wwPDB EM Validation Summary Report ⓘ

Mar 13, 2024 – 01:23 PM JST

PDB ID	:	3J3V
EMDB ID	:	EMD-5642
Title	:	Atomic model of the immature 50S subunit from Bacillus subtilis (state I-a)
Authors	:	Li, N.; Guo, Q.; Zhang, Y.; Yuan, Y.; Ma, C.; Lei, J.; Gao, N.
Deposited on	:	2013-04-28
Resolution	:	13.30 Å(reported)
Based on initial models	:	2J01, 2AW4

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:

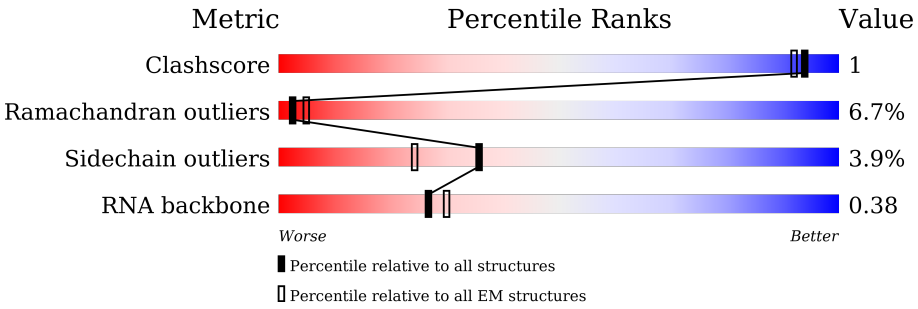
EMDB validation analysis	:	0.0.1.dev70
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

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 13.30 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.



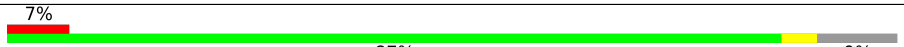
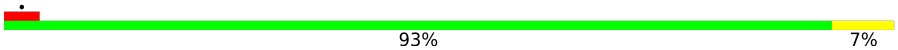
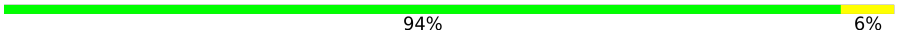
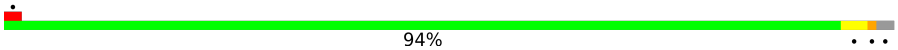
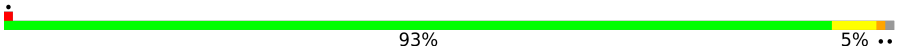
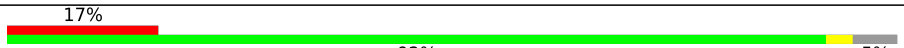
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=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	59	5%, 86%, 7%, 7%
2	2	44	93%, 7%
3	5	232	18%, 44%, 7%, 48%
4	6	141	77%, 94%, 6%
5	A	2927	·, 53%, 36%, 9%, ·
6	B	119	7%, ·, 66%, 25%, 8%
7	C	277	·, 90%, 9%, ·

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
8	D	209	
9	E	207	
10	F	179	
11	G	179	
12	J	145	
13	K	122	
14	L	146	
15	N	120	
16	O	120	
17	P	115	
18	Q	119	
19	R	102	
20	S	113	
21	T	95	
22	U	103	
23	X	66	
24	Y	59	

2 Entry composition (i)

There are 24 unique types of molecules in this entry. The entry contains 86157 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 L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	0	55	Total	C	N	O	S	0	0
			433	267	87	72	7		

- Molecule 2 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	2	44	Total	C	N	O	S	0	0
			368	222	89	55	2		

- Molecule 3 is a protein called 50S ribosomal protein L1.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	5	120	Total	C	N	O	S	0	0
			910	576	156	176	2		

- Molecule 4 is a protein called 50S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	6	141	Total	C	N	O	S	0	0
			1044	657	184	196	7		

- Molecule 5 is a RNA chain called ribosome RNA 23S.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	A	2884	Total	C	N	O	P	0	0
			61914	27625	11428	19979	2882		

- Molecule 6 is a RNA chain called ribosome RNA 5S.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	B	119	Total	C	N	O	P	0	0
			2542	1135	462	827	118		

- Molecule 7 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	C	277	Total	C	N	O	S	0	0
			2129	1323	419	380	7		

- Molecule 8 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	D	206	Total	C	N	O	S	0	0
			1568	984	289	290	5		

- Molecule 9 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	E	206	Total	C	N	O	S	0	0
			1567	983	290	292	2		

- Molecule 10 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	F	179	Total	C	N	O	S	0	0
			1413	898	246	261	8		

- Molecule 11 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	G	163	Total	C	N	O	S	0	0
			1246	776	226	242	2		

- Molecule 12 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	J	143	Total	C	N	O	S	0	0
			1134	717	207	204	6		

- Molecule 13 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	K	122	Total	C	N	O	S	0	0
			921	571	173	173	4		

- Molecule 14 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	L	146	Total	C	N	O	S	0	0
			1082	671	207	202	2		

- Molecule 15 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	N	120	Total	C	N	O	S	0	0
			962	588	187	182	5		

- Molecule 16 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	O	120	Total	C	N	O	S	0	0
			913	564	176	172	1		

- Molecule 17 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms				AltConf	Trace
17	P	112	Total	C	N	O	0	0
			916	584	178	154		

- Molecule 18 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	Q	117	Total	C	N	O	S	0	0
			940	591	189	156	4		

- Molecule 19 is a protein called 50S ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	R	102	Total	C	N	O	S	0	0
			795	506	140	148	1		

- Molecule 20 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	S	112	Total	C	N	O	S	0	0
			868	541	168	155	4		

- Molecule 21 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	T	95	Total	C	N	O	S	0	0
			767	480	139	144	4		

- Molecule 22 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	U	103	Total	C	N	O	S	0	0
			780	488	145	143	4		

- Molecule 23 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	X	61	Total	C	N	O	S	0	0
			504	312	97	93	2		

- Molecule 24 is a protein called 50S ribosomal protein L30.

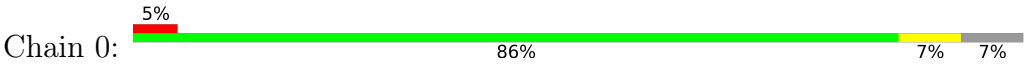
Mol	Chain	Residues	Atoms					AltConf	Trace
24	Y	56	Total	C	N	O	S	0	0
			441	273	86	81	1		

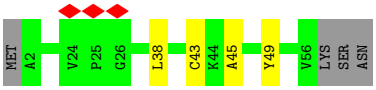
3 Residue-property plots (i)

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 L32

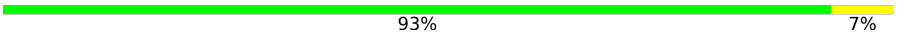
Chain 0:

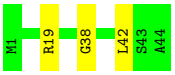




• Molecule 2: 50S ribosomal protein L34

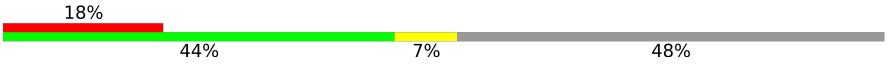
Chain 2:

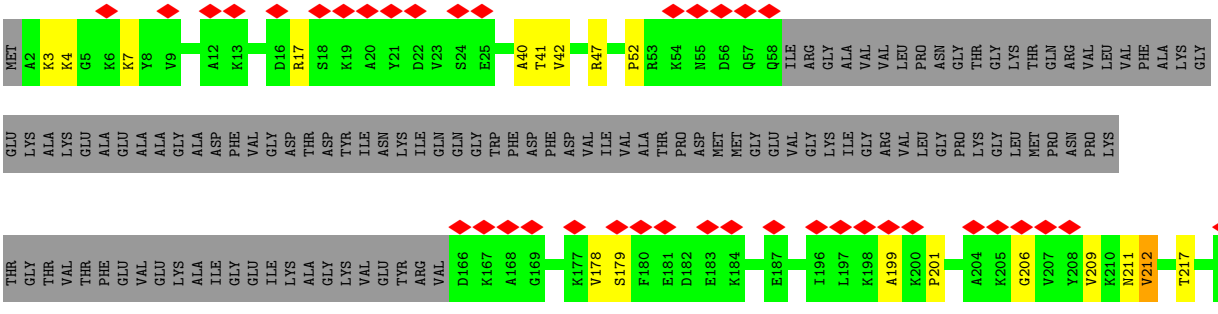




• Molecule 3: 50S ribosomal protein L1

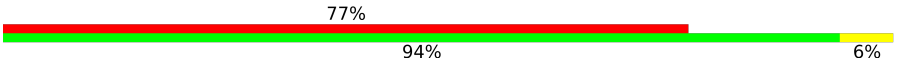
Chain 5:

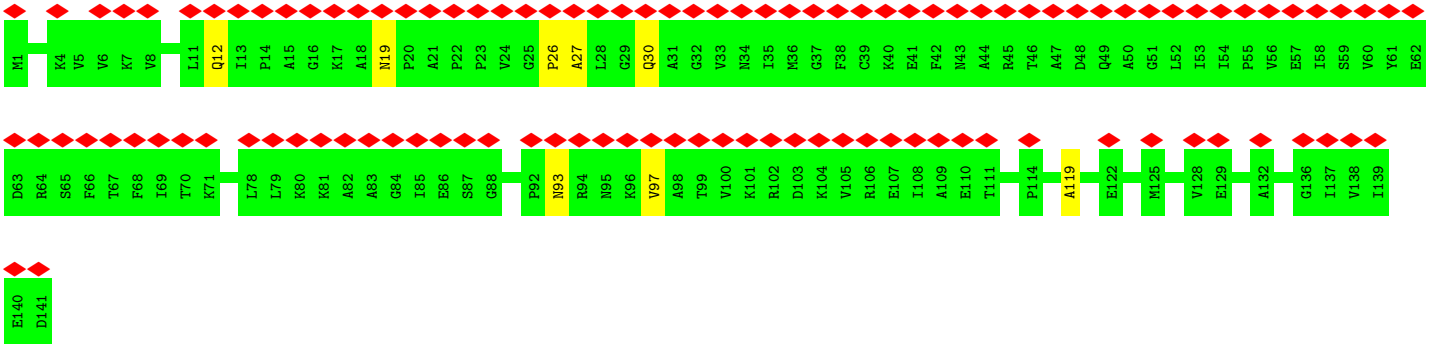




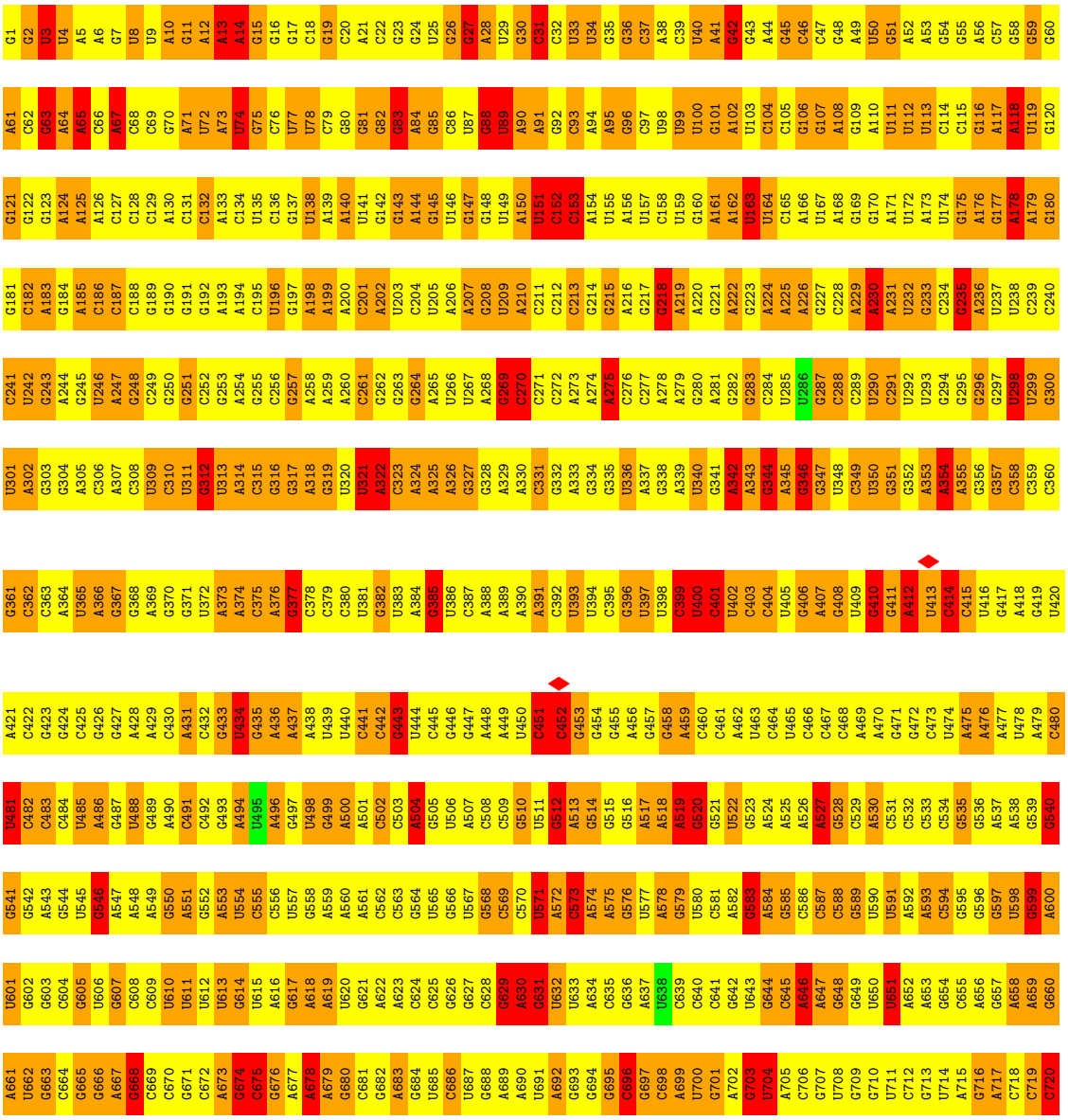
• Molecule 4: 50S ribosomal protein L11

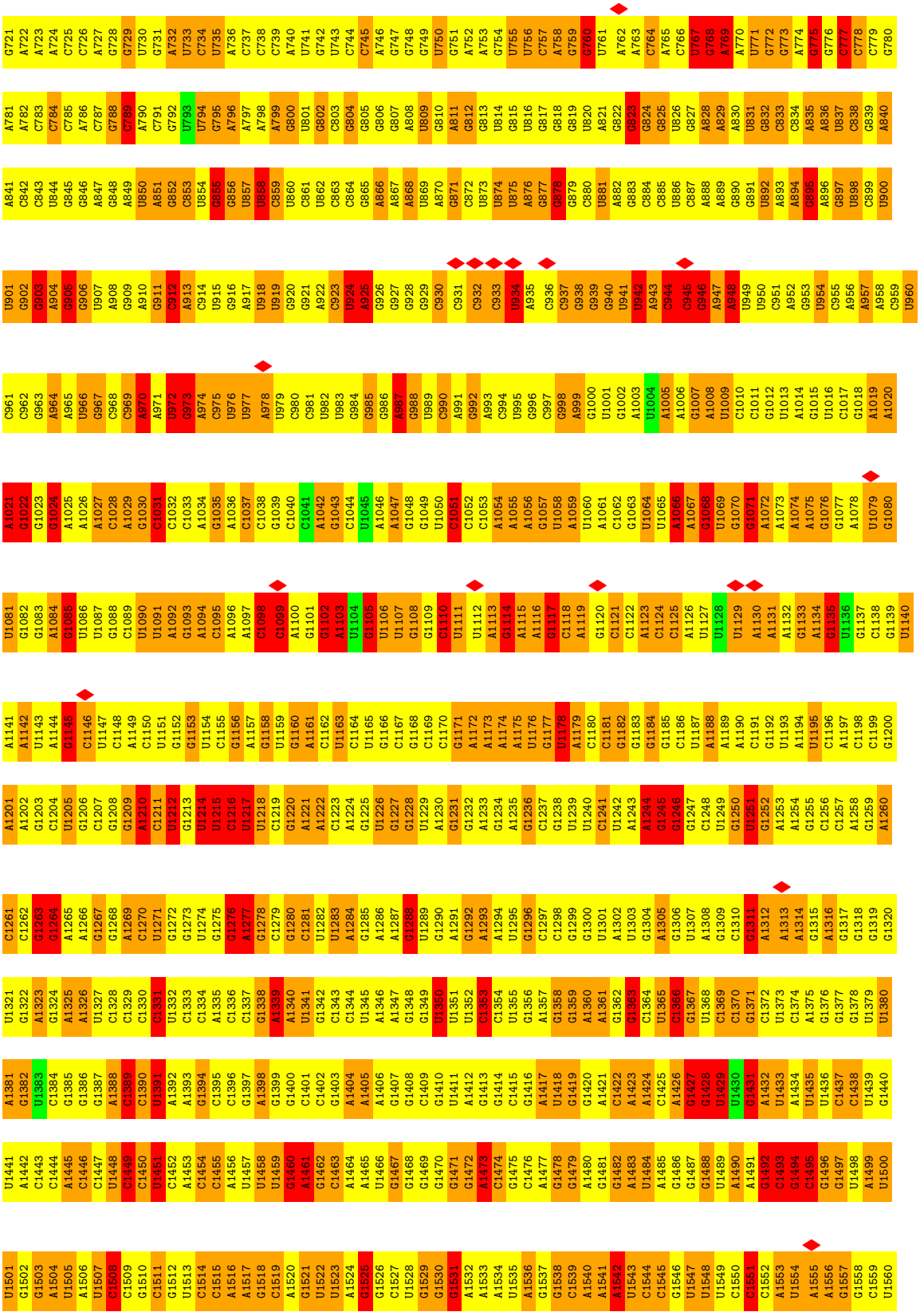
Chain 6:

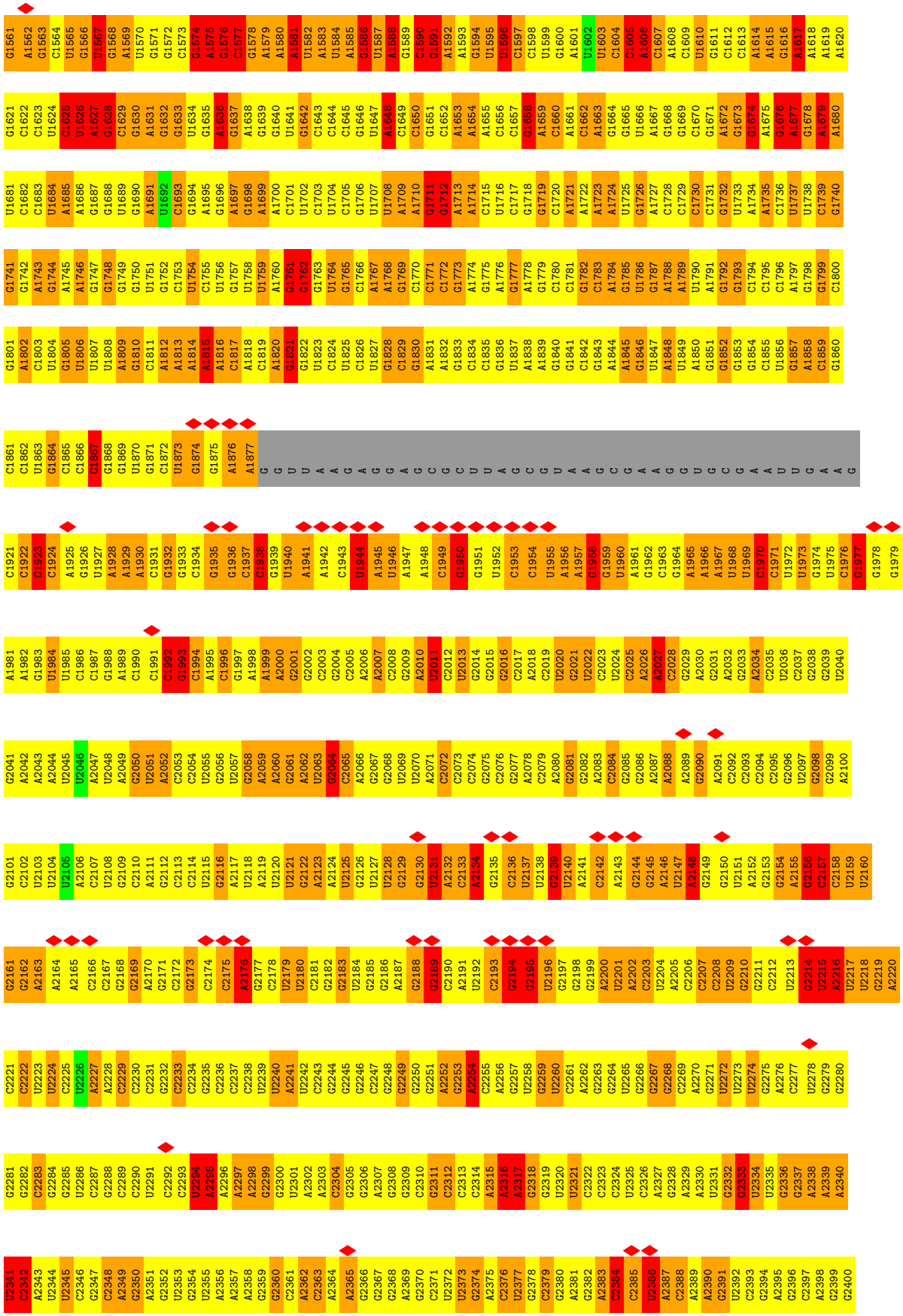


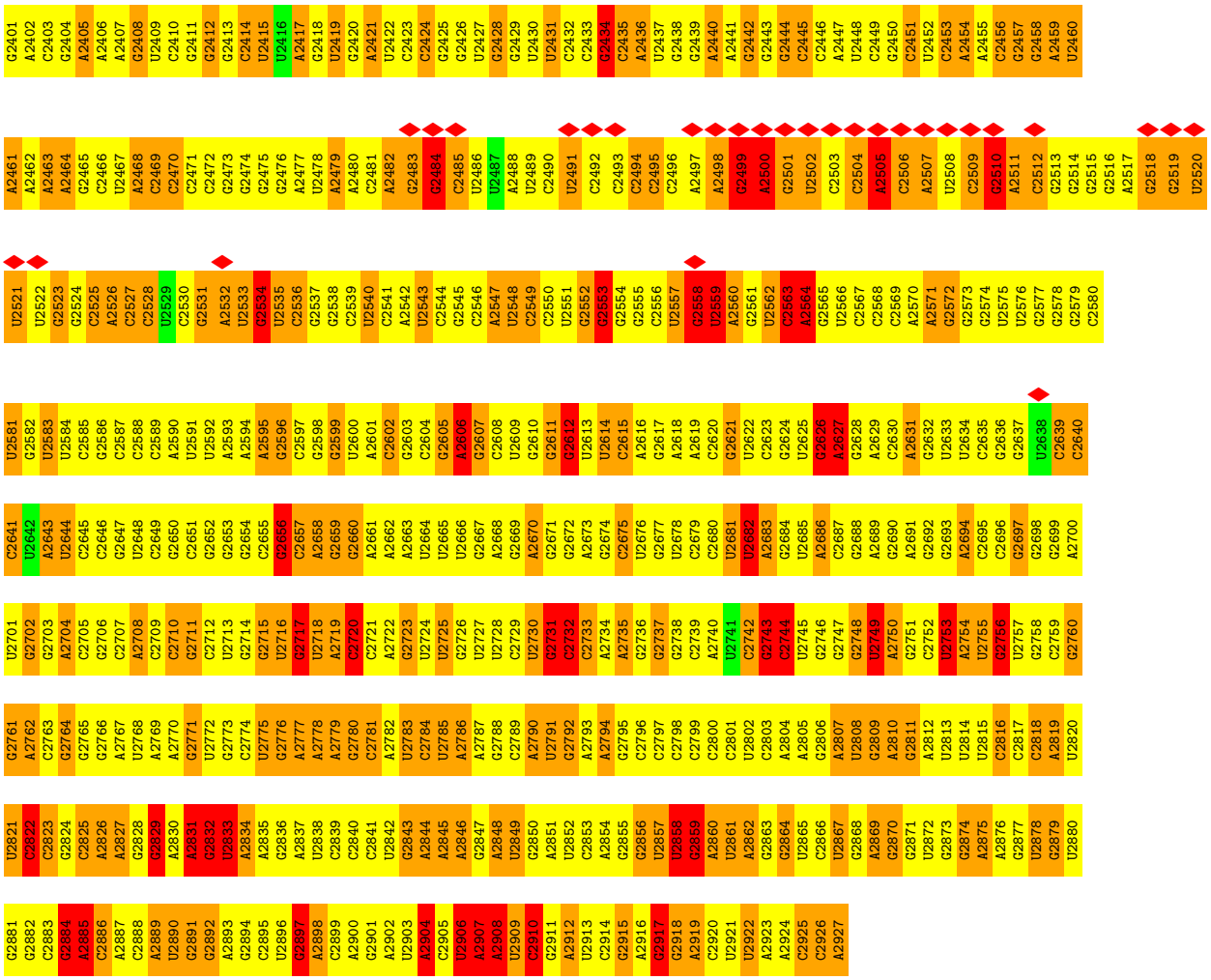


• Molecule 5: ribosome RNA 23S



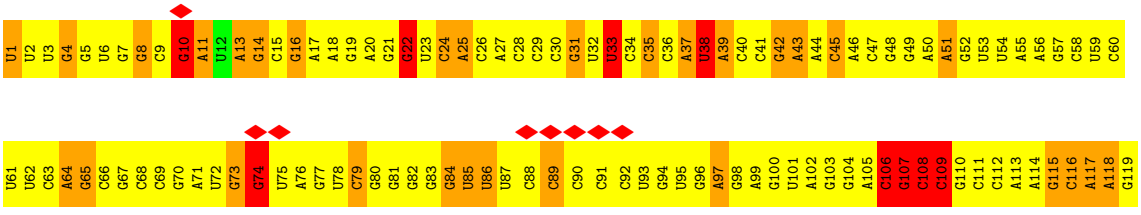

G721 A722 A723 A724 C725 C726 A727 G728 G729 U730 G731 A732 U733 C734 U735 A736 C737 C738 C739 A740 U741 G742 U743 C744 C745 A746 G747 G748 G749 U750 G751 A752 A753 G754 U755 U756 C757 A758 G759 G760 U761 A762 A763 C764 A765 C766 U767 G768 A769 A770 U771 G772 G773 A774 G775 G776 C777 C778 C779 G780
A781 A782 C783 C784 C785 A786 C787 G788 C789 A790 C791 G792 U793 U794 G795 A796 A797 A798 A799 G800 U801 G802 C803 G804 G805 G806 G807 A808 U809 G810 A811 G812 G813 U814 G815 U816 G817 G818 G819 U820 A821 G822 G823 G824 G825 U826 G827 A828 A829 A830 U831 G832 C833 C834 A835 A836 U837 C838 G839 A840
A841 C842 C843 U844 G845 G846 A847 G848 A849 U850 A851 G852 C853 U854 G855 G856 U857 U858 C859 U860 C861 U862 C863 C864 G865 A866 A867 A868 U869 A870 G871 C872 U873 U874 U875 A876 G877 G878 G879 C880 U881 A882 G883 C884 C885 U886 C887 A888 A889 G890 G891 U892 A893 A894 G895 A896 G897 U898 C899 U900
U901 G902 G903 A904 G905 G906 U907 A908 G909 A910 G911 C912 A913 C914 U915 G916 A917 U918 U919 G920 G921 A922 C923 U924 A925 G926 G927 G928 G929 C930 C931 C932 C933 U934 A935 C936 C937 G938 G939 G940 U941 U942 A943 C944 C945 G946 A947 A948 U949 U950 C951 A952 G953 U954 C955 A956 A957 A958 C959 U960
C961 C962 G963 A964 A965 U966 G967 C968 C969 A970 A971 U972 G973 A974 C975 U976 U977 A978 U979 C980 C981 U982 U983 G984 G985 G986 A987 G988 U989 C990 A991 G992 A993 C994 U995 G996 C997 G998 A999 G1000 A1001 G1002 A1003 U1004 A1005 A1006 G1007 A1008 U1009 C1010 C1011 G1012 A1013 A1014 A1015 U1016 C1017 G1018 A1019 A1020
A1021 G1022 G1023 G1024 A1025 A1026 A1027 C1028 A1029 G1030 C1031 C1032 C1033 A1034 G1035 A1036 C1037 C1038 G1039 C1040 G1041 A1042 G1043 C1044 U1045 A1046 A1047 G1048 G1049 U1050 C1051 C1052 C1053 A1054 A1055 A1056 G1057 U1058 A1059 U1060 A1061 C1062 G1063 U1064 U1065 A1066 A1067 G1068 U1069 G1070 G1071 A1072 A1073 A1074 A1075 G1076 G1077 A1078 U1079 G1080
U1081 G1082 G1083 A1084 G1085 U1086 U1087 G1088 C1089 U1090 U1091 A1092 G1093 A1094 C1095 A1096 A1097 C1098 C1099 A1100 G1101 G1102 A1103 U1104 G1105 U1106 U1107 G1108 G1109 C1110 U1111 U1112 A1113 G1114 A1115 A1116 G1117 C1118 A1119 G1120 C1121 C1122 A1123 C1124 C1125 A1126 U1127 U1128 U1129 A1130 A1131 A1132 G1133 A1134 G1135 U1136 G1137 C1138 G1139 U1140
A1141 A1142 U1143 A1144 G1145 C1146 U1147 C1148 A1149 C1150 U1151 G1152 G1153 U1154 C1155 G1156 A1157 G1158 U1159 G1160 A1161 C1162 U1163 C1164 U1165 G1166 C1167 G1168 C1169 C1170 G1171 A1172 A1173 A1174 A1175 U1176 G1177 U1178 A1179 C1180 C1181 G1182 G1183 G1184 G1185 C1186 U1187 A1188 A1189 A1190 C1191 G1192 U1193 A1194 U1195 C1196 A1197 C1198 C1199 G1200
A1201 A1202 G1203 C1204 U1205 G1206 C1207 G1208 G1209 A1210 C1211 U1212 G1213 U1214 U1215 C1216 U1217 U1218 C1219 G1220 A1221 A1222 C1223 A1224 G1225 U1226 G1227 G1228 U1229 A1230 G1231 G1232 A1233 G1234 A1235 G1236 C1237 G1238 U1239 U1240 C1241 U1242 A1243 A1244 G1245 G1246 G1247 C1248 U1249 G1250 U1251 G1252 A1253 A1254 G1255 C1256 C1257 A1258 G1259 A1260
C1261 C1262 G1263 G1264 A1265 A1266 G1267 G1268 A1269 C1270 U1271 G1272 G1273 U1274 G1275 G1276 A1277 G1278 C1279 G1280 C1281 U1282 U1283 A1284 G1285 A1286 A1287 G1288 U1289 G1290 A1291 G1292 A1293 A1294 U1295 G1296 C1297 C1298 G1299 G1300 U1301 A1302 U1303 A1304 A1305 G1306 U1307 A1308 C1309 C1310 G1311 A1312 A1313 A1314 G1315 A1316 G1317 G1318 G1319 G1320
U1321 G1322 A1323 G1324 A1325 A1326 U1327 C1328 C1329 C1330 C1331 U1332 C1333 C1334 A1335 C1336 C1337 G1338 A1339 A1340 U1341 G1342 C1343 C1344 U1345 A1346 A1347 G1348 G1349 U1350 U1351 U1352 C1353 C1354 U1355 G1356 A1357 G1358 G1359 A1360 A1361 G1362 G1363 C1364 U1365 C1366 G1367 U1368 C1369 C1370 G1371 C1372 U1373 C1374 A1375 G1376 G1377 G1378 U1379 U1380
A1381 G1382 U1383 C1384 G1385 G1386 G1387 A1388 C1389 C1390 U1391 A1392 A1393 G1394 C1395 C1396 G1397 A1398 G1399 G1400 C1401 C1402 C1403 A1404 A1405 A1406 G1407 G1408 C1409 G1410 U1411 A1412 G1413 G1414 C1415 G1416 A1417 U1418 G1419 G1420 A1421 C1422 A1423 A1424 C1425 A1426 G1427 G1428 U1429 U1430 G1431 A1432 U1433 A1434 U1435 G1436 C1437 G1438 U1439 G1440
U1441 A1442 C1443 C1444 A1445 C1446 C1447 U1448 C1449 C1450 U1451 C1452 A1453 C1454 C1455 A1456 U1457 U1458 U1459 G1460 A1461 G1462 C1463 A1464 A1465 A1466 G1467 G1468 G1469 G1470 G1471 G1472 A1473 C1474 G1475 C1476 A1477 G1478 G1479 A1480 G1481 G1482 A1483 U1484 A1485 G1486 G1487 G1488 U1489 A1490 A1491 G1492 C1493 G1494 C1495 G1496 G1497 U1498 A1499 U1500
U1501 G1502 G1503 A1504 U1505 A1506 U1507 C1508 C1509 G1510 C1511 G1512 U1513 C1514 C1515 A1516 A1517 C1518 C1519 A1520 G1521 U1522 U1523 A1524 G1525 G1526 C1527 U1528 G1529 G1530 G1531 A1532 A1533 A1534 U1535 A1536 G1537 G1538 C1539 A1540 A1541 A1542 U1543 C1544 C1545 G1546 U1547 U1548 U1549 C1550 C1551 C1552 A1553 U1554 A1555 A1556 G1557 G1558 C1559 U1560





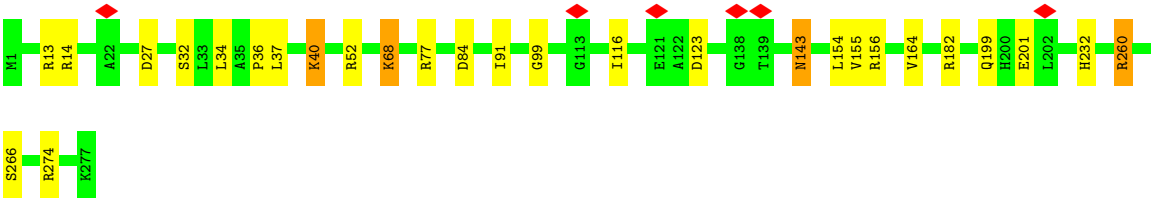
• Molecule 6: ribosome RNA 5S

Chain B:



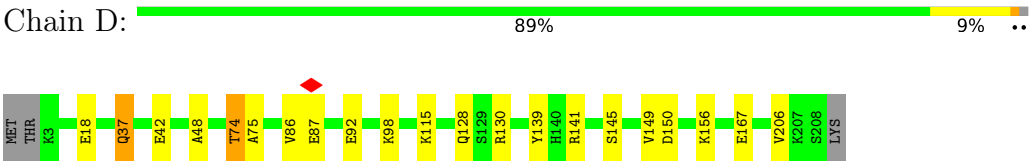
• Molecule 7: 50S ribosomal protein L2

Chain C:



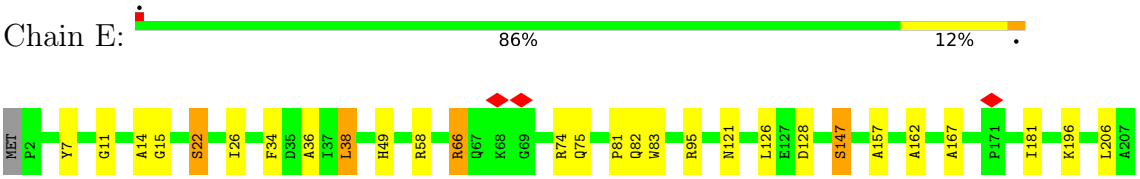
• Molecule 8: 50S ribosomal protein L3

Chain D:



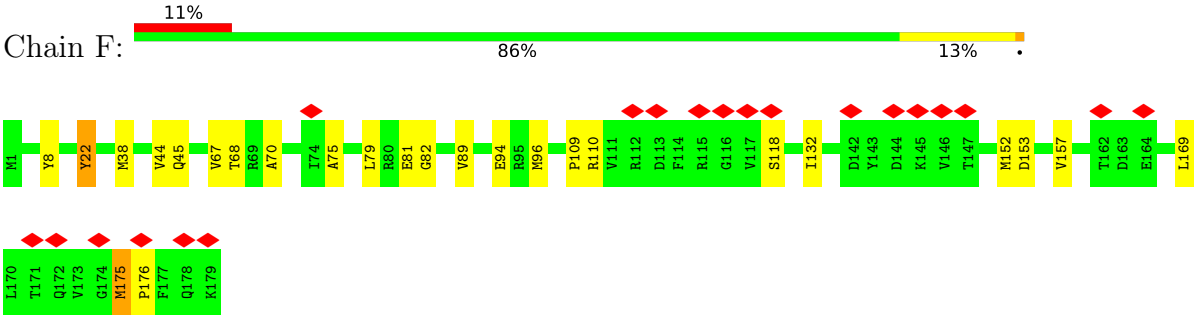
• Molecule 9: 50S ribosomal protein L4

Chain E:



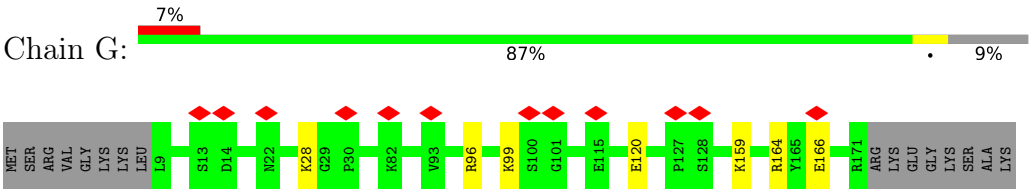
• Molecule 10: 50S ribosomal protein L5

Chain F:



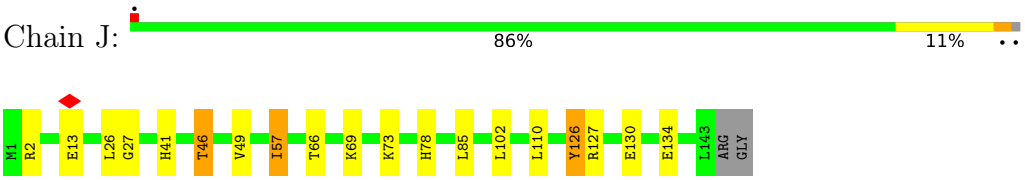
• Molecule 11: 50S ribosomal protein L6

Chain G:



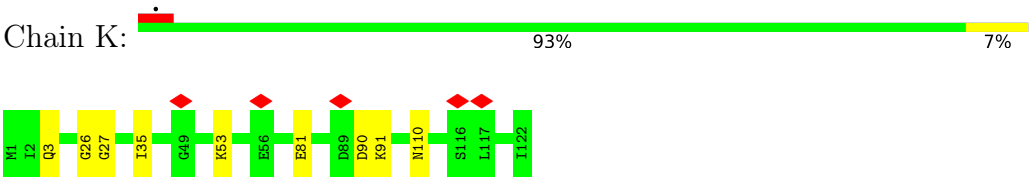
• Molecule 12: 50S ribosomal protein L13

Chain J:



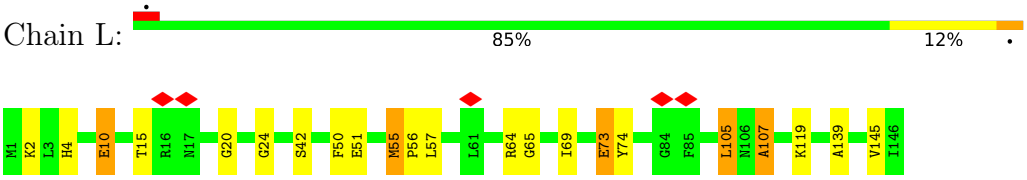
• Molecule 13: 50S ribosomal protein L14

Chain K:



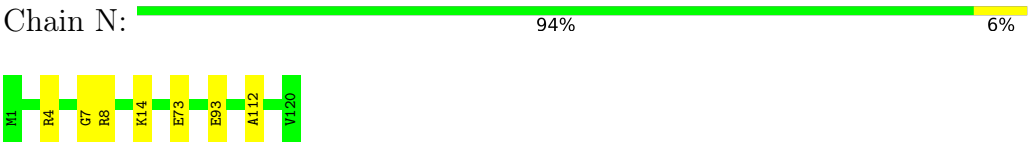
• Molecule 14: 50S ribosomal protein L15

Chain L:



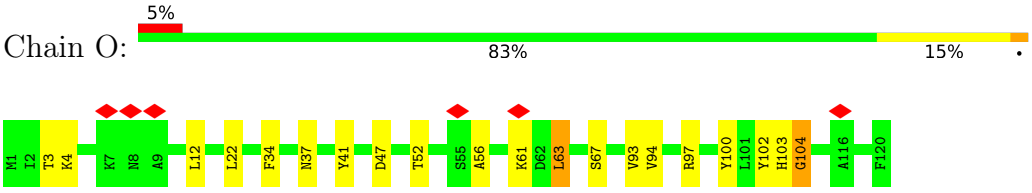
• Molecule 15: 50S ribosomal protein L17

Chain N:



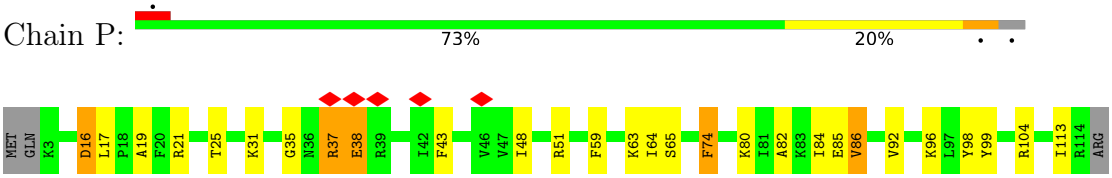
• Molecule 16: 50S ribosomal protein L18

Chain O:



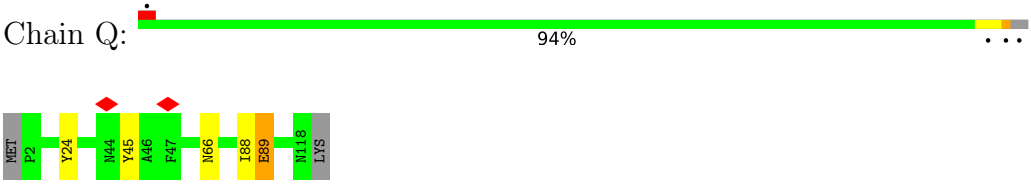
• Molecule 17: 50S ribosomal protein L19

Chain P:



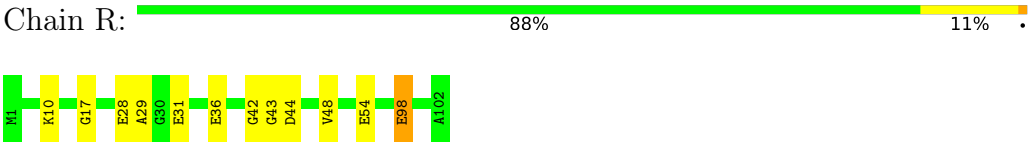
• Molecule 18: 50S ribosomal protein L20

Chain Q:



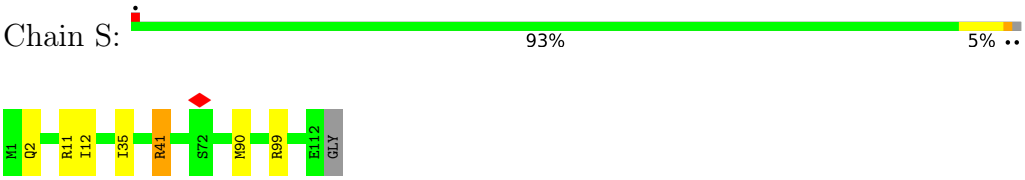
• Molecule 19: 50S ribosomal protein L21

Chain R:



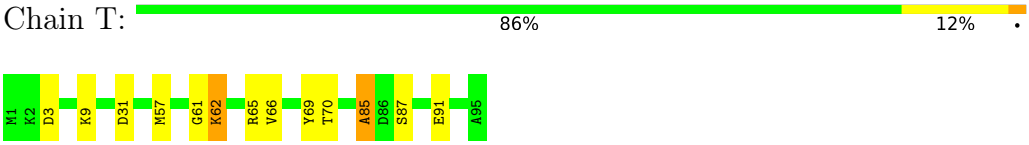
• Molecule 20: 50S ribosomal protein L22

Chain S:



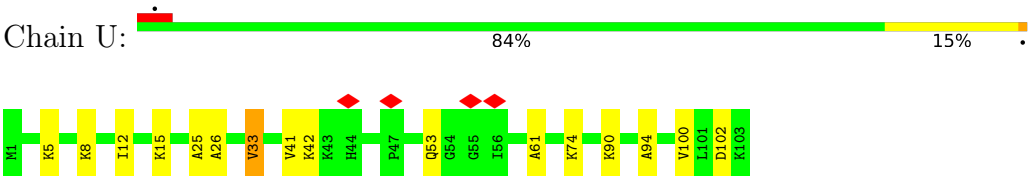
• Molecule 21: 50S ribosomal protein L23

Chain T:



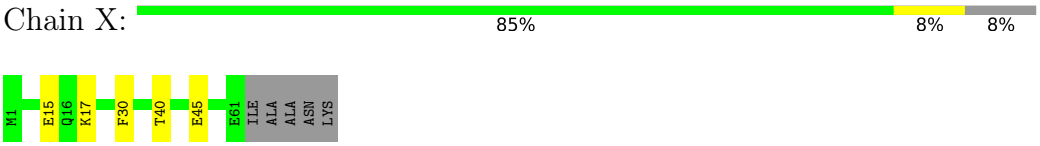
• Molecule 22: 50S ribosomal protein L24

Chain U:



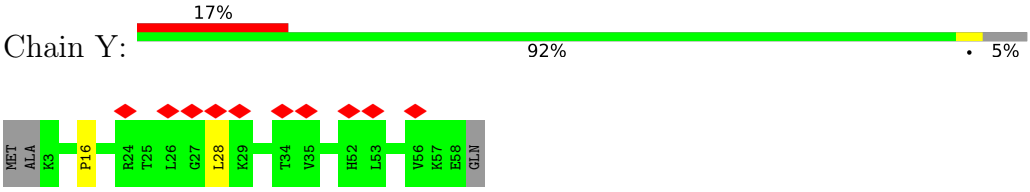
• Molecule 23: 50S ribosomal protein L29

Chain X:



• Molecule 24: 50S ribosomal protein L30

Chain Y:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	21020	Depositor
Resolution determination method	OTHER	Depositor
CTF correction method	Each particle	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	20	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	4000	Depositor
Magnification	59000	Depositor
Image detector	FEI EAGLE (4k x 4k)	Depositor
Maximum map value	10.841	Depositor
Minimum map value	-4.301	Depositor
Average map value	0.000	Depositor
Map value standard deviation	1.000	Depositor
Recommended contour level	2.7	Depositor
Map size (Å)	384.0, 384.0, 384.0	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.5, 1.5, 1.5	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	0	1.04	0/440	1.06	1/584 (0.2%)
2	2	1.26	0/371	1.06	0/483
3	5	0.87	0/921	1.10	1/1239 (0.1%)
4	6	0.91	0/1058	1.02	0/1427
5	A	1.69	134/69349 (0.2%)	2.70	8798/108189 (8.1%)
6	B	1.64	4/2843 (0.1%)	2.64	336/4432 (7.6%)
7	C	1.01	0/2166	1.09	2/2902 (0.1%)
8	D	0.96	0/1590	1.07	0/2130
9	E	0.97	0/1586	1.08	2/2139 (0.1%)
10	F	0.96	0/1432	1.09	2/1920 (0.1%)
11	G	0.98	0/1264	1.05	0/1709
12	J	0.94	0/1157	1.04	0/1557
13	K	1.03	0/928	1.05	0/1245
14	L	0.98	0/1094	1.09	2/1457 (0.1%)
15	N	1.08	0/969	1.06	0/1294
16	O	1.01	0/922	1.05	1/1236 (0.1%)
17	P	1.10	0/929	1.21	5/1243 (0.4%)
18	Q	1.06	0/952	1.08	4/1266 (0.3%)
19	R	0.91	0/806	1.09	0/1080
20	S	1.01	0/877	1.13	1/1179 (0.1%)
21	T	1.00	0/774	1.11	1/1030 (0.1%)
22	U	0.87	0/790	1.15	0/1054
23	X	1.05	0/505	1.02	0/671
24	Y	0.97	0/443	1.01	0/594
All	All	1.55	138/94166 (0.1%)	2.45	9156/142060 (6.4%)

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
5	A	0	447

Continued on next page...

Continued from previous page...

Mol	Chain	#Chirality outliers	#Planarity outliers
6	B	0	15
8	D	0	2
9	E	0	1
14	L	0	2
15	N	0	1
17	P	0	3
21	T	0	3
All	All	0	474

The worst 5 of 138 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	A	1253	A	N7-C5	-7.44	1.34	1.39
5	A	353	A	N7-C5	-7.42	1.34	1.39
5	A	629	G	C2'-C1'	-7.08	1.45	1.53
5	A	1449	C	P-O5'	-7.08	1.52	1.59
5	A	2297	A	N7-C5	-6.86	1.35	1.39

The worst 5 of 9156 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	B	10	G	P-O3'-C3'	26.30	151.26	119.70
5	A	1339	A	P-O3'-C3'	26.04	150.94	119.70
5	A	178	A	P-O3'-C3'	22.26	146.41	119.70
5	A	2062	A	P-O3'-C3'	21.01	144.91	119.70
5	A	74	U	P-O3'-C3'	20.60	144.42	119.70

There are no chirality outliers.

5 of 474 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
5	A	14	A	Sidechain
5	A	15	G	Sidechain
5	A	27	G	Sidechain
5	A	28	A	Sidechain
5	A	3	U	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	0	433	0	454	0	0
2	2	368	0	410	0	0
3	5	910	0	944	2	0
4	6	1044	0	1098	1	0
5	A	61914	0	31166	148	0
6	B	2542	0	1288	6	0
7	C	2129	0	2225	0	0
8	D	1568	0	1635	2	0
9	E	1567	0	1652	3	0
10	F	1413	0	1479	2	0
11	G	1246	0	1273	0	0
12	J	1134	0	1178	3	0
13	K	921	0	977	0	0
14	L	1082	0	1132	3	0
15	N	962	0	995	0	0
16	O	913	0	947	4	0
17	P	916	0	987	2	0
18	Q	940	0	1005	1	0
19	R	795	0	838	0	0
20	S	868	0	930	0	0
21	T	767	0	813	0	0
22	U	780	0	838	1	0
23	X	504	0	541	0	0
24	Y	441	0	478	0	0
All	All	86157	0	55283	174	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 1.

The worst 5 of 174 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)
5:A:1799:G:H1	5:A:2011:U:H3	1.32	0.76
5:A:2557:U:H3	5:A:2564:A:H61	1.39	0.68
5:A:1672:A:H61	5:A:1684:U:H3	1.43	0.65
5:A:1339:A:C2	5:A:1679:A:C2	2.87	0.62
5:A:1976:C:H2'	5:A:1977:G:H5"	1.80	0.62

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	53/59 (90%)	40 (76%)	10 (19%)	3 (6%)	1 18
2	2	42/44 (96%)	38 (90%)	2 (5%)	2 (5%)	2 21
3	5	116/232 (50%)	96 (83%)	11 (10%)	9 (8%)	1 13
4	6	139/141 (99%)	117 (84%)	15 (11%)	7 (5%)	2 20
7	C	275/277 (99%)	224 (82%)	33 (12%)	18 (6%)	1 16
8	D	204/209 (98%)	158 (78%)	38 (19%)	8 (4%)	3 23
9	E	204/207 (99%)	166 (81%)	19 (9%)	19 (9%)	0 11
10	F	177/179 (99%)	136 (77%)	27 (15%)	14 (8%)	1 13
11	G	161/179 (90%)	150 (93%)	9 (6%)	2 (1%)	13 50
12	J	141/145 (97%)	117 (83%)	14 (10%)	10 (7%)	1 14
13	K	120/122 (98%)	103 (86%)	11 (9%)	6 (5%)	2 20
14	L	144/146 (99%)	105 (73%)	24 (17%)	15 (10%)	0 8
15	N	118/120 (98%)	96 (81%)	19 (16%)	3 (2%)	5 32
16	O	118/120 (98%)	87 (74%)	18 (15%)	13 (11%)	0 7
17	P	110/115 (96%)	71 (64%)	23 (21%)	16 (14%)	0 4
18	Q	115/119 (97%)	104 (90%)	10 (9%)	1 (1%)	17 57
19	R	100/102 (98%)	79 (79%)	13 (13%)	8 (8%)	1 12
20	S	110/113 (97%)	97 (88%)	8 (7%)	5 (4%)	2 22
21	T	93/95 (98%)	70 (75%)	14 (15%)	9 (10%)	0 10
22	U	101/103 (98%)	71 (70%)	18 (18%)	12 (12%)	0 6
23	X	59/66 (89%)	53 (90%)	4 (7%)	2 (3%)	3 26
24	Y	54/59 (92%)	47 (87%)	5 (9%)	2 (4%)	3 24
All	All	2754/2952 (93%)	2225 (81%)	345 (12%)	184 (7%)	2 15

5 of 184 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	5	41	THR
3	5	209	VAL
3	5	212	VAL
4	6	93	ASN
7	C	34	LEU

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	0	49/53 (92%)	49 (100%)	0	100	100
2	2	39/39 (100%)	38 (97%)	1 (3%)	46	66
3	5	98/185 (53%)	93 (95%)	5 (5%)	24	48
4	6	110/110 (100%)	110 (100%)	0	100	100
7	C	225/225 (100%)	213 (95%)	12 (5%)	22	47
8	D	167/170 (98%)	157 (94%)	10 (6%)	19	44
9	E	169/170 (99%)	163 (96%)	6 (4%)	35	59
10	F	154/154 (100%)	147 (96%)	7 (4%)	27	52
11	G	138/151 (91%)	133 (96%)	5 (4%)	35	59
12	J	122/123 (99%)	113 (93%)	9 (7%)	13	38
13	K	101/101 (100%)	98 (97%)	3 (3%)	41	63
14	L	110/110 (100%)	107 (97%)	3 (3%)	44	65
15	N	100/100 (100%)	97 (97%)	3 (3%)	41	63
16	O	93/93 (100%)	90 (97%)	3 (3%)	39	61
17	P	97/100 (97%)	90 (93%)	7 (7%)	14	39
18	Q	96/98 (98%)	95 (99%)	1 (1%)	76	86
19	R	84/84 (100%)	79 (94%)	5 (6%)	19	44
20	S	93/93 (100%)	91 (98%)	2 (2%)	52	71
21	T	85/85 (100%)	83 (98%)	2 (2%)	49	69
22	U	87/87 (100%)	84 (97%)	3 (3%)	37	60

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
23	X	54/57 (95%)	51 (94%)	3 (6%)	21 46
24	Y	51/53 (96%)	51 (100%)	0	100 100
All	All	2322/2441 (95%)	2232 (96%)	90 (4%)	36 56

5 of 90 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
13	K	90	ASP
17	P	74	PHE
14	L	51	GLU
16	O	94	VAL
19	R	10	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 17 such sidechains are listed below:

Mol	Chain	Res	Type
16	O	103	HIS
20	S	2	GLN
10	F	37	ASN
10	F	172	GLN
11	G	23	ASN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
5	A	2882/2927 (98%)	895 (31%)	205 (7%)
6	B	118/119 (99%)	24 (20%)	3 (2%)
All	All	3000/3046 (98%)	919 (30%)	208 (6%)

5 of 919 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
5	A	2	G
5	A	3	U
5	A	4	U
5	A	8	U
5	A	10	A

5 of 208 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
5	A	1606	A
5	A	1999	A
5	A	2870	G
5	A	1629	C
5	A	1787	G

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

There are no ligands in this entry.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

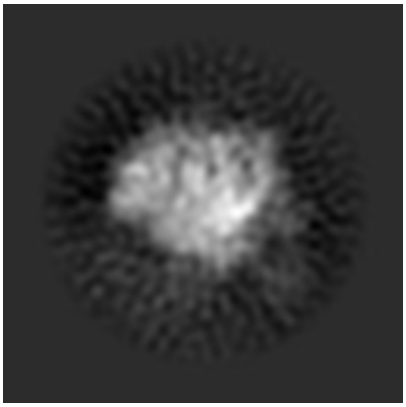
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-5642. These allow visual inspection of the internal detail of the map and identification of artifacts.

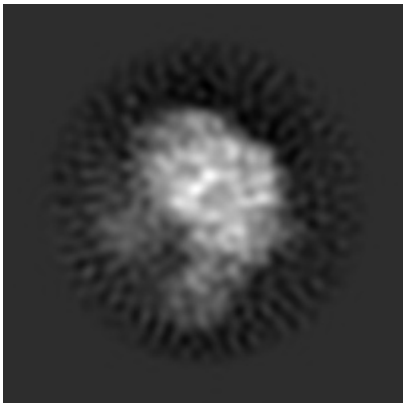
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

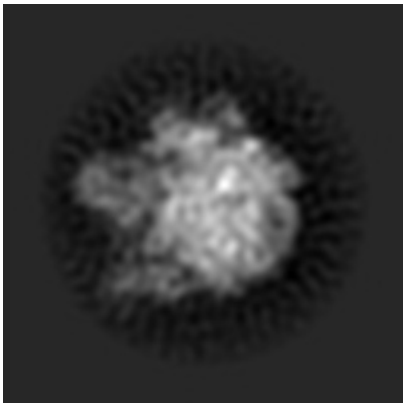
6.1.1 Primary map



X



Y

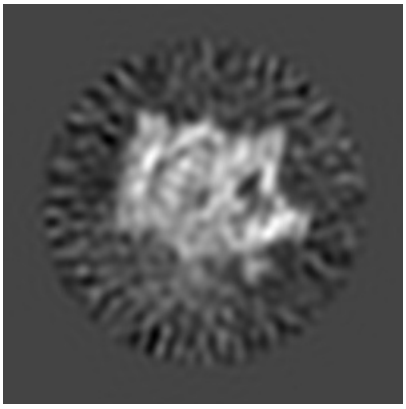


Z

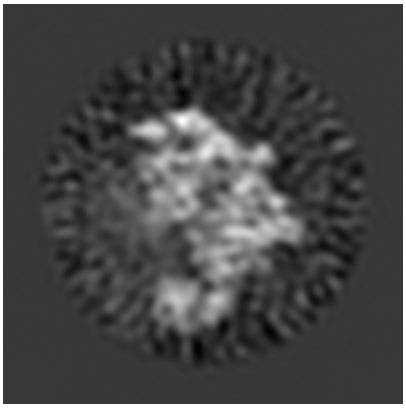
The images above show the map projected in three orthogonal directions.

6.2 Central slices

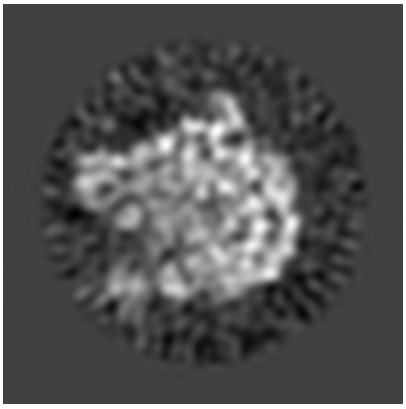
6.2.1 Primary map



X Index: 128



Y Index: 128

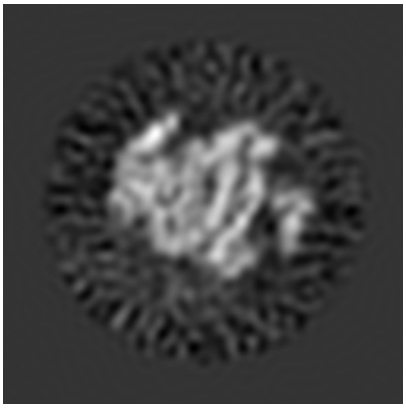


Z Index: 128

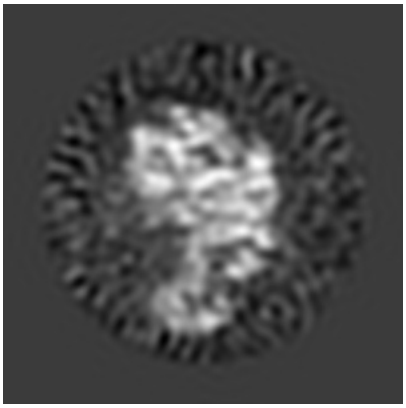
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

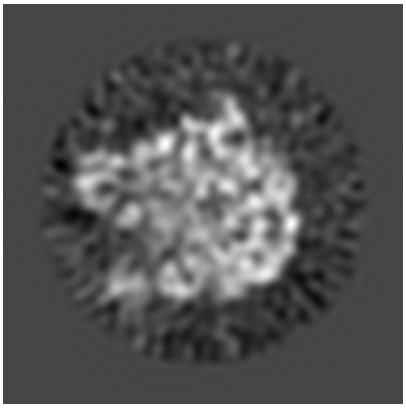
6.3.1 Primary map



X Index: 143



Y Index: 139

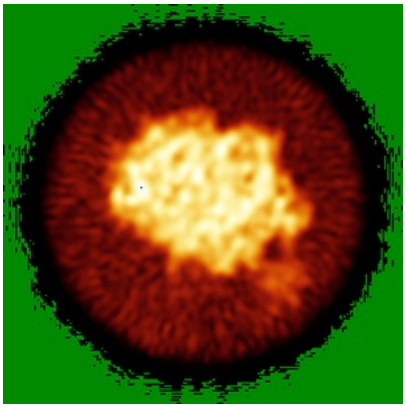


Z Index: 130

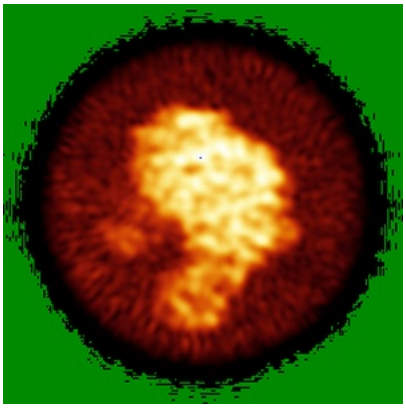
The images above show the largest variance slices of the map in three orthogonal directions.

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

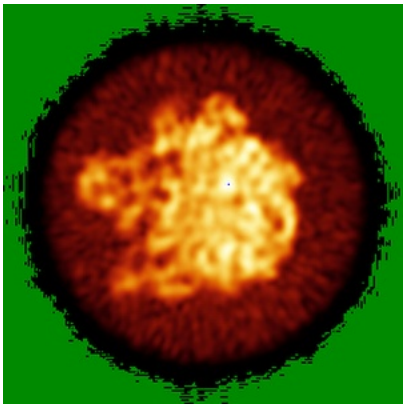
6.4.1 Primary map



X



Y

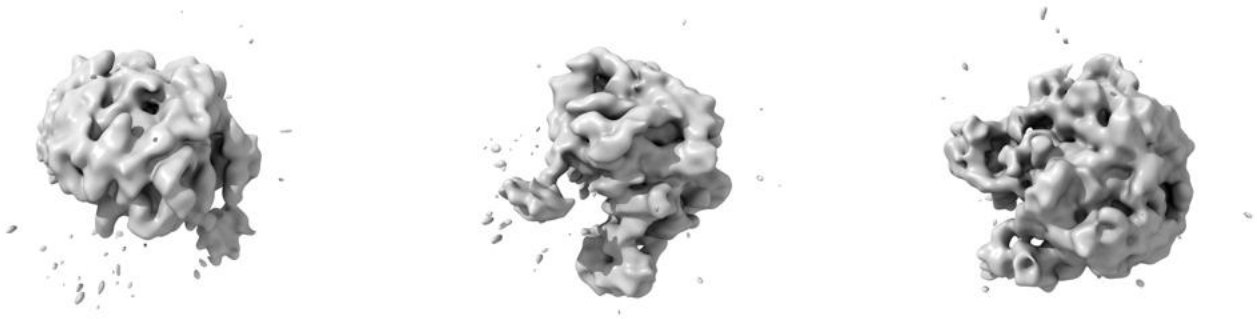


Z

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

6.5 Orthogonal surface views (i)

6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 2.7. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

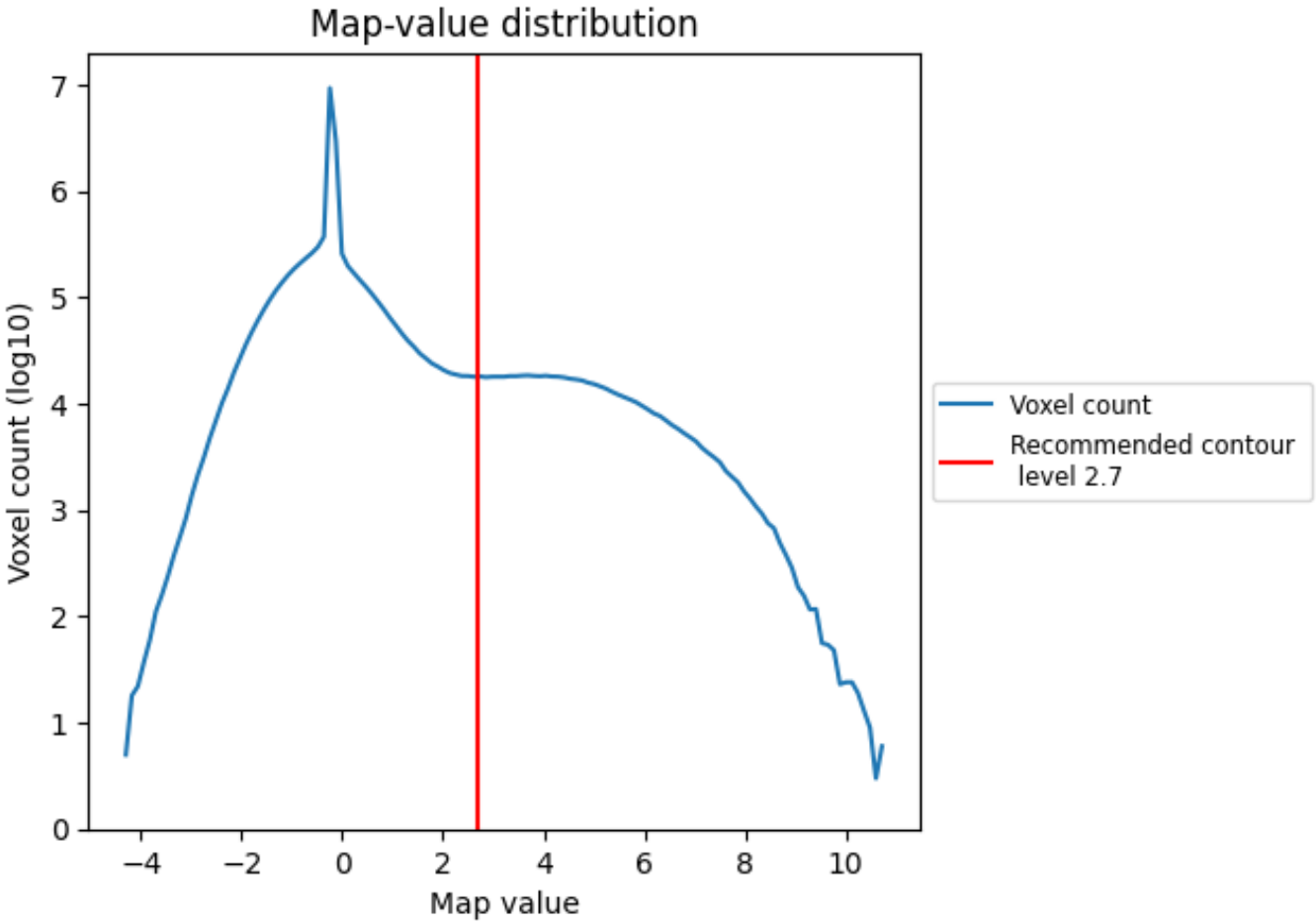
6.6 Mask visualisation (i)

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

7 Map analysis

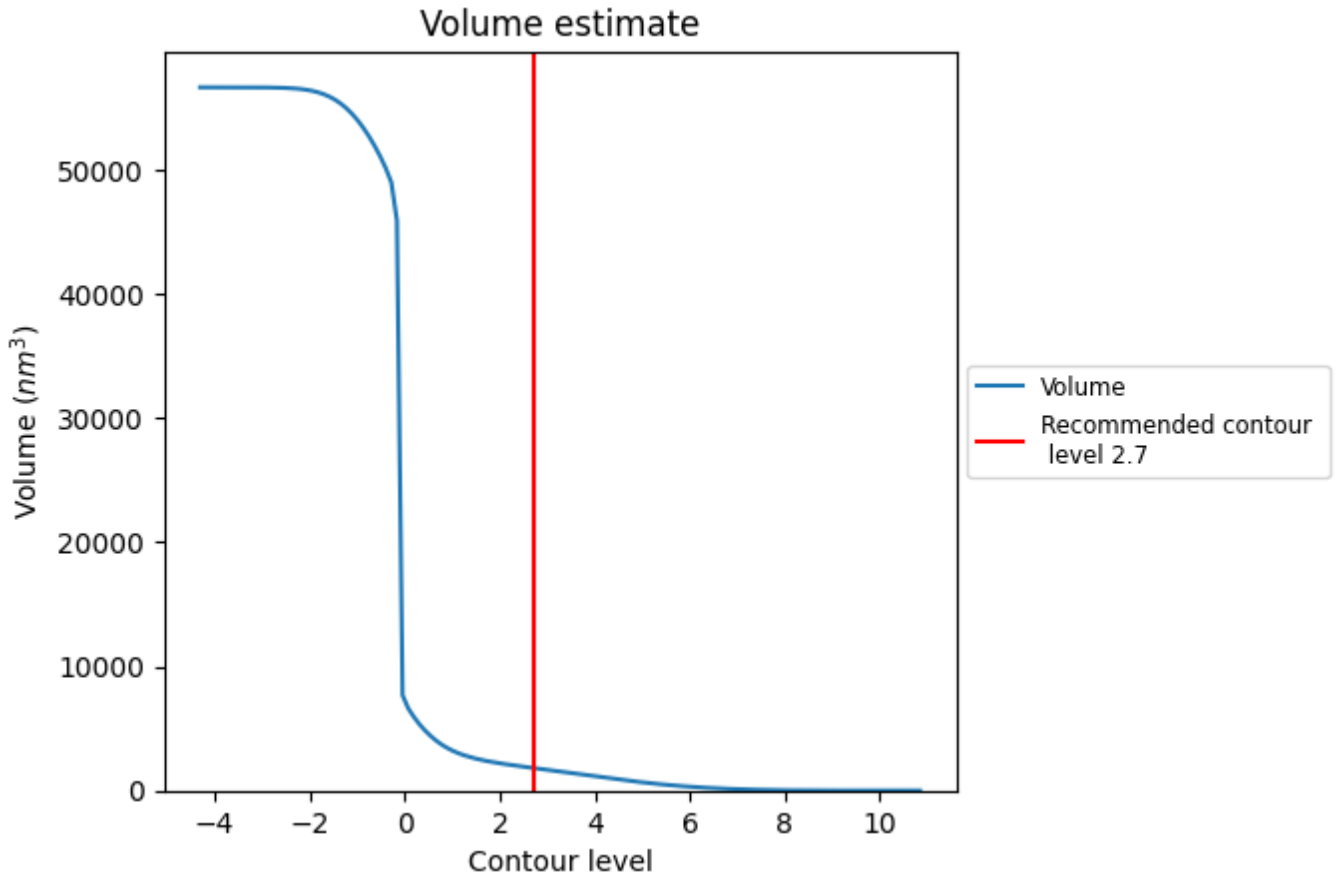
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

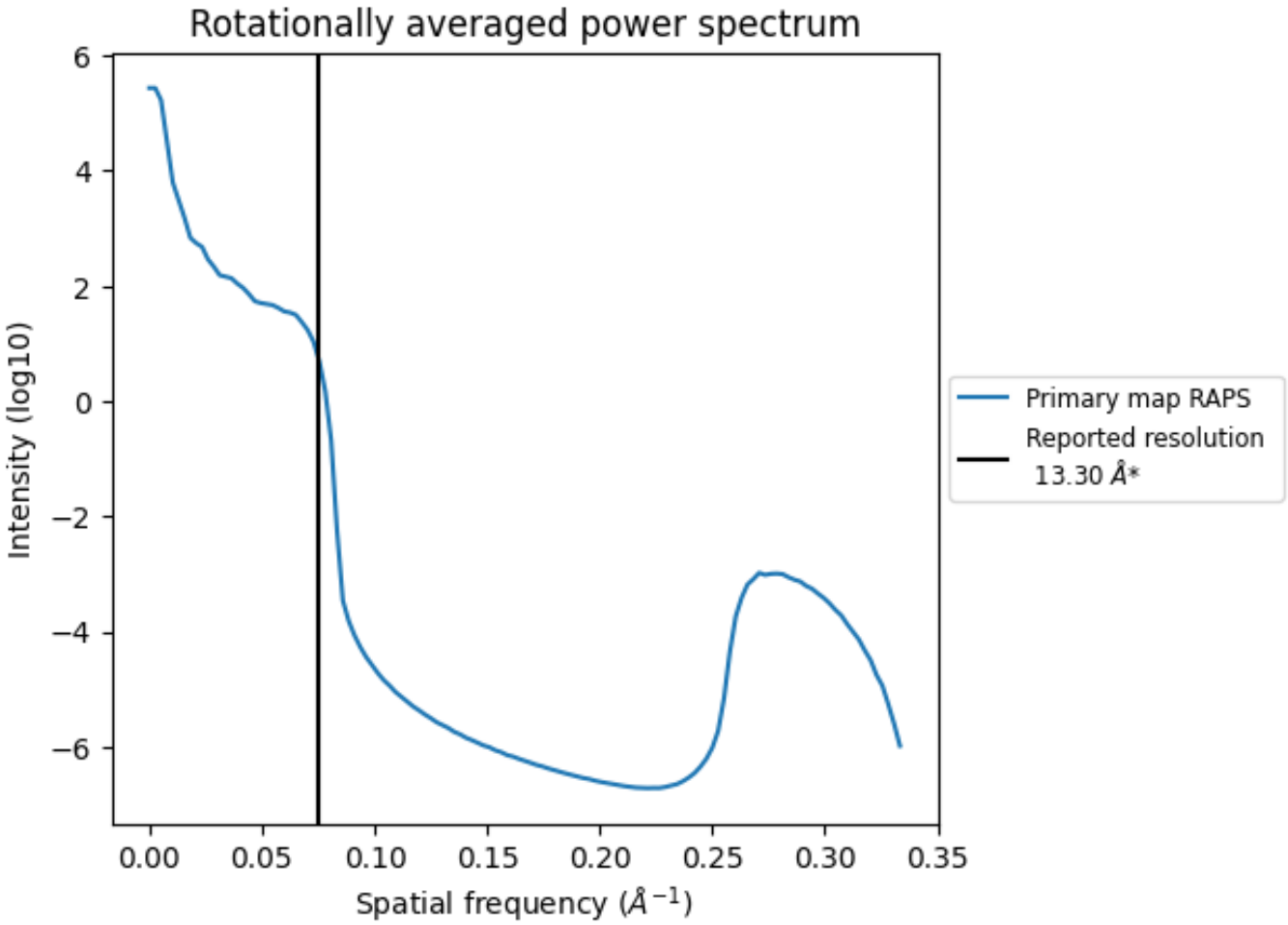
7.2 Volume estimate (i)



The volume at the recommended contour level is 1820 nm^3; this corresponds to an approximate mass of 1644 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 0.075 Å^{-1}

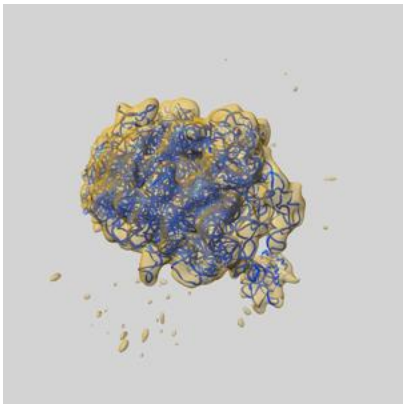
8 Fourier-Shell correlation (i)

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

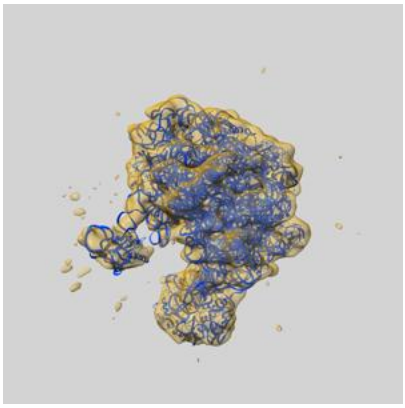
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-5642 and PDB model 3J3V. Per-residue inclusion information can be found in section 3 on page 8.

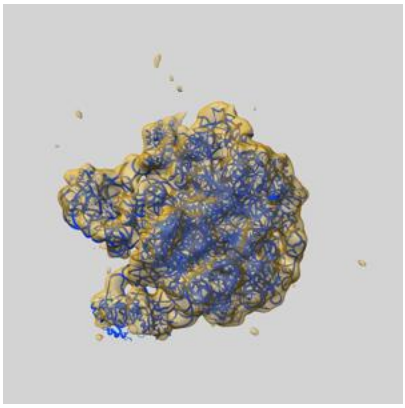
9.1 Map-model overlay



X



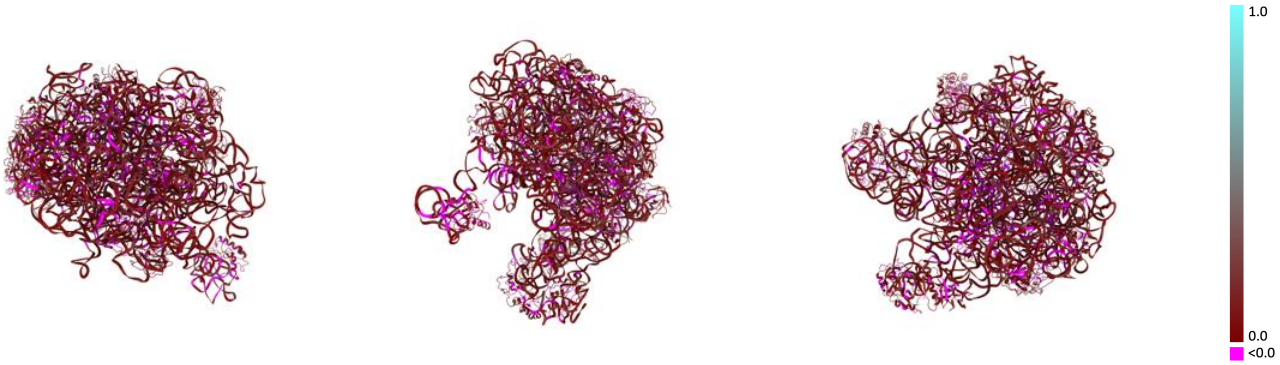
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 2.7 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.

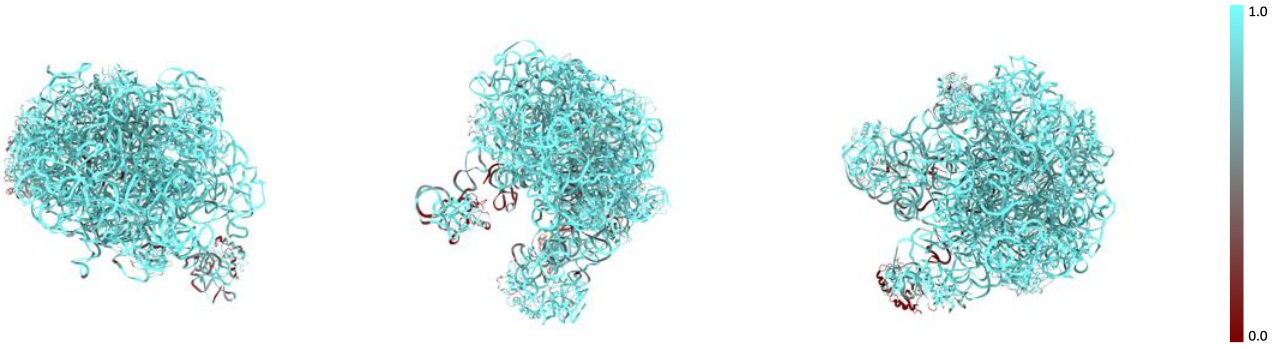
9.2 Q-score mapped to coordinate model



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.

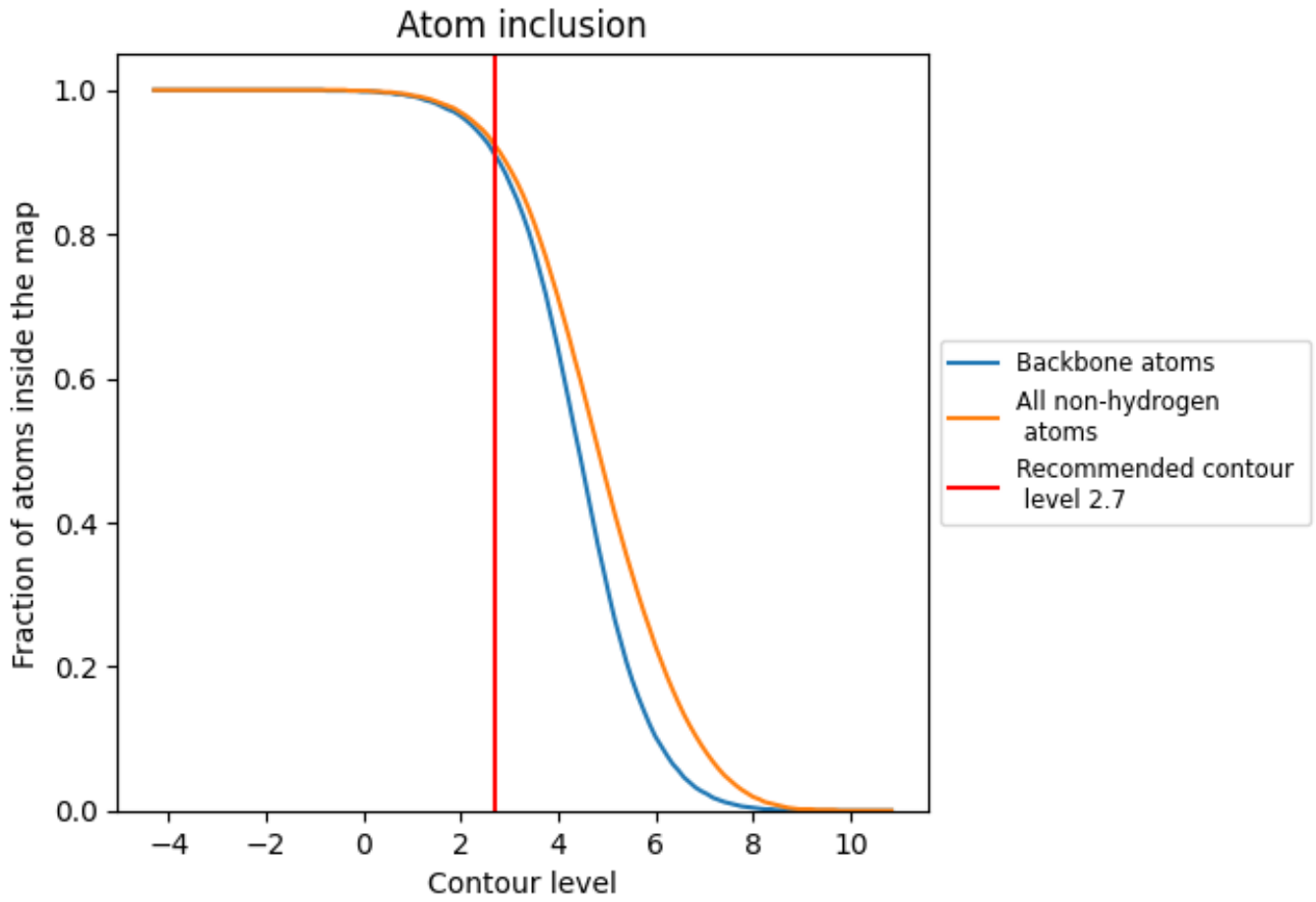
9.3 Atom inclusion mapped to coordinate model



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 (2.7).

9.4 Atom inclusion (i)



At the recommended contour level, 91% of all backbone atoms, 92% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (2.7) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9230	0.0810
0	0.9480	0.0410
2	1.0000	0.0160
5	0.6230	0.0580
6	0.2030	0.0410
A	0.9360	0.0910
B	0.8530	0.0870
C	0.9600	0.0350
D	0.9660	0.0560
E	0.9690	0.0560
F	0.8480	0.0720
G	0.8840	0.0820
J	0.9580	0.0420
K	0.9360	0.0590
L	0.9120	0.0420
N	1.0000	0.0510
O	0.9280	0.0730
P	0.9120	0.0450
Q	0.9670	0.0250
R	0.9800	0.0700
S	0.9680	0.0470
T	0.9910	0.0490
U	0.9550	0.0470
X	0.9920	0.0830
Y	0.7490	0.0410