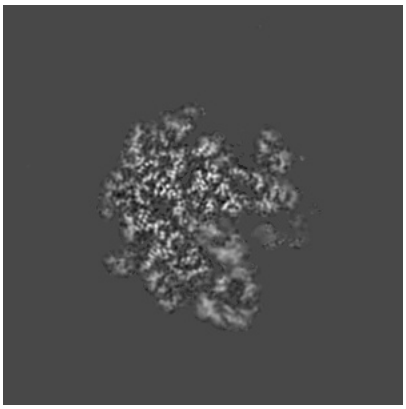


Z

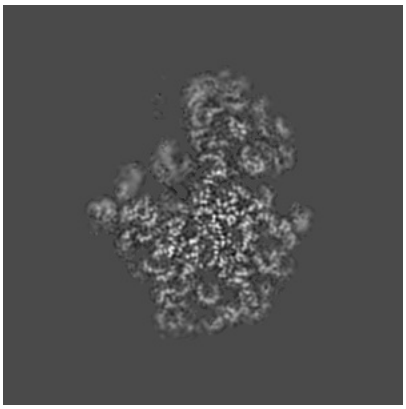
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

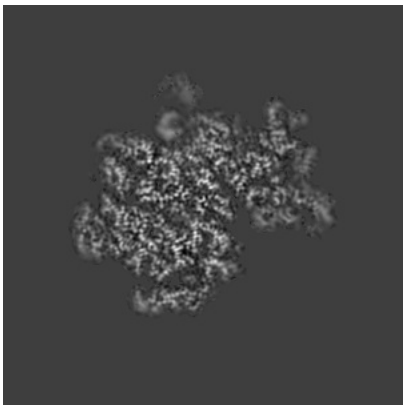
6.2.1 Primary map



X Index: 180

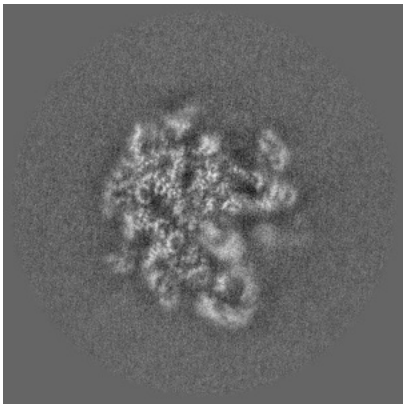


Y Index: 180

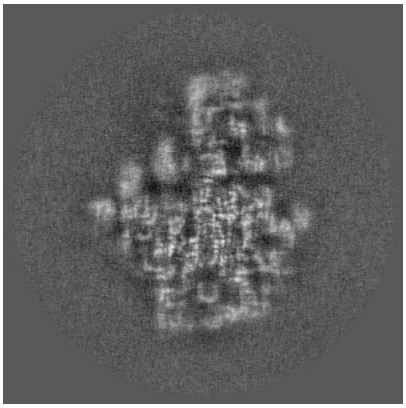


Z Index: 180

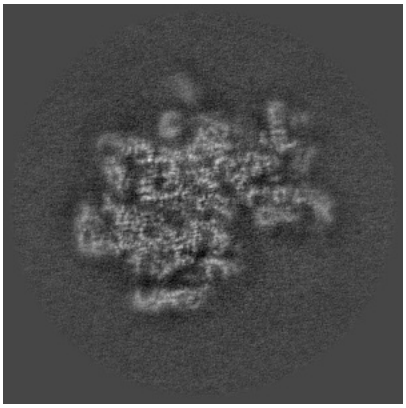
6.2.2 Raw map



X Index: 180



Y Index: 180

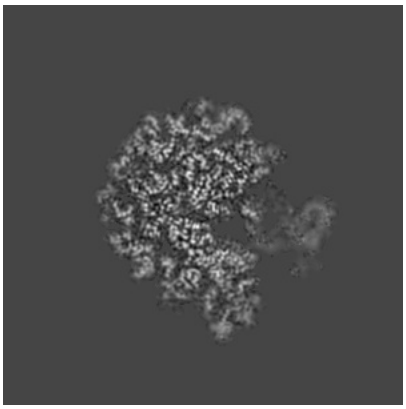


Z Index: 180

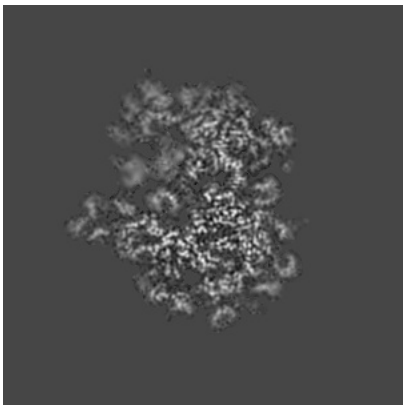
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

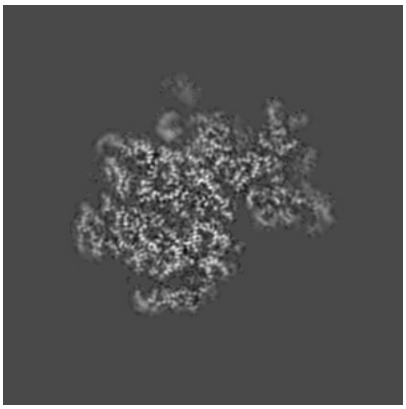
6.3.1 Primary map



X Index: 162

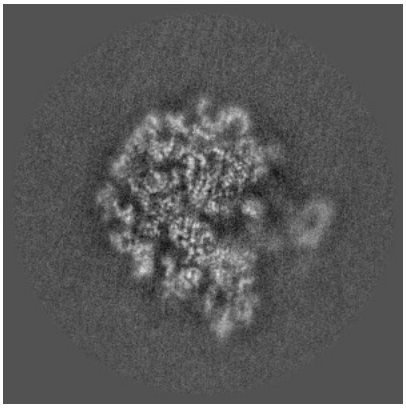


Y Index: 192

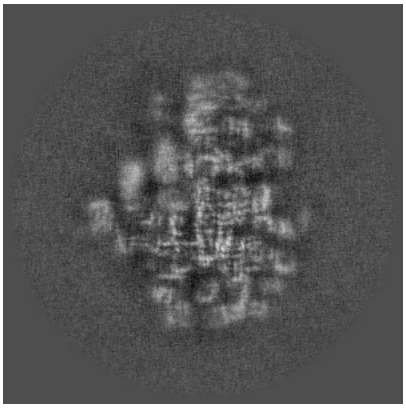


Z Index: 181

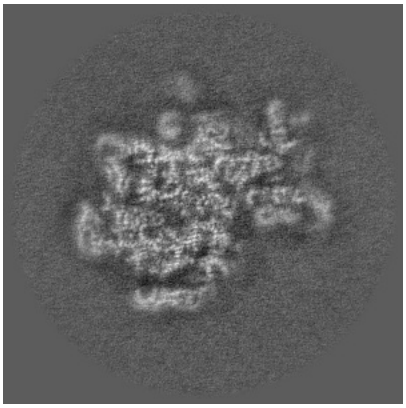
6.3.2 Raw map



X Index: 162



Y Index: 184

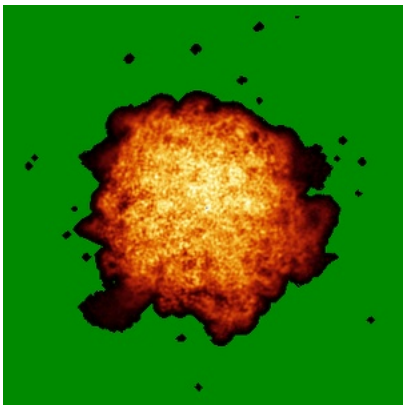


Z Index: 181

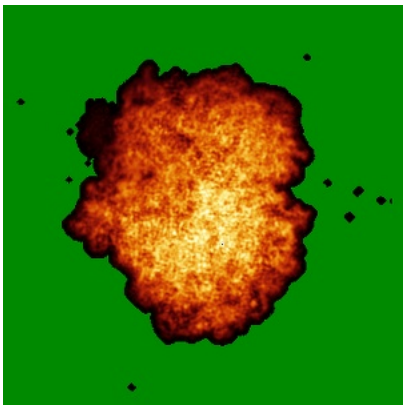
The images above show the largest variance slices of the map in three orthogonal directions.

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

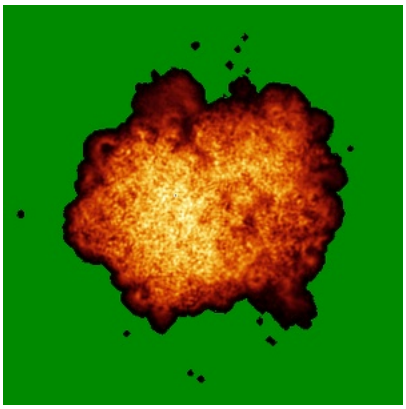
6.4.1 Primary map



X

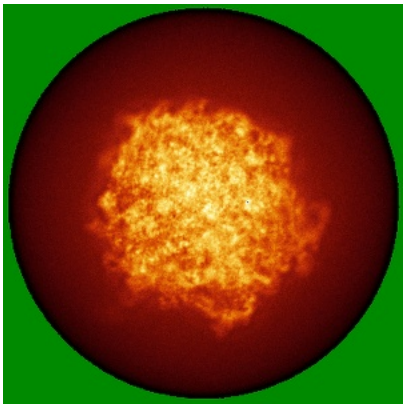


Y

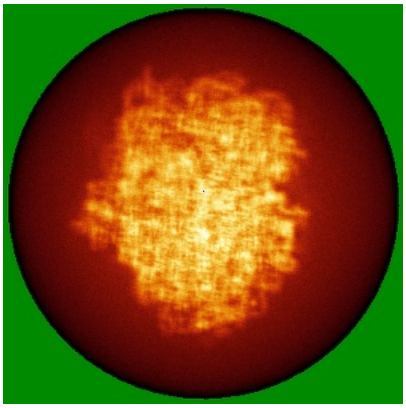


Z

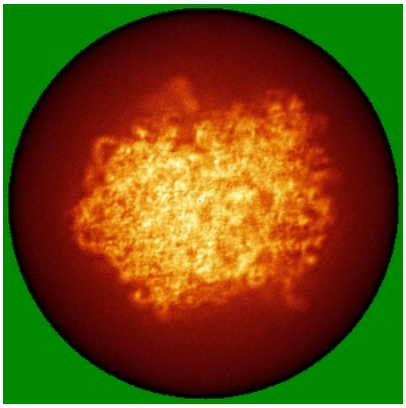
6.4.2 Raw map



X



Y

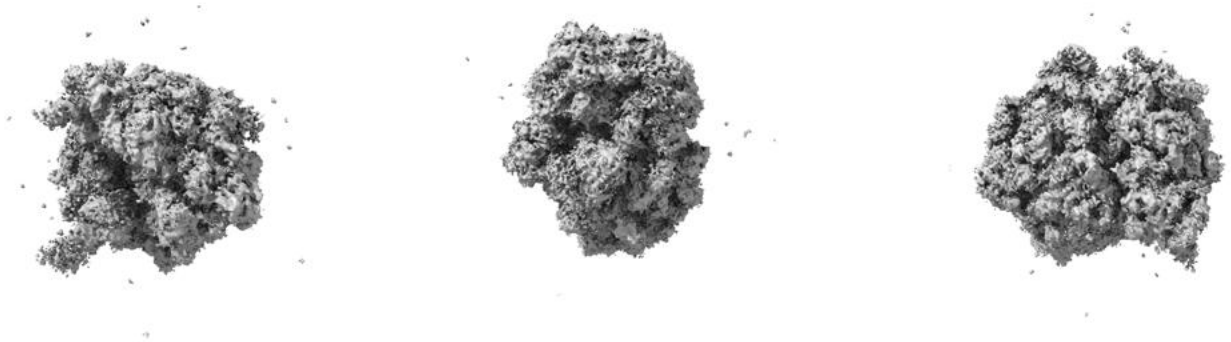


Z

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)

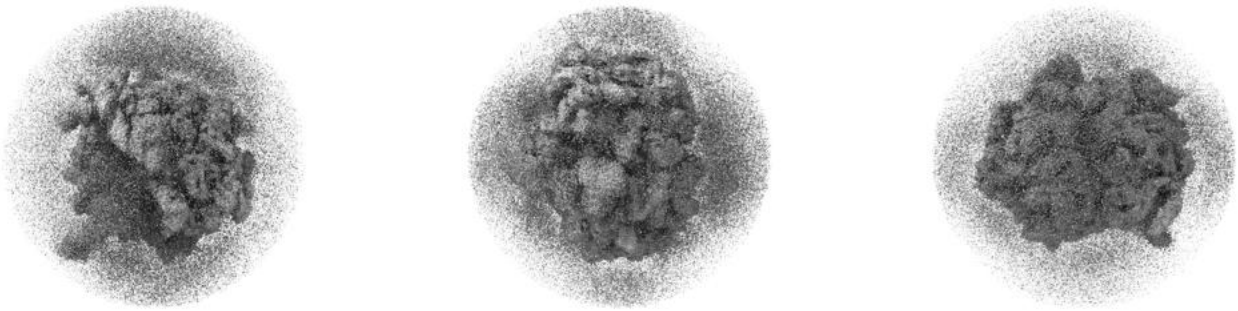
6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.6. 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.

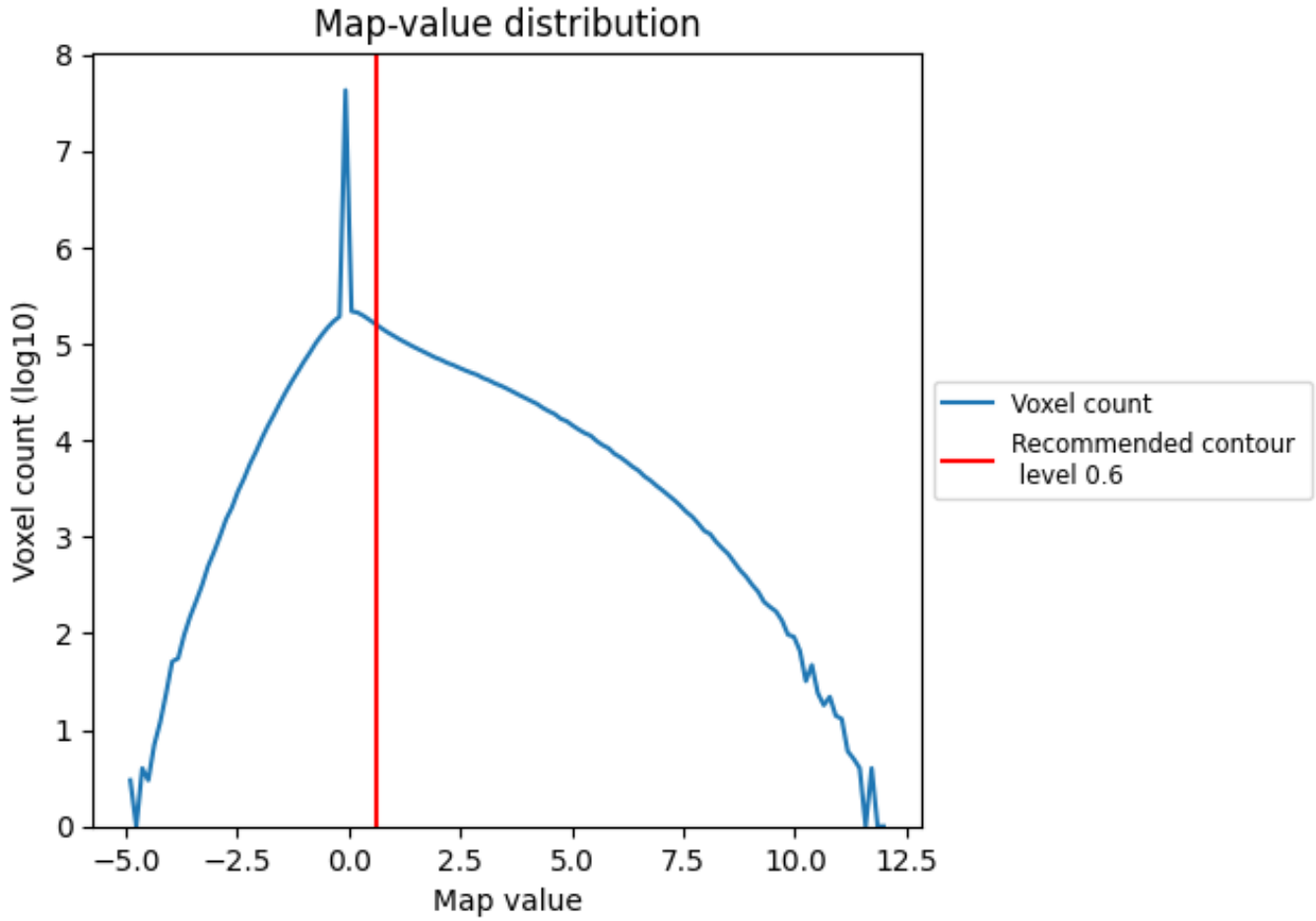
6.6 Mask visualisation (i)

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

7 Map analysis

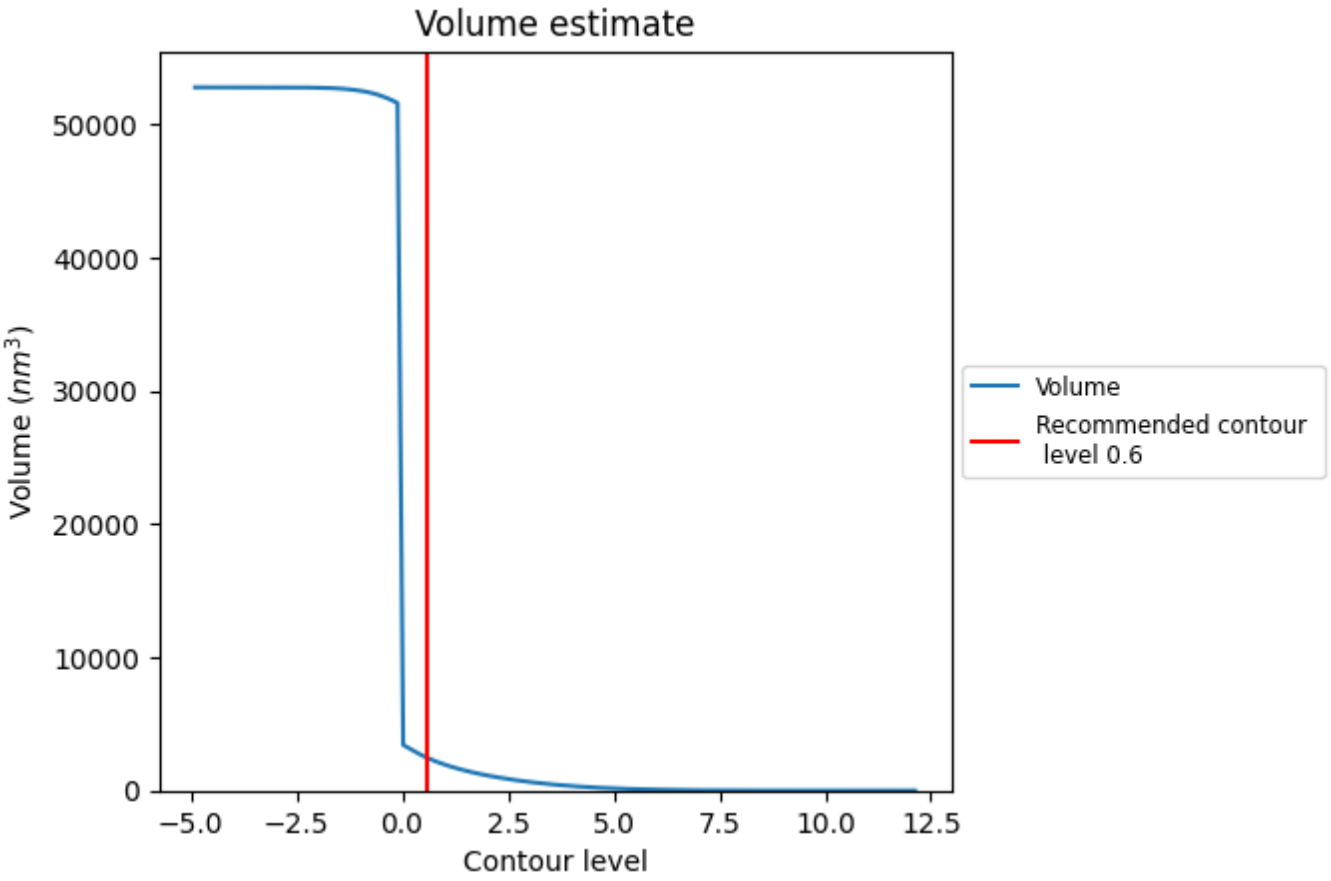
This section contains the results of statistical analysis of the map.

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.

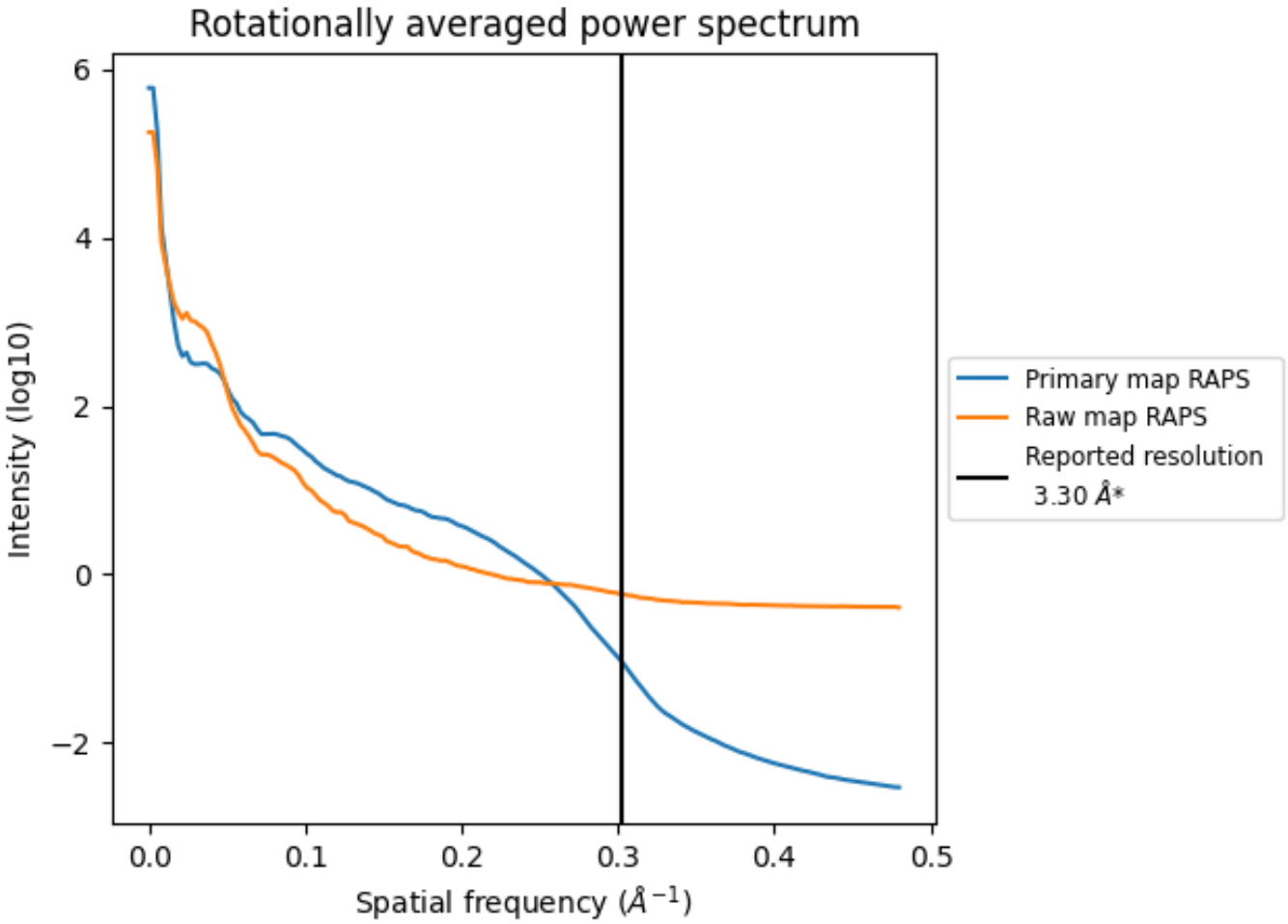
7.2 Volume estimate (i)



The volume at the recommended contour level is 2449 nm^3; this corresponds to an approximate mass of 2212 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)

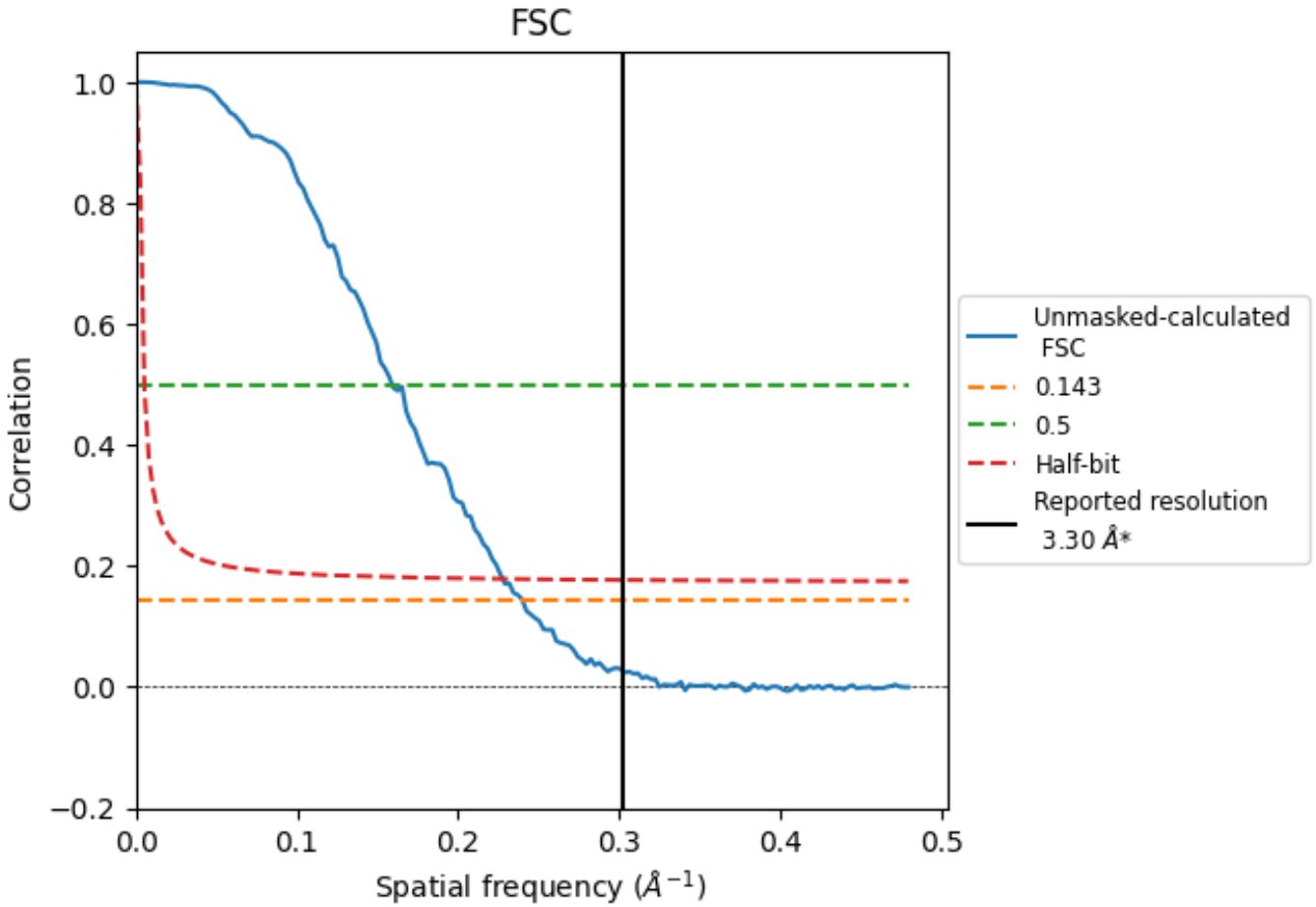


*Reported resolution corresponds to spatial frequency of 0.303 Å^{-1}

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 0.303 Å^{-1}

8.2 Resolution estimates (i)

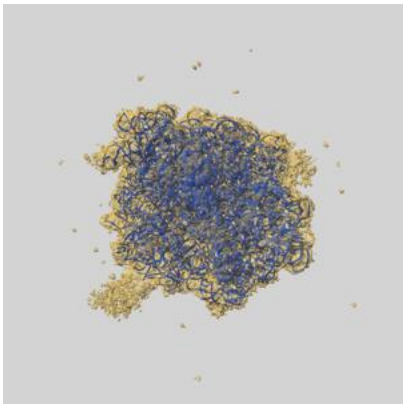
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.30	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	4.16	6.28	4.39

*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 4.16 differs from the reported value 3.3 by more than 10 %

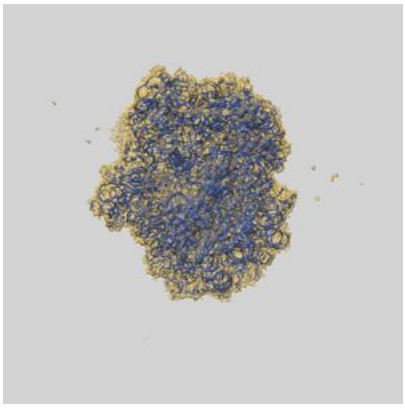
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-22466 and PDB model 7JT1. Per-residue inclusion information can be found in section 3 on page 15.

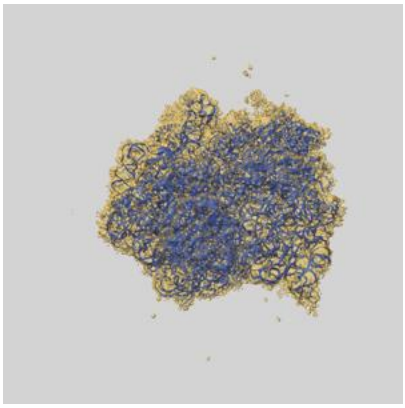
9.1 Map-model overlay



X



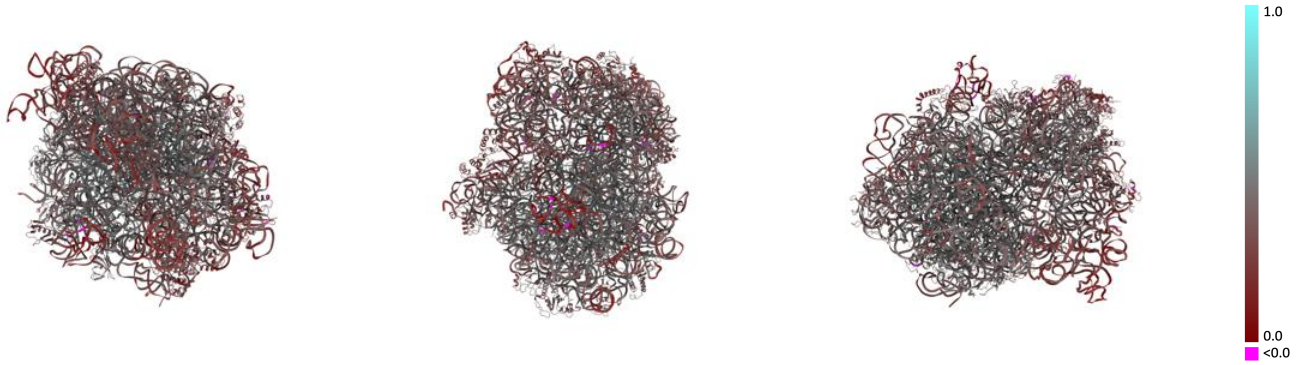
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.6 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

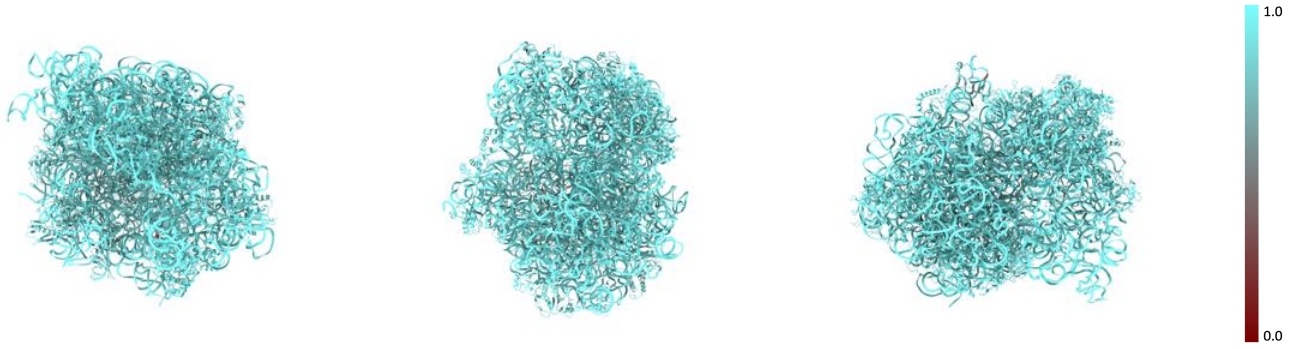
9.2 Q-score mapped to coordinate model



X Y Z

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

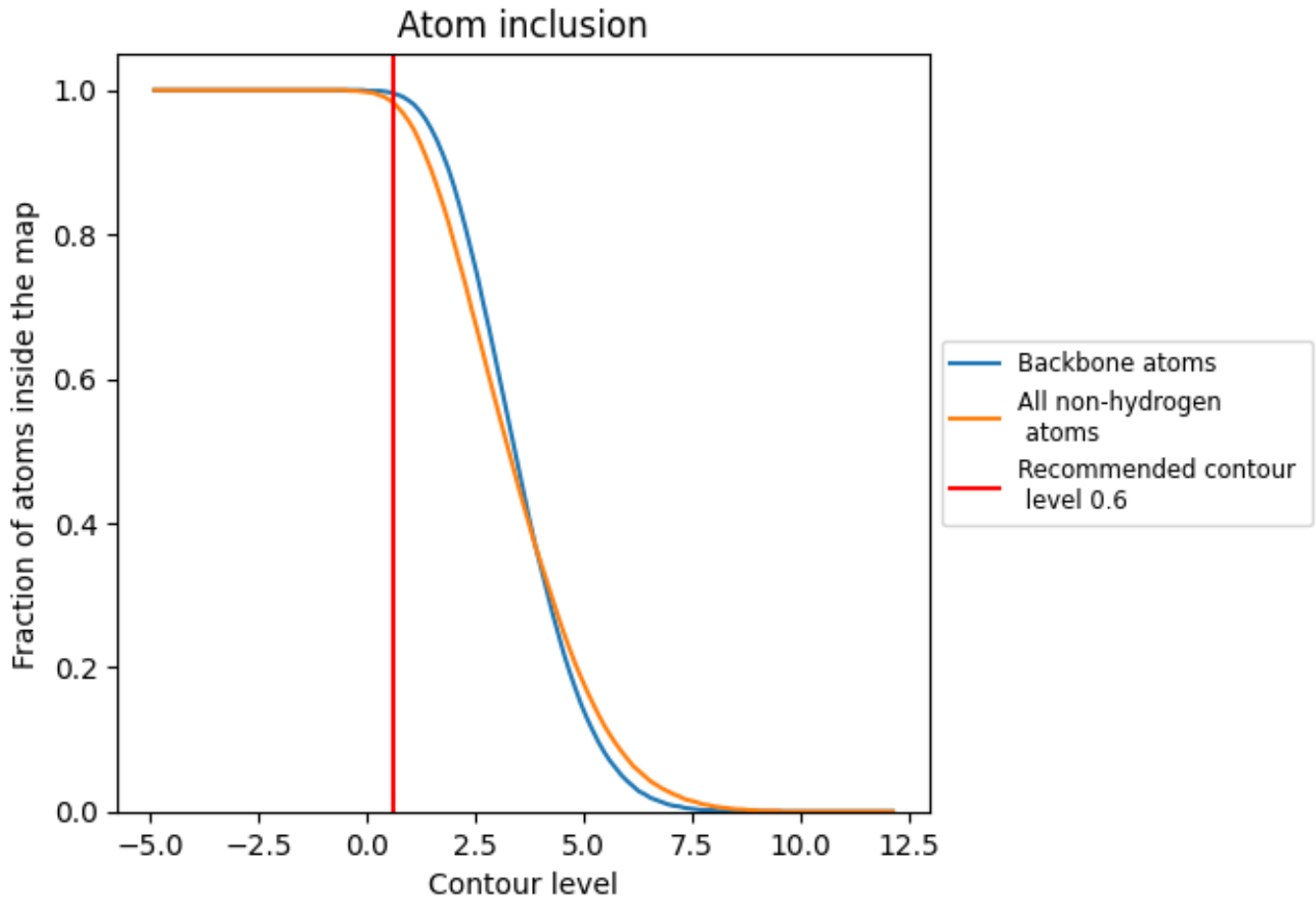
9.3 Atom inclusion mapped to coordinate model



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.6).

9.4 Atom inclusion (i)



At the recommended contour level, 100% of all backbone atoms, 98% 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 (0.6) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9830	0.3960
1	0.9940	0.4180
2	0.9900	0.3500
3	0.9900	0.3710
4	0.9800	0.2550
5	0.9860	0.3370
8	0.9380	0.3490
9	0.9870	0.2550
B	0.9670	0.4460
C	0.9700	0.4240
D	0.9720	0.4720
E	0.9610	0.4730
F	0.9450	0.4360
G	0.9500	0.3450
H	0.9530	0.3850
I	0.9530	0.3130
J	0.9630	0.4060
K	0.9670	0.3810
L	0.9730	0.3280
M	0.9660	0.4100
N	0.9330	0.3420
O	0.9000	0.3360
P	0.9650	0.3960
Q	0.9760	0.3980
R	0.9640	0.3070
S	0.9590	0.3540
T	0.9610	0.3760
U	0.9520	0.3440
V	0.9760	0.3750
W	0.9220	0.3540
X	0.9580	0.3300
Y	0.9250	0.3030
Z	0.9250	0.3090
b	0.9750	0.4730
c	0.9580	0.4520

Continued on next page...

Continued from previous page...

Chain	Atom inclusion	Q-score
d	0.9650	0.4070
e	0.9690	0.3080
f	0.9740	0.3720
g	0.9680	0.3230
j	0.9590	0.4370
k	0.9750	0.4590
l	0.9700	0.4370
m	0.9560	0.4410
n	0.9650	0.4500
o	0.9650	0.3740
p	0.9810	0.4290
q	0.9600	0.4450
r	0.9740	0.4260
s	0.9690	0.4550
t	0.9570	0.4290
u	0.9750	0.4060
v	0.9700	0.4030
w	0.9620	0.4490
x	0.9820	0.4530
y	0.9600	0.3630
z	0.9700	0.4440