wwPDB EM Validation Summary Report (i)

Nov 20, 2022 – 09:10 AM EST

PDB ID	:	4V7H
EMDB ID	:	EMD-1345
Title	:	Structure of the 80S rRNA and proteins and P/E tRNA for eukaryotic ribosome based on cryo-EM map of Thermomyces lanuginosus ribosome at 8.9A resolution
Authors	:	Taylor, D.J.; Devkota, B.; Huang, A.D.; Topf, M.; Narayanan, E.; Sali, A.; Harvey, S.C.; Frank, J.
Deposited on	:	2009-09-22
Resolution	:	8.90 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 (i) symbol.

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

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

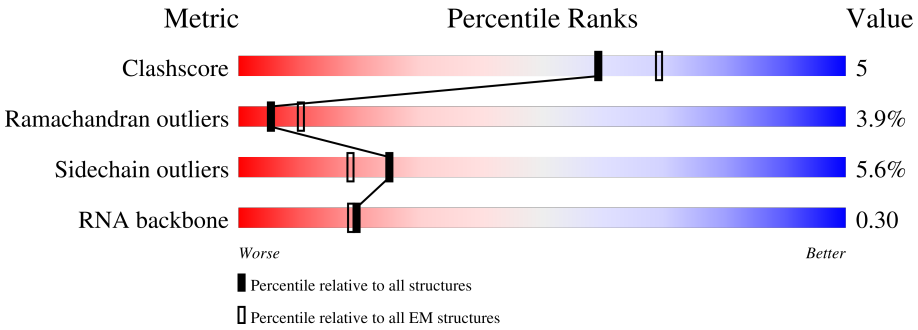
EMDB validation analysis	:	0.0.1.dev43
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.3

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 8.90 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	AA	1761	15% 72% 24%
2	AB	193	35% 97%
3	AC	188	52% 93% 7%
4	AD	158	25% 65% 12% 22%
5	AE	162	46% 93% 6%
6	AG	186	41% 91% 8%
7	AH	125	49% 89% 7%

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Mol	Chain	Length	Quality of chain
8	AI	138	52% 83% 11%
9	AJ	96	50% 86% 10%
10	AK	125	43% 90% 10%
11	AL	118	46% 93% 7%
12	AM	130	29% 85% 13%
13	AN	50	38% 78% 14%
14	AO	84	54% 86% 13%
15	AQ	80	49% 92% 6%
16	AS	71	37% 89% 10%
17	AR	313	61% 25% 70% 5%
18	AT	141	43% 82% 15%
19	A7	76	36% 29% 43% 28%
20	B0	109	45% 85% 12%
21	B1	48	44% 92% 6%
22	B2	98	26% 96%
23	B8	118	25% 77% 20%
24	B9	72	43% 82% 14%
25	BA	213	38% 91% 8%
26	BB	243	49% 86% 12%
27	BC	362	39% 90% 10%
28	BD	257	30% 91% 8%
29	BE	237	20% 86% 13%
30	BF	213	39% 93% 6%
31	BG	113	26% 90% 9%
32	BH	179	32% 88% 11%

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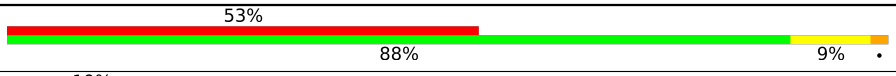
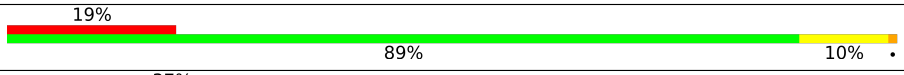
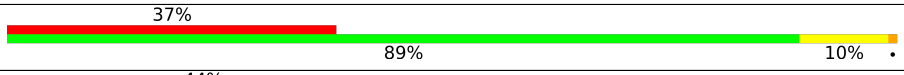
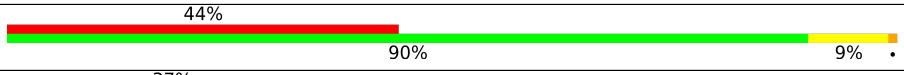
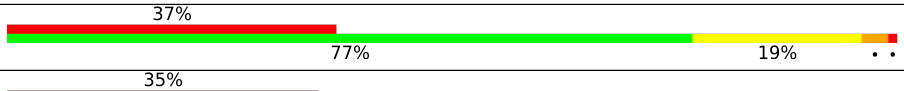
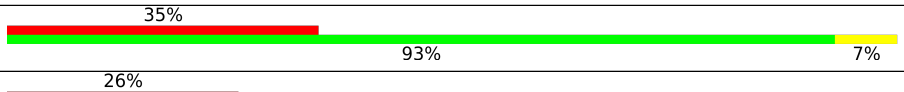
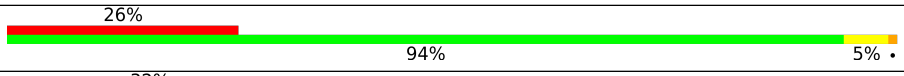
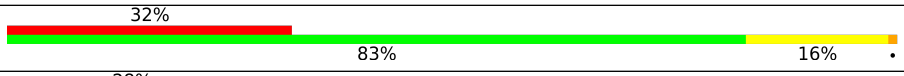
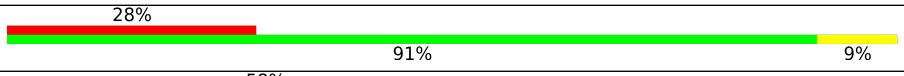
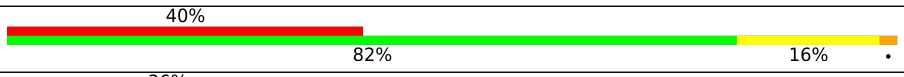
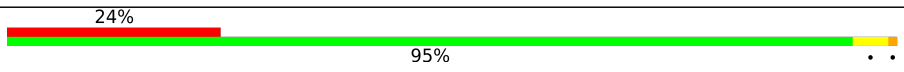
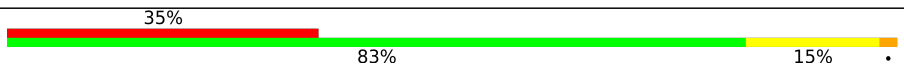
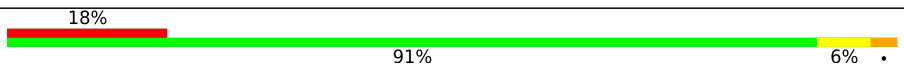
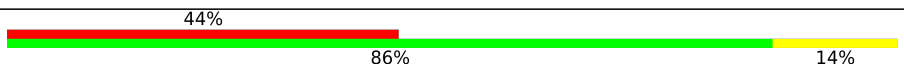
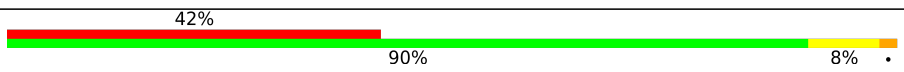
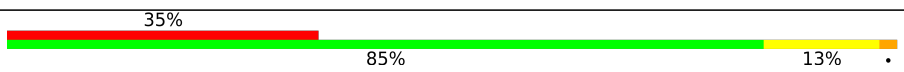
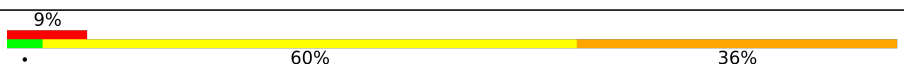
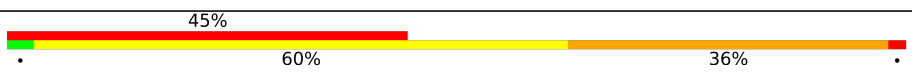
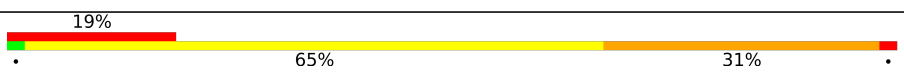
Mol	Chain	Length	Quality of chain
33	BI	165	
34	BJ	151	
35	BK	138	
36	BL	192	
37	BM	178	
38	BN	150	
39	BO	121	
40	BP	176	
41	BQ	116	
42	BR	131	
43	BS	45	
44	BT	80	
45	BU	116	
46	BV	142	
47	BW	79	
48	BX	86	
49	BY	52	
50	BZ	92	
51	B3	113	
52	B4	157	
53	B5	3170	

2 Entry composition (i)

There are 53 unique types of molecules in this entry. The entry contains 165754 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a RNA chain called 18S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	AA	1761	37458	16745	6626	12327	1760	0	3

- Molecule 2 is a protein called 40S ribosomal protein S0(A).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	AB	193	1500	958	269	271	2	0	0

- Molecule 3 is a protein called 40S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	AC	188	1469	929	271	263	6	0	0

- Molecule 4 is a protein called 40S ribosomal protein S9(A).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	AD	124	1018	647	189	181	1	0	0

- Molecule 5 is a protein called 40S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	AE	162	1207	765	222	218	2	0	0

- Molecule 6 is a protein called 40S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	AG	186	1456	908	277	268	3	0	0

- Molecule 7 is a protein called 40S ribosomal protein S22(A).

Mol	Chain	Residues	Atoms					AltConf	Trace
7	AH	125	Total	C	N	O	S	0	0
			992	634	181	174	3		

- Molecule 8 is a protein called 40S ribosomal protein S16(A).

Mol	Chain	Residues	Atoms				AltConf	Trace
8	AI	138	Total	C	N	O	0	0
			1087	695	200	192		

- Molecule 9 is a protein called 40S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	AJ	96	Total	C	N	O	S	0	0
			771	487	140	143	1		

- Molecule 10 is a protein called 40S ribosomal protein S14(A).

Mol	Chain	Residues	Atoms					AltConf	Trace
10	AK	125	Total	C	N	O	S	0	0
			924	566	179	176	3		

- Molecule 11 is a protein called 40S ribosomal protein S23(A).

Mol	Chain	Residues	Atoms					AltConf	Trace
11	AL	118	Total	C	N	O	S	0	0
			906	579	166	159	2		

- Molecule 12 is a protein called 40S ribosomal protein S18.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	AM	130	Total	C	N	O	S	0	0
			1077	669	217	189	2		

- Molecule 13 is a protein called 40S ribosomal protein S29(A).

Mol	Chain	Residues	Atoms					AltConf	Trace
13	AN	50	Total	C	N	O	S	0	0
			417	258	87	68	4		

- Molecule 14 is a protein called 40S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	AO	84	Total	C	N	O	S	0	0
			694	446	129	118	1		

- Molecule 15 is a protein called 40S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	AQ	80	Total	C	N	O	S	0	0
			643	410	127	104	2		

- Molecule 16 is a protein called 40S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	AS	71	Total	C	N	O	S	0	0
			548	348	101	93	6		

- Molecule 17 is a protein called RACK1 protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	AR	313	Total	C	N	O	S	0	0
			2410	1526	413	463	8		

- Molecule 18 is a protein called s19e protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	AT	141	Total	C	N	O	S	0	0
			1102	687	206	207	2		

- Molecule 19 is a RNA chain called P/E tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	A7	76	Total	C	N	O	P	0	0
			1648	746	294	533	75		

- Molecule 20 is a protein called 60S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	B0	109	Total	C	N	O	S	0	0
			881	555	176	149	1		

- Molecule 21 is a protein called 60S ribosomal protein L39.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	B1	48	Total	C	N	O	S	0	0
			424	263	95	64	2		

- Molecule 22 is a protein called 60S ribosomal protein L30e.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	B2	98	Total	C	N	O	S	0	0
			752	484	125	142	1		

- Molecule 23 is a protein called 60S ribosomal protein LP0.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	B8	118	Total	C	N	O	S	0	0
			947	609	167	168	3		

- Molecule 24 is a protein called 60S ribosomal protein L43.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	B9	72	Total	C	N	O	S	0	0
			539	332	104	98	5		

- Molecule 25 is a protein called 60S ribosomal protein L1.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	BA	213	Total	C	N	O	S	0	0
			1683	1074	294	306	9		

- Molecule 26 is a protein called 60S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	BB	243	Total	C	N	O	S	0	0
			1848	1150	374	323	1		

- Molecule 27 is a protein called 60S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	BC	362	Total	C	N	O	S	0	0
			2887	1833	545	502	7		

- Molecule 28 is a protein called 60S ribosomal protein L4(B).

Mol	Chain	Residues	Atoms					AltConf	Trace
28	BD	257	Total	C	N	O	S	0	0
			1950	1226	375	346	3		

- Molecule 29 is a protein called 60S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	BE	237	Total	C	N	O	S	0	0
			1913	1210	329	372	2		

- Molecule 30 is a protein called 60S ribosomal protein L7(A).

Mol	Chain	Residues	Atoms					AltConf	Trace
30	BF	213	Total	C	N	O	S	0	0
			1561	1010	281	269	1		

- Molecule 31 is a protein called 60S ribosomal protein L8(A).

Mol	Chain	Residues	Atoms					AltConf	Trace
31	BG	113	Total	C	N	O	S	0	0
			844	540	144	158	2		

- Molecule 32 is a protein called 60S ribosomal protein L9(A).

Mol	Chain	Residues	Atoms					AltConf	Trace
32	BH	179	Total	C	N	O	S	0	0
			1418	896	260	259	3		

- Molecule 33 is a protein called 60S ribosomal protein L10.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	BI	165	Total	C	N	O	S	0	0
			1326	834	257	228	7		

- Molecule 34 is a protein called 60S ribosomal protein L11(B).

Mol	Chain	Residues	Atoms					AltConf	Trace
34	BJ	151	Total	C	N	O	S	0	0
			1195	744	229	218	4		

- Molecule 35 is a protein called 60S ribosomal protein L12.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	BK	138	Total	C	N	O	S	0	0
			1038	651	190	195	2		

- Molecule 36 is a protein called 60S ribosomal protein L15(A).

Mol	Chain	Residues	Atoms					AltConf	Trace
36	BL	192	Total	C	N	O	S	0	0
			1618	1011	340	266	1		

- Molecule 37 is a protein called 60S ribosomal protein L16(A).

Mol	Chain	Residues	Atoms					AltConf	Trace
37	BM	178	Total	C	N	O	S	0	0
			1317	845	254	217	1		

- Molecule 38 is a protein called 60S ribosomal protein L17(A).

Mol	Chain	Residues	Atoms				AltConf	Trace
38	BN	150	Total	C	N	O	0	0
			1189	742	230	217		

- Molecule 39 is a protein called 60S ribosomal protein L18(A).

Mol	Chain	Residues	Atoms					AltConf	Trace
39	BO	121	Total	C	N	O	S	0	0
			931	598	170	162	1		

- Molecule 40 is a protein called 60S ribosomal protein L19.

Mol	Chain	Residues	Atoms				AltConf	Trace
40	BP	176	Total	C	N	O	0	0
			1317	816	277	224		

- Molecule 41 is a protein called 60S ribosomal protein L21(A).

Mol	Chain	Residues	Atoms					AltConf	Trace
41	BQ	116	Total	C	N	O	S	0	0
			893	564	173	153	3		

- Molecule 42 is a protein called 60S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	BR	131	Total	C	N	O	S	0	0
			977	614	183	173	7		

- Molecule 43 is a protein called 60S ribosomal protein L24(A).

Mol	Chain	Residues	Atoms				AltConf	Trace
43	BS	45	Total	C	N	O	0	0
			371	238	73	60		

- Molecule 44 is a protein called 60S ribosomal protein L25.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	BT	80	Total	C	N	O	S	0	0
			642	411	108	121	2		

- Molecule 45 is a protein called 60S ribosomal protein L26(A).

Mol	Chain	Residues	Atoms				AltConf	Trace
45	BU	116	Total	C	N	O	0	0
			916	576	179	161		

- Molecule 46 is a protein called 60S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	BV	142	Total	C	N	O	S	0	0
			1123	717	218	185	3		

- Molecule 47 is a protein called 60S ribosomal protein L31(A).

Mol	Chain	Residues	Atoms					AltConf	Trace
47	BW	79	Total	C	N	O	S	0	0
			663	415	135	112	1		

- Molecule 48 is a protein called 60S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	BX	86	Total	C	N	O	S	0	0
			605	379	111	114	1		

- Molecule 49 is a protein called 60S ribosomal protein L37(A).

Mol	Chain	Residues	Atoms					AltConf	Trace
49	BY	52	Total	C	N	O	S	0	0
			403	245	85	69	4		

- Molecule 50 is a protein called 60S ribosomal protein L42.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	BZ	92	Total	C	N	O	S	0	0
			749	472	151	121	5		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
51	B3	113	Total	C	N	O	P	0	0
			2403	1075	429	787	112		

- Molecule 52 is a RNA chain called 5.8S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	B4	157	Total	C	N	O	P	0	0
			3329	1490	581	1102	156		

- Molecule 53 is a RNA chain called 26S ribosomal RNA.

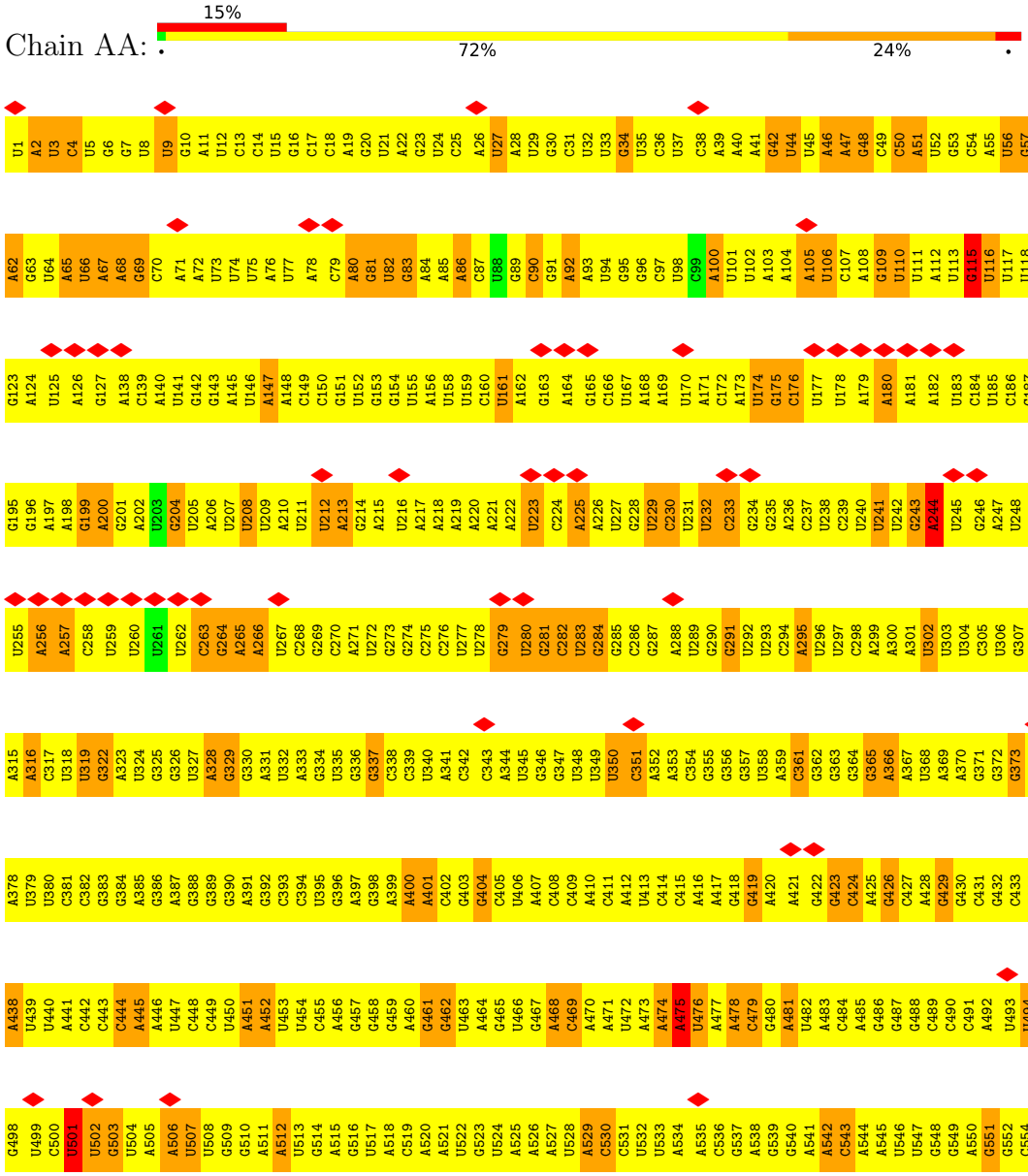
Mol	Chain	Residues	Atoms					AltConf	Trace
53	B5	3170	Total	C	N	O	P	0	0
			67775	30273	12178	22155	3169		

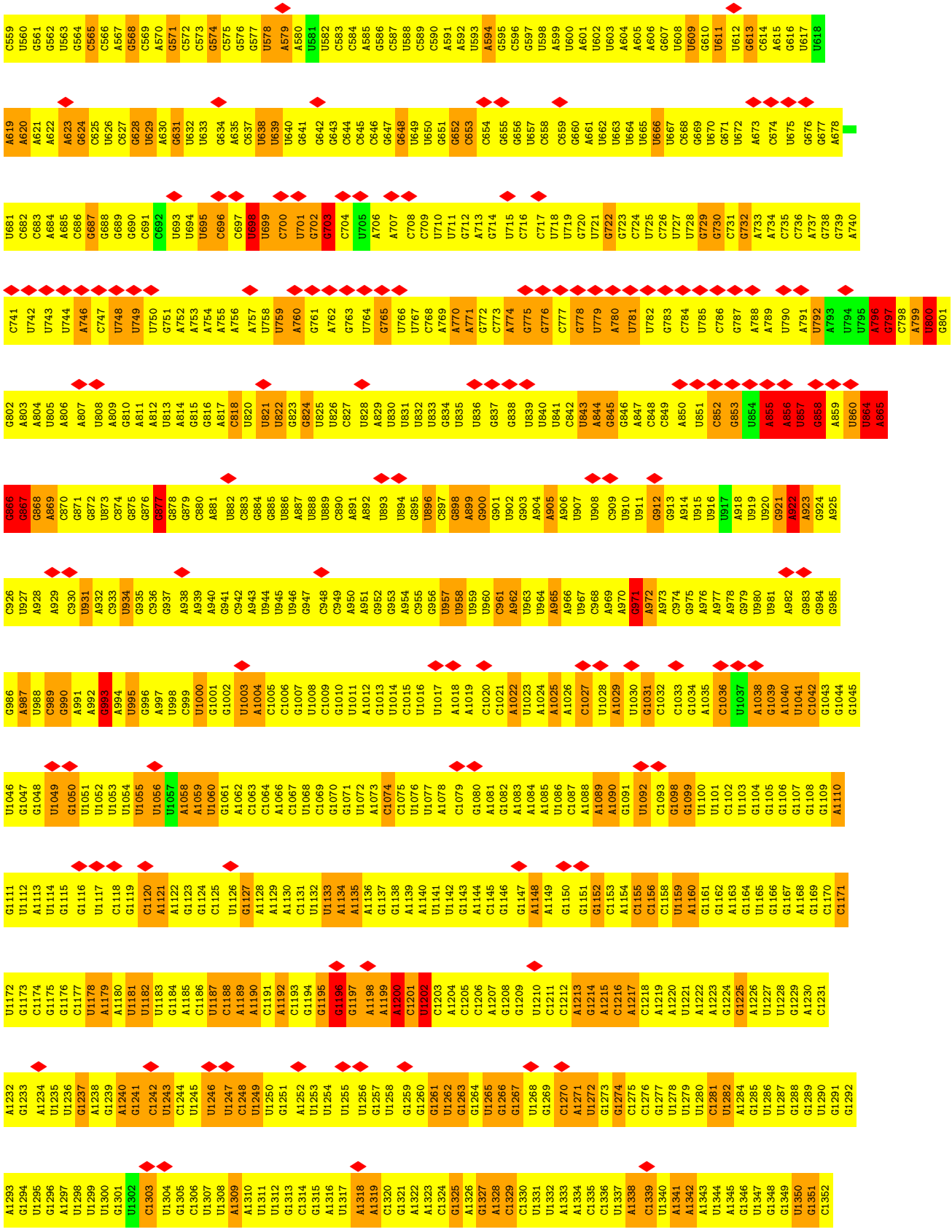
3 Residue-property plots (i)

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: 18S rRNA

Chain AA:

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A619 A620 A621 A622 A623 G624 C625 U626 C627 G628 U629 A630 G631 U632 U633 G634 A635 C637 U638 U639 U640 G641 G642 G643 C644 C645 C646 G647 G648 U649 U650 G651 G652 C653 C654 G655 G656 U657 C658 C659 G660 A661 U662 U663 U664 U665 U666 U667 C668 G669 U670 G671 U672 A673 C674 U675 G676 G677 A678
U681 C682 C683 A684 A685 C686 G687 G688 G689 G690 C691 G692 U693 U694 U695 C696 C697 U698 U699 C700 U701 G702 G703 C704 U705 A706 A707 C708 C709 U710 U711 G712 A713 G714 U715 C716 C717 U718 U719 G720 U721 G722 G723 C724 U725 C726 U727 U728 G729 G730 C731 G732 A733 A734 C735 C736 A737 G738 G739 A740
C741 U742 U743 U744 A746 C747 U748 U749 U750 G751 A752 A753 A754 A755 A756 A757 U758 U759 A760 G761 A762 G763 U764 G765 U766 U767 C768 A769 A770 A771 G772 C773 A774 G775 G776 C777 G778 U779 A780 U781 U782 G783 C784 U785 C786 G787 A788 A789 U790 A791 U792 A793 U794 U795 A796 G797 C798 A799 U800 G801
G802 A803 A804 U805 A806 A807 U808 A809 G810 A811 A812 U813 A814 G815 G816 A817 C818 U820 U821 U822 G823 G824 U825 U826 C827 U828 A829 U830 U831 U832 U833 G834 U835 U836 G837 G838 U839 U840 U841 C842 U843 A844 G845 G846 A847 C848 C849 A850 U851 C852 G853 U854 A855 A856 U857 G858 A859 U860 U864 A865
G866 G867 G868 A869 C870 G871 G872 U873 C874 G875 G876 G877 G878 G879 C880 A881 U882 C883 G884 G885 U886 A887 U888 U889 C890 A891 A892 U893 U894 G895 U896 C897 G898 A899 G900 G901 U902 G903 A904 A905 A906 U907 U908 C909 U910 U911 G912 G913 A914 U915 U916 U917 A918 U919 U920 G921 A922 A923 G924 A925
C926 U927 A928 A929 C930 U931 A932 C933 U934 G935 C936 G937 A938 A939 A940 G941 C942 A943 U944 U945 U946 G947 C948 C949 A950 A951 G952 G953 A954 C955 G956 U957 U958 U959 U960 C961 A962 U963 U964 A965 A966 U967 C968 A969 A970 G971 A972 A973 C974 G975 A976 A977 A978 G979 U980 U981 A982 G983 G984 G985
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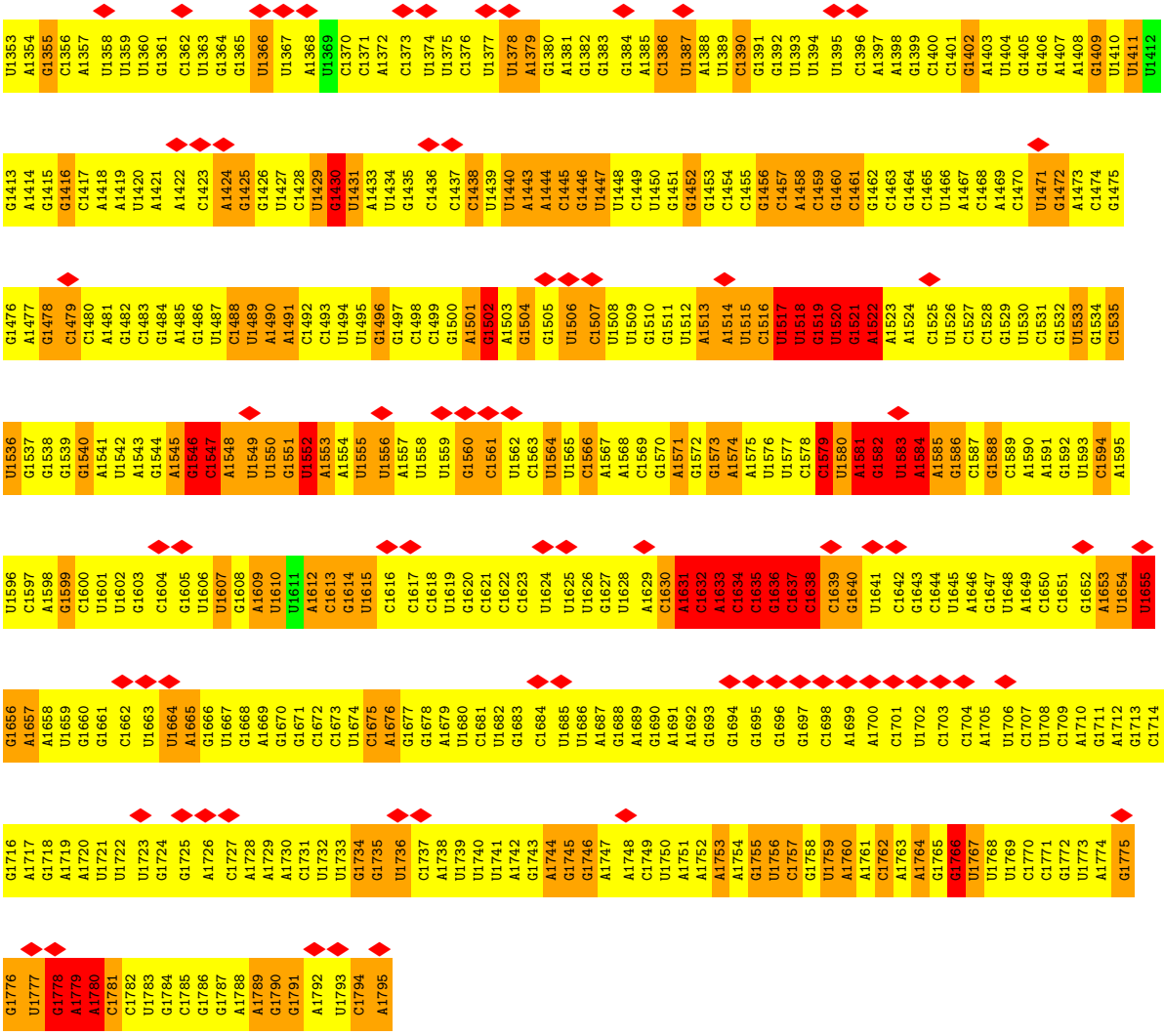
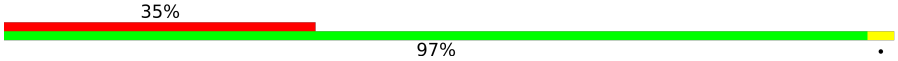
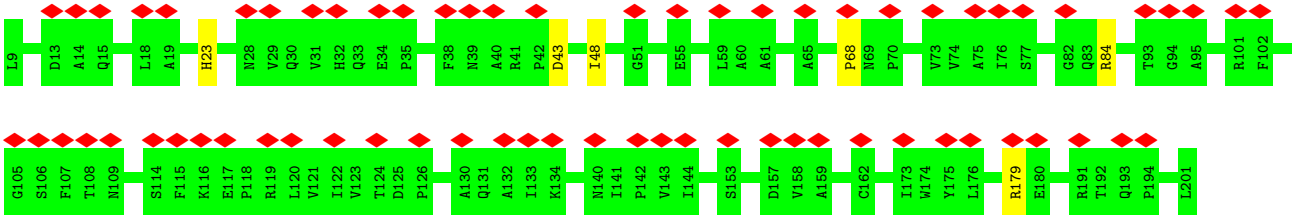
U1046 G1047 G1048 U1049 G1050 U1051 U1052 U1053 U1054 U1055 U1056 U1057 A1058 A1059 U1060 G1061 A1062 C1063 C1064 A1066 C1067 U1068 C1069 G1070 G1071 U1072 A1073 C1074 C1075 U1076 U1077 A1078 C1079 G1080 A1081 G1082 A1083 A1084 A1085 A1086 C1087 A1088 A1089 A1090 G1091 U1092 C1093 G1098 G1099 U1100 U1101 C1102 U1103 G1104 G1105 G1106 G1107 G1108 G1109 A1110
G1111 U1112 A1113 U1114 G1115 G1116 U1117 C1118 G1119 C1120 A1121 A1122 G1123 G1124 C1125 U1126 G1127 A1128 A1129 A1130 C1131 U1132 U1133 A1134 A1135 A1136 G1137 G1138 A1139 A1140 U1141 U1142 G1143 A1144 C1145 G1146 G1147 A1148 A1149 G1150 G1151 G1152 C1153 A1154 C1155 C1156 C1158 U1159 A1160 G1161 G1162 A1163 G1164 U1165 G1166 G1167 A1168 G1169 C1170 C1171
U1172 G1173 C1174 G1175 G1176 C1177 U1178 A1179 A1180 U1181 U1182 U1183 G1184 A1185 C1186 U1187 C1188 A1189 A1190 C1191 A1192 C1193 G1194 G1195 G1196 G1197 A1198 A1199 A1200 C1201 U1202 C1203 A1204 C1205 C1206 A1207 G1208 G1209 U1210 C1211 C1212 A1213 G1214 A1215 C1216 A1217 C1218 A1219 A1220 U1221 A1222 A1223 G1224 G1225 A1226 U1227 U1228 G1229 A1230 C1231
A1232 G1233 A1234 U1235 U1236 G1237 A1238 G1239 A1240 G1241 C1242 U1243 C1244 U1245 U1246 U1247 C1248 U1249 U1250 G1251 A1252 U1253 U1254 U1255 U1256 G1257 U1258 G1259 G1260 G1261 U1262 G1263 G1264 U1265 G1266 G1267 U1268 G1269 C1270 A1271 U1272 G1273 G1274 C1275 C1276 G1277 U1278 U1279 U1280 C1281 U1282 A1284 G1285 U1286 U1287 G1288 G1289 U1290 G1291 G1292
A1293 G1294 U1295 G1296 A1297 U1298 U1299 U1300 G1301 U1302 C1303 U1304 G1305 C1306 U1307 U1308 A1309 A1310 U1311 U1312 G1313 C1314 G1315 A1316 U1317 A1318 A1319 C1320 G1321 A1322 A1323 C1324 G1325 A1326 G1327 A1328 C1329 C1330 U1331 U1332 A1333 A1334 C1335 C1336 U1337 A1338 C1339 U1340 A1341 A1342 A1343 U1344 A1345 G1346 U1347 G1348 G1349 U1350 G1351 C1352



• Molecule 2: 40S ribosomal protein S0(A)

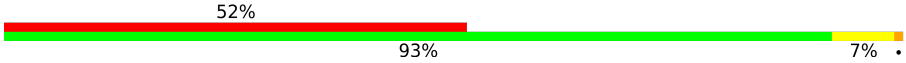
Chain AB:

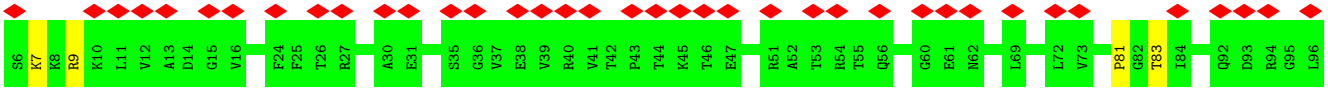


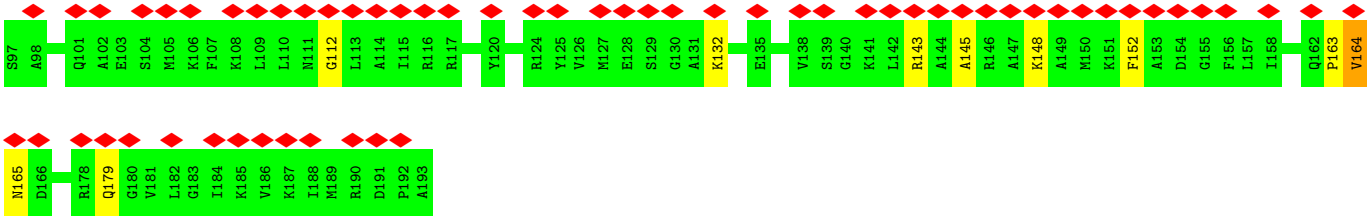


• Molecule 3: 40S ribosomal protein S3

Chain AC:

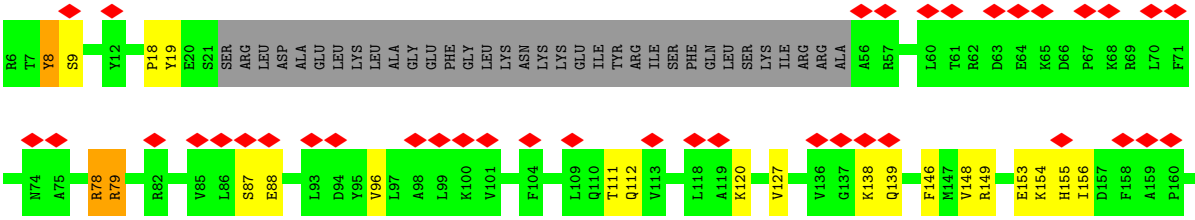






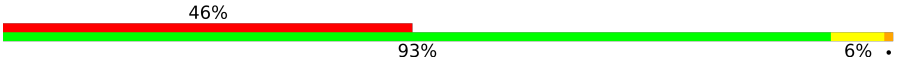
• Molecule 4: 40S ribosomal protein S9(A)

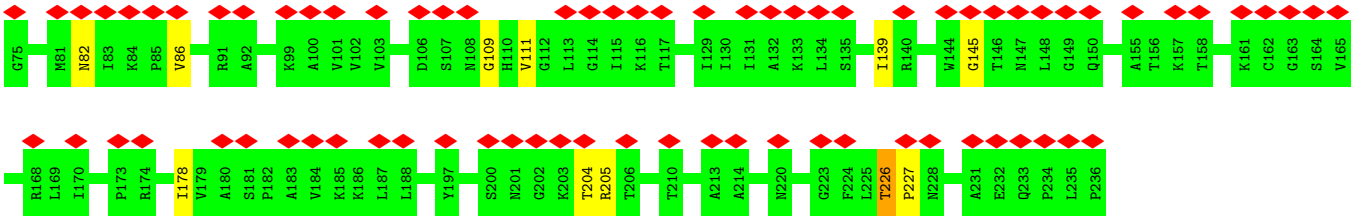
Chain AD:



• Molecule 5: 40S ribosomal protein S2

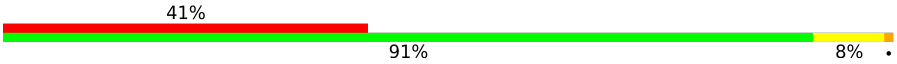
Chain AE:

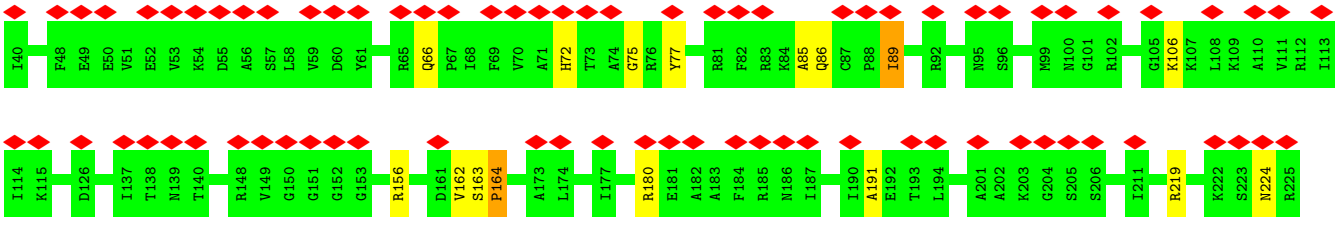




• Molecule 6: 40S ribosomal protein S5

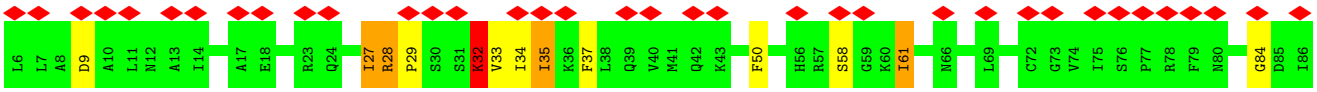
Chain AG:





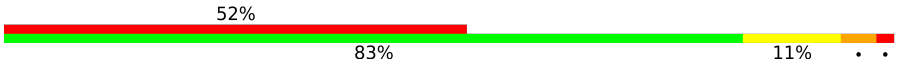
• Molecule 7: 40S ribosomal protein S22(A)

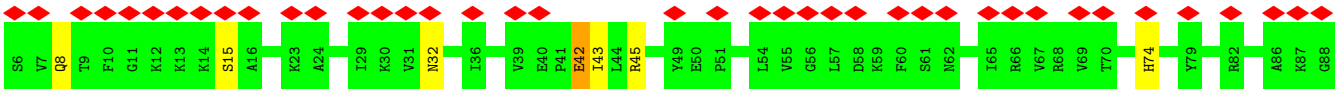
Chain AH:

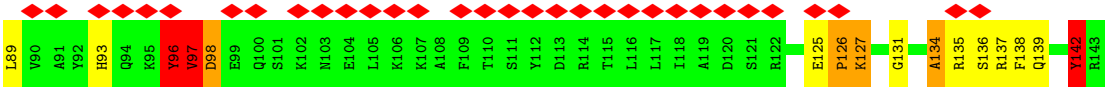


• Molecule 8: 40S ribosomal protein S16(A)

Chain AI:

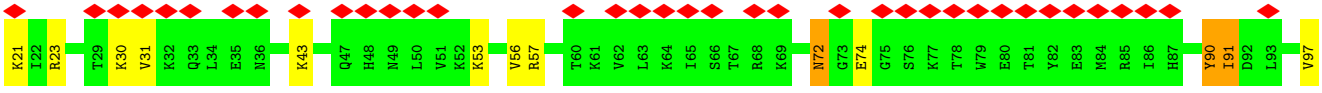


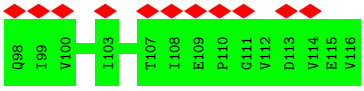




• Molecule 9: 40S ribosomal protein S20

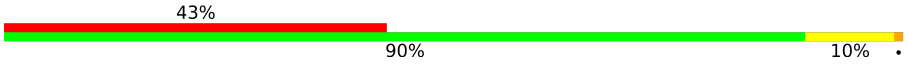
Chain AJ:

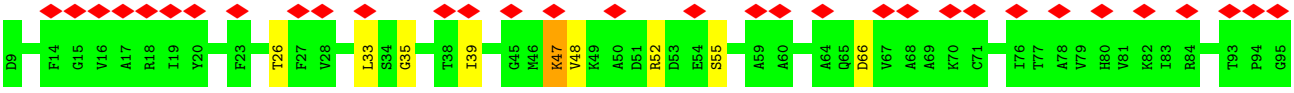


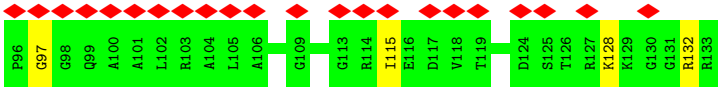


• Molecule 10: 40S ribosomal protein S14(A)

Chain AK:

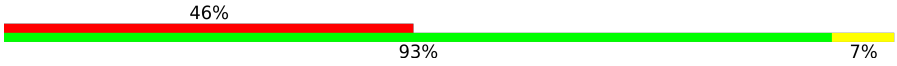


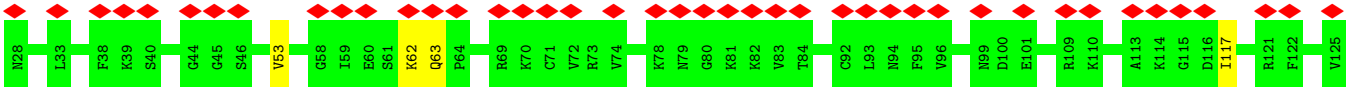


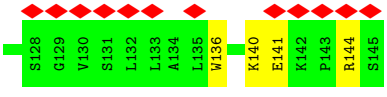


• Molecule 11: 40S ribosomal protein S23(A)

Chain AL:

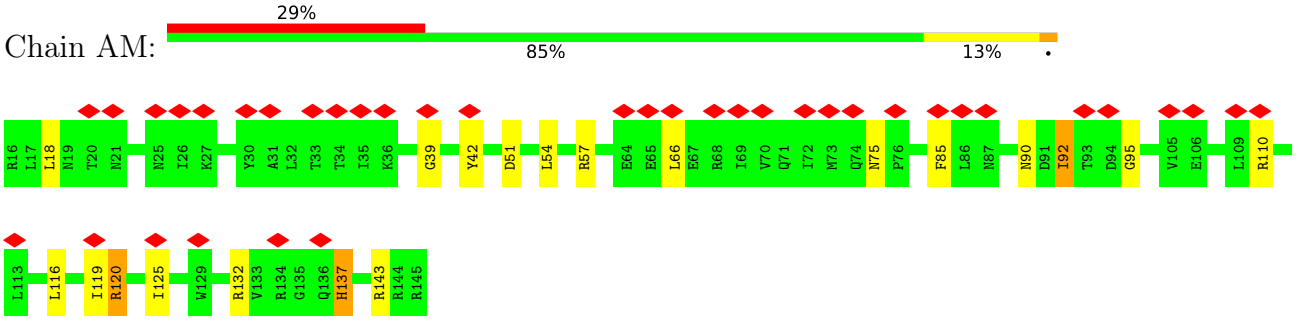






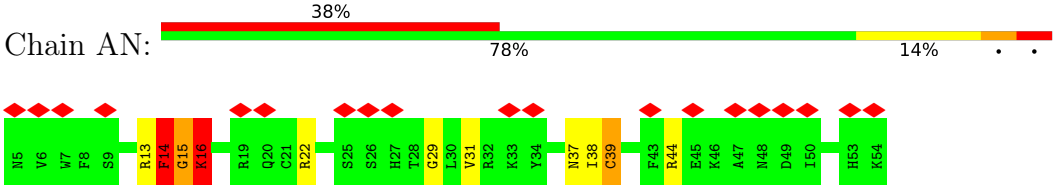
• Molecule 12: 40S ribosomal protein S18

Chain AM:



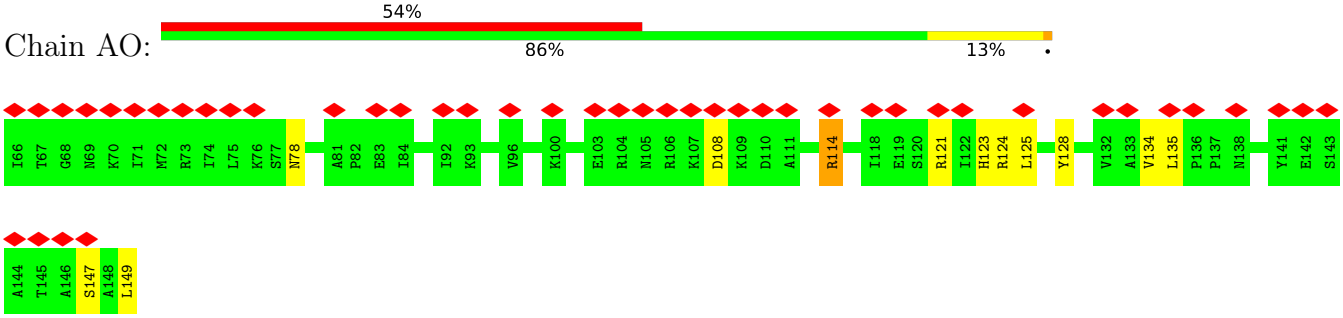
• Molecule 13: 40S ribosomal protein S29(A)

Chain AN:



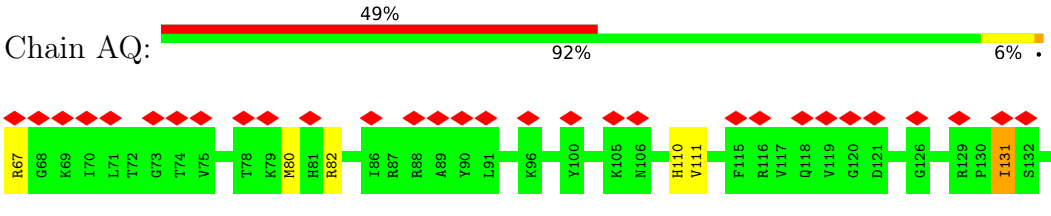
• Molecule 14: 40S ribosomal protein S13

Chain AO:



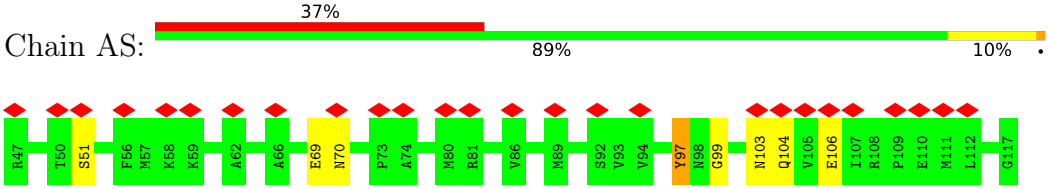
• Molecule 15: 40S ribosomal protein S11

Chain AQ:



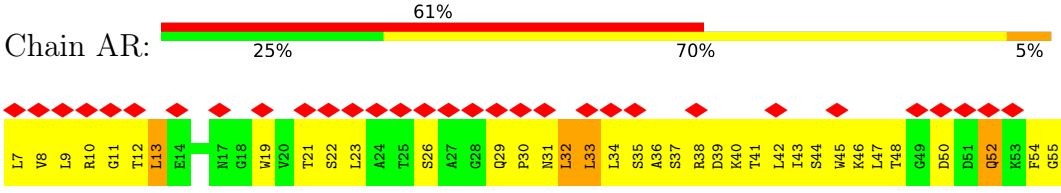
• Molecule 16: 40S ribosomal protein S15

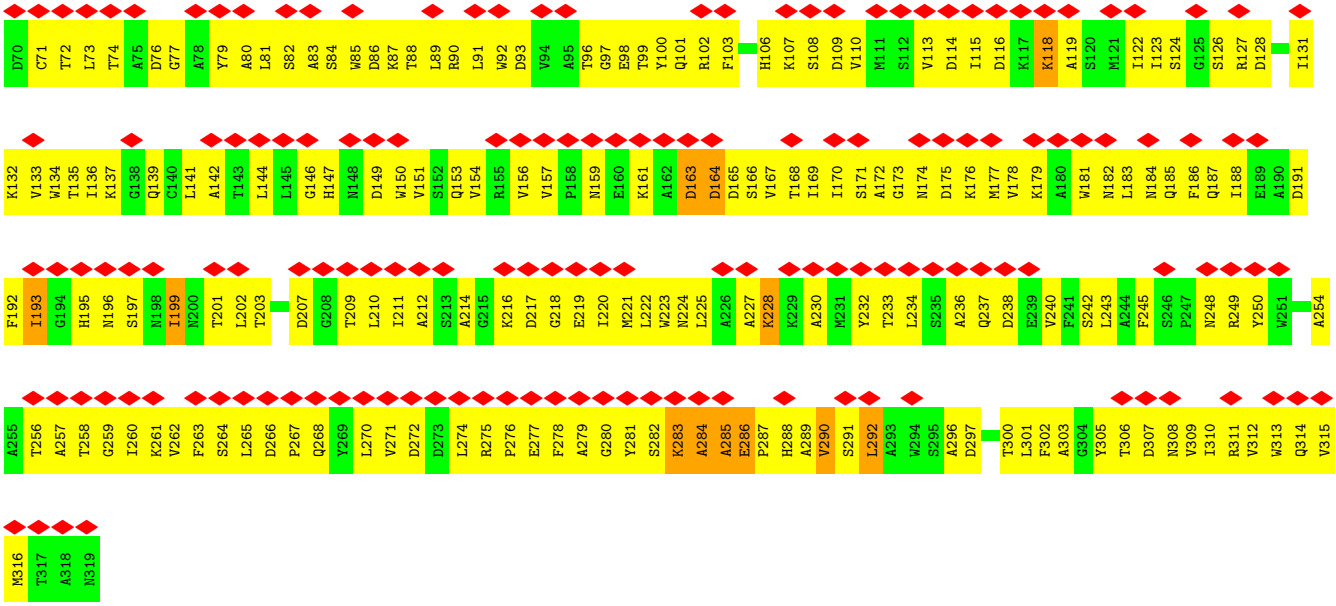
Chain AS:



• Molecule 17: RACK1 protein

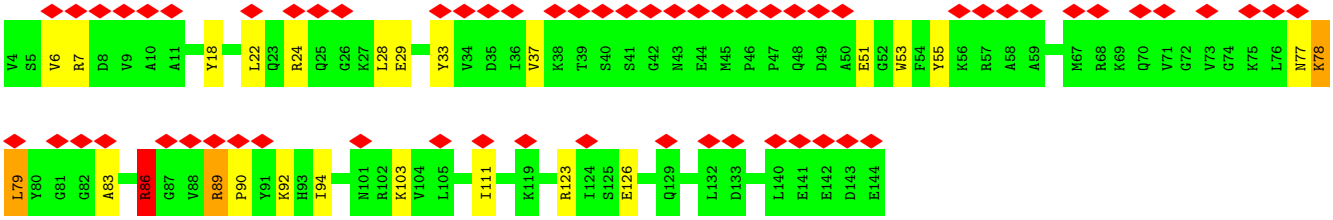
Chain AR:





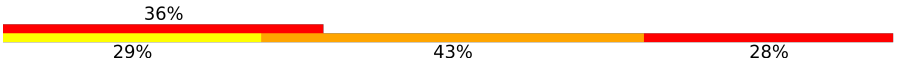
• Molecule 18: s19e protein

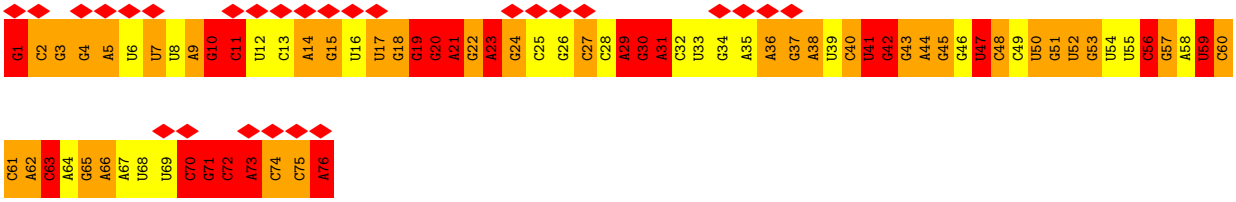
Chain AT:



• Molecule 19: P/E tRNA

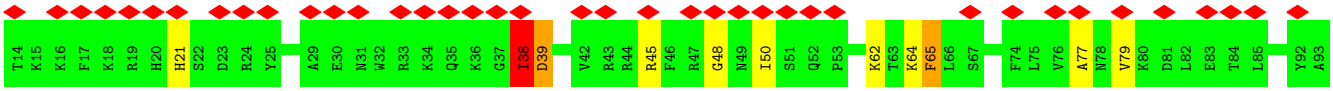
Chain A7:

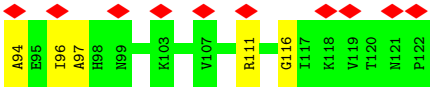




• Molecule 20: 60S ribosomal protein L32

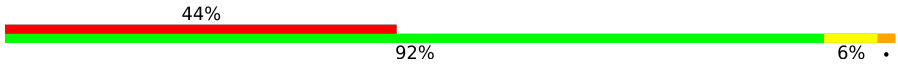
Chain B0:

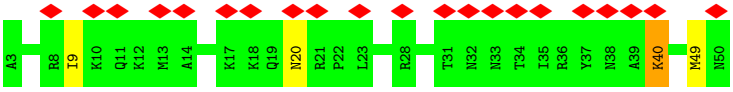




• Molecule 21: 60S ribosomal protein L39

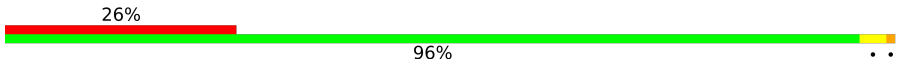
Chain B1:

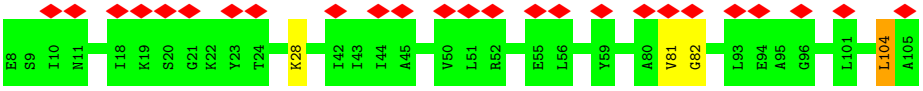




• Molecule 22: 60S ribosomal protein L30e

Chain B2:



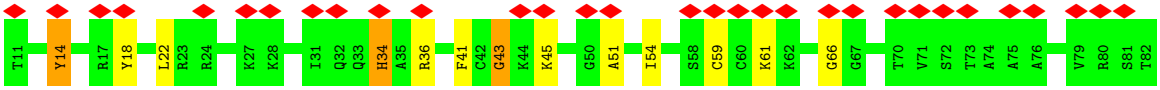


• Molecule 23: 60S ribosomal protein LP0

Chain B8:

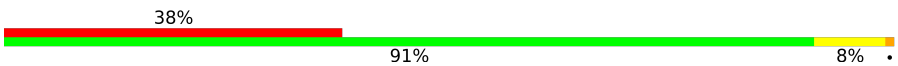
• Molecule 24: 60S ribosomal protein L43

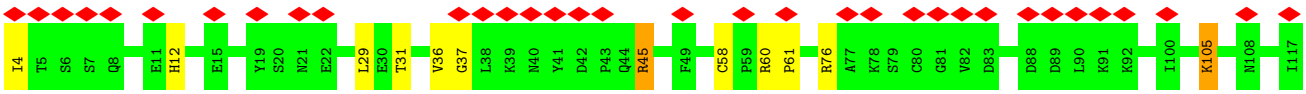
Chain B9:

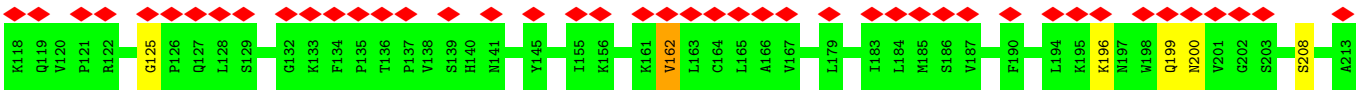


• Molecule 25: 60S ribosomal protein L1

Chain BA:

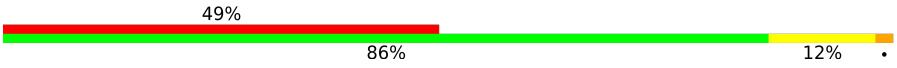


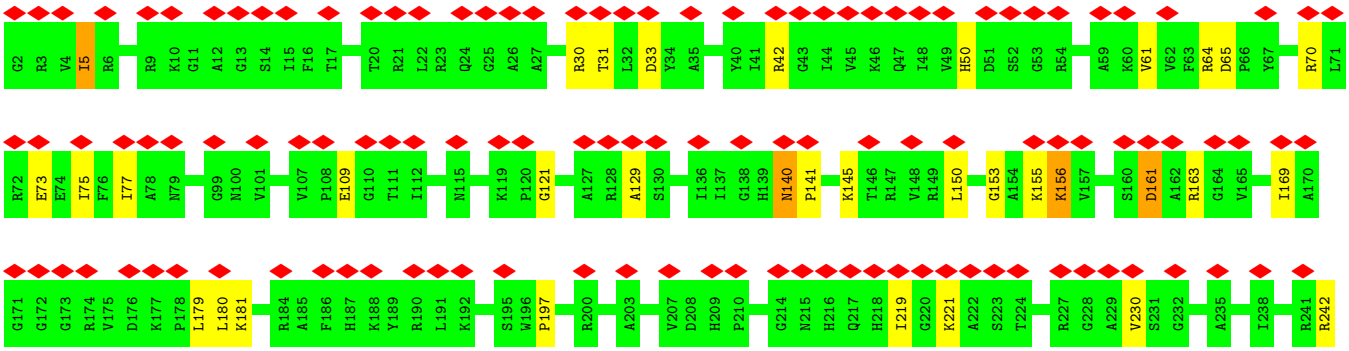




• Molecule 26: 60S ribosomal protein L2

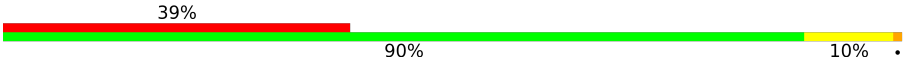
Chain BB:

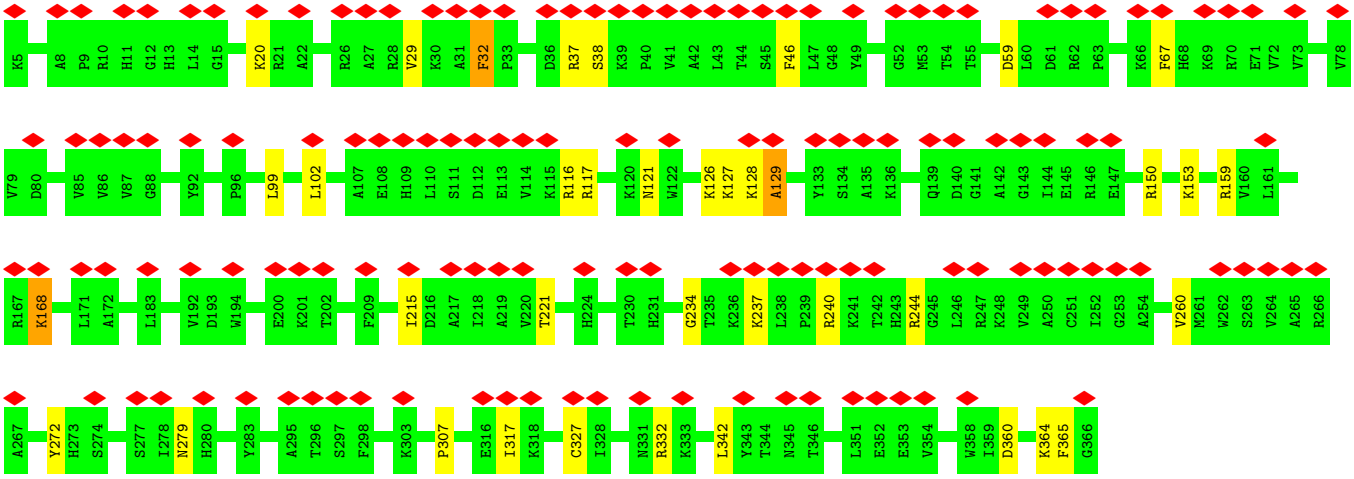




• Molecule 27: 60S ribosomal protein L3

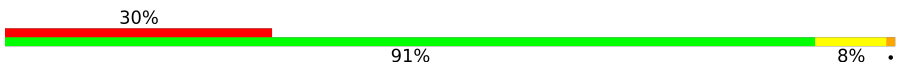
Chain BC:

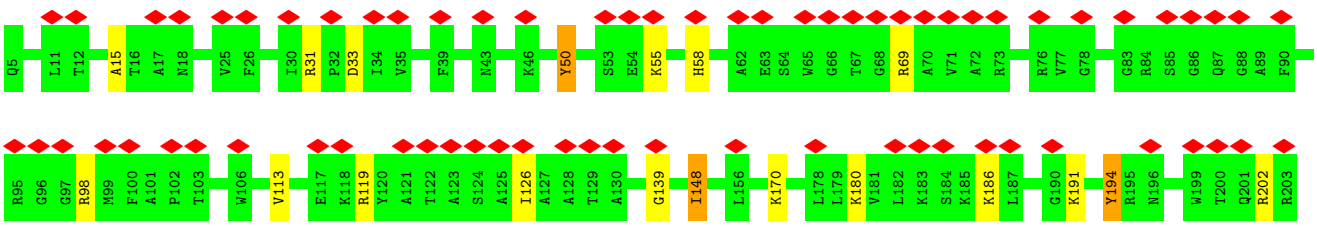


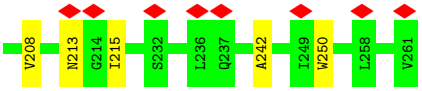


• Molecule 28: 60S ribosomal protein L4(B)

Chain BD:

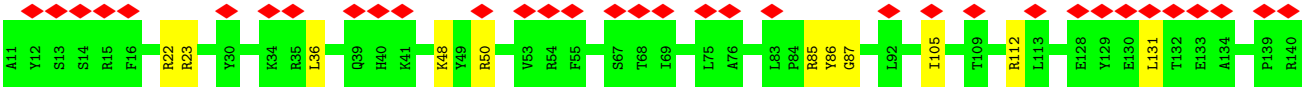


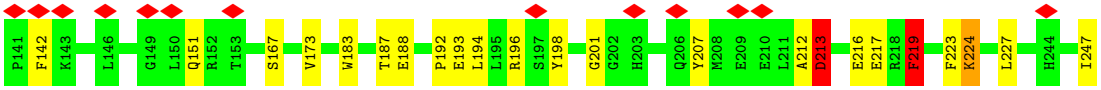




• Molecule 29: 60S ribosomal protein L5

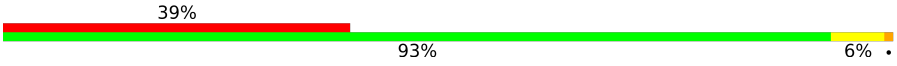
Chain BE:

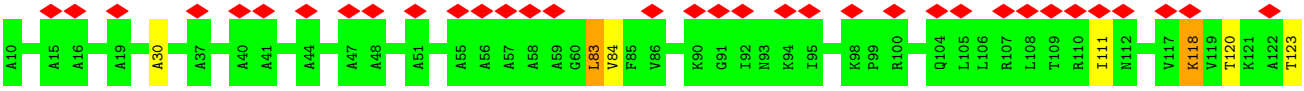


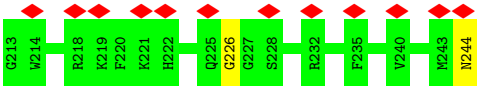


• Molecule 30: 60S ribosomal protein L7(A)

Chain BF:

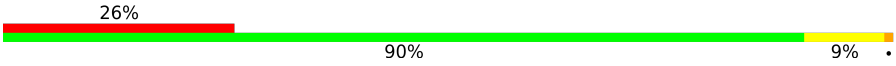


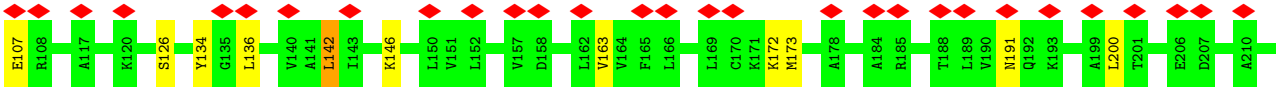




• Molecule 31: 60S ribosomal protein L8(A)

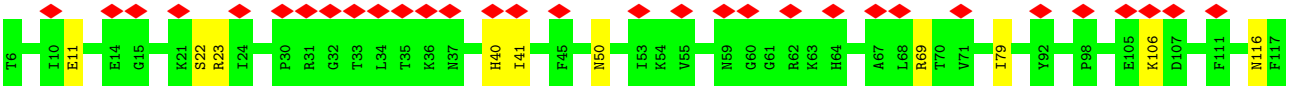
Chain BG:

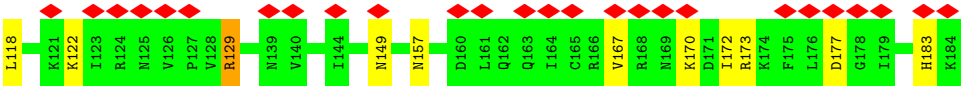




• Molecule 32: 60S ribosomal protein L9(A)

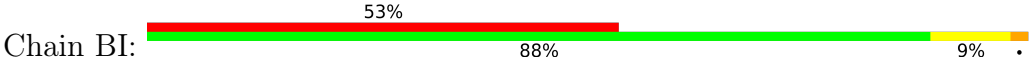
Chain BH:

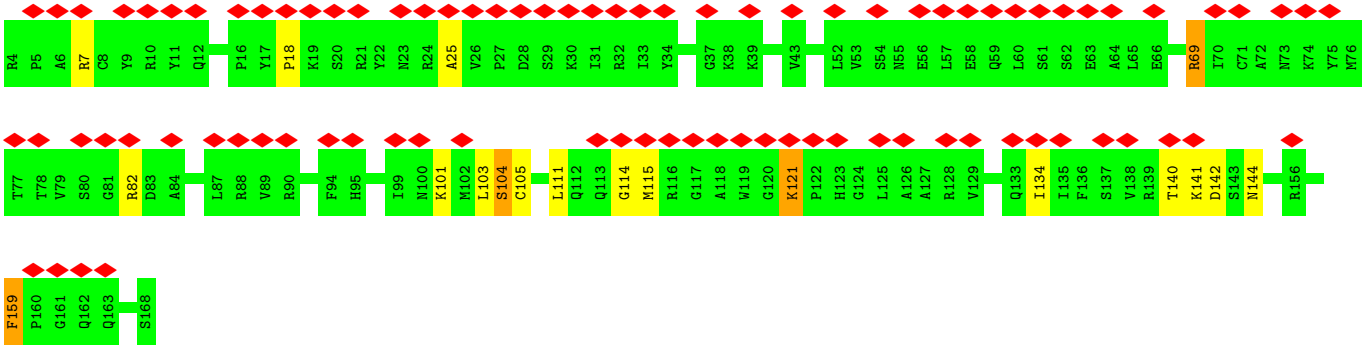




• Molecule 33: 60S ribosomal protein L10

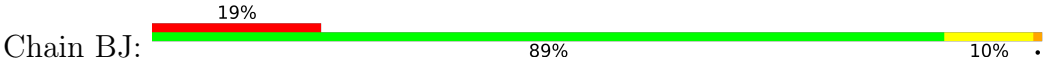
Chain BI:

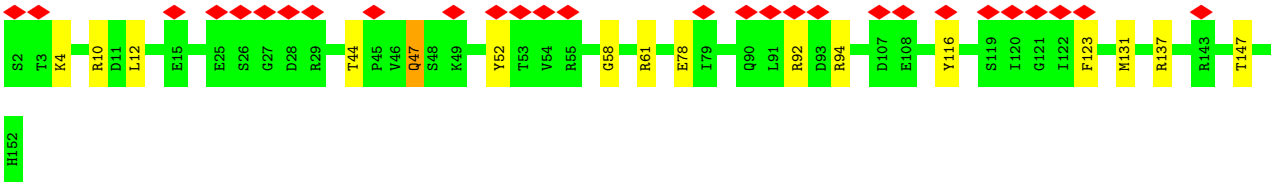




• Molecule 34: 60S ribosomal protein L11(B)

Chain BJ:



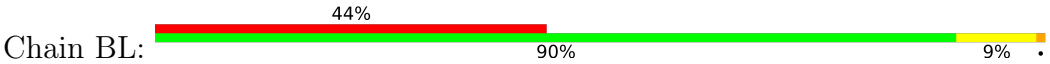


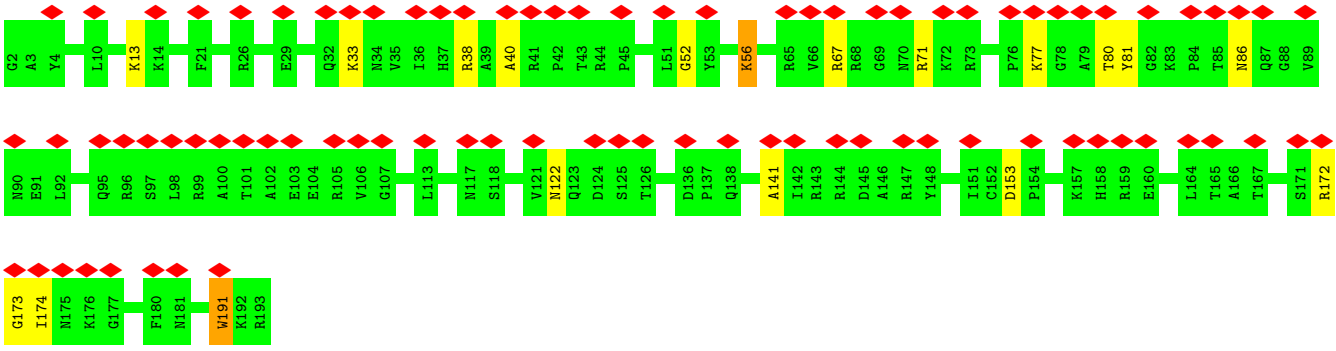
• Molecule 35: 60S ribosomal protein L12

Chain BK:

• Molecule 36: 60S ribosomal protein L15(A)

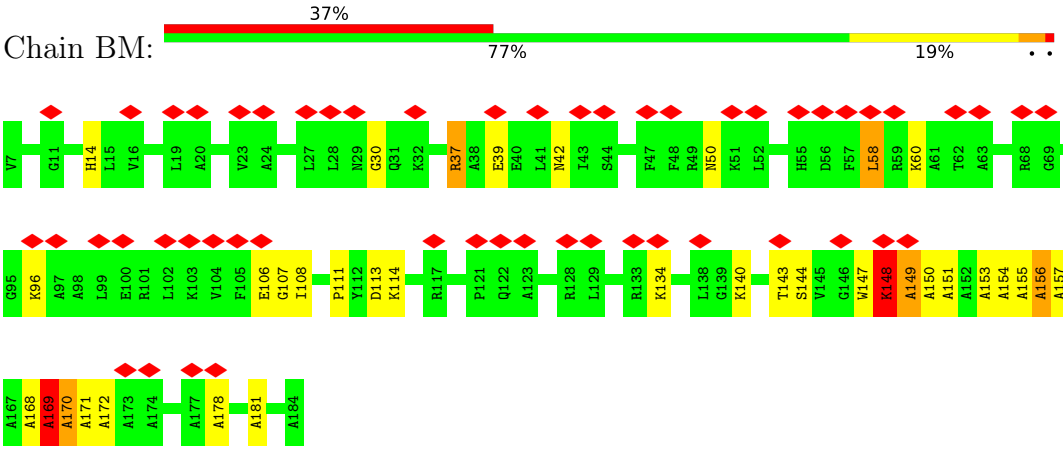
Chain BL:





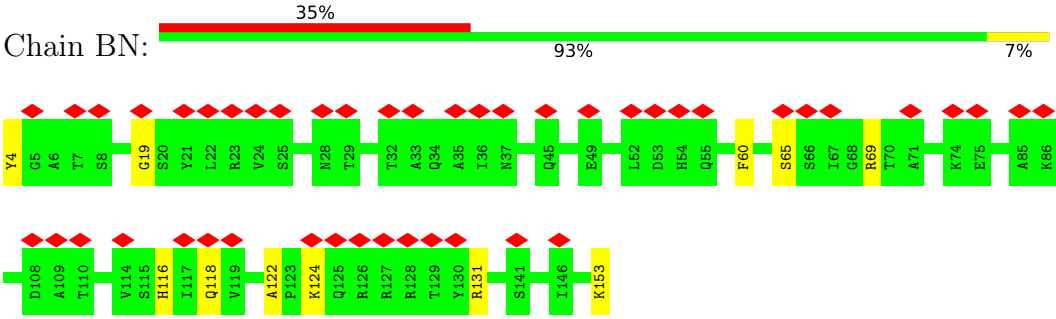
• Molecule 37: 60S ribosomal protein L16(A)

Chain BM:



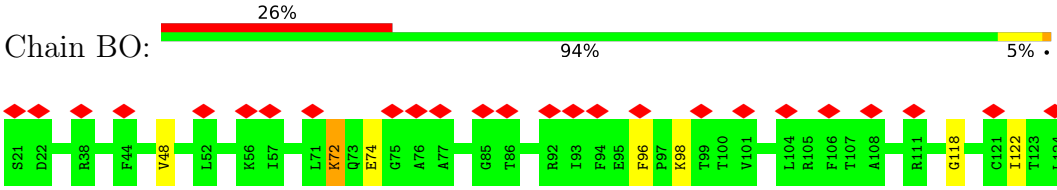
• Molecule 38: 60S ribosomal protein L17(A)

Chain BN:



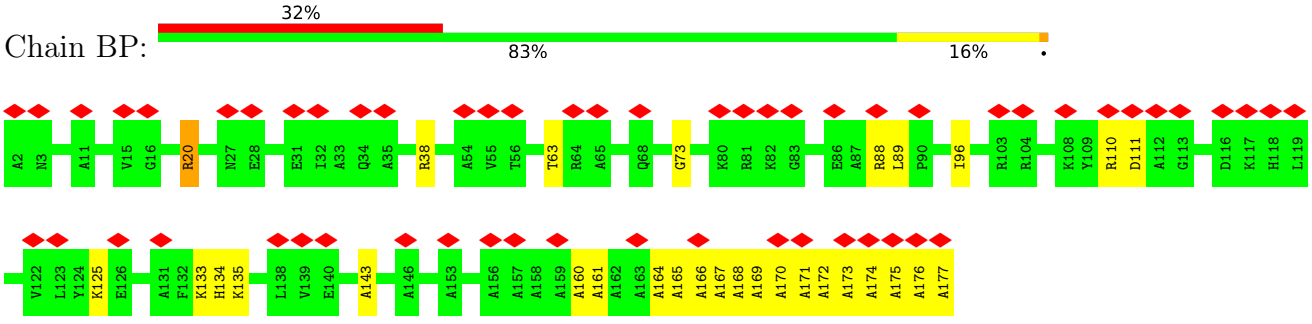
• Molecule 39: 60S ribosomal protein L18(A)

Chain BO:



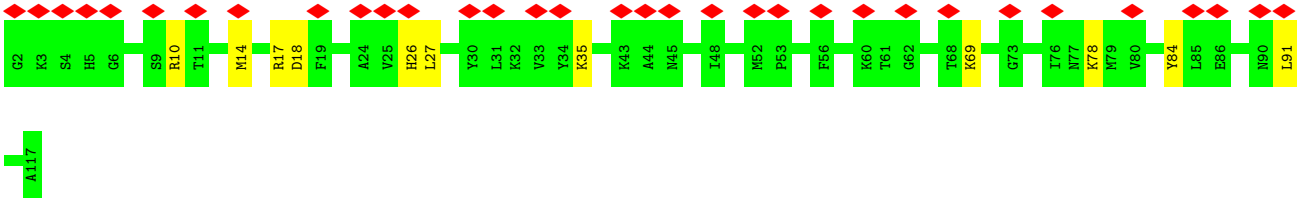
• Molecule 40: 60S ribosomal protein L19

Chain BP:



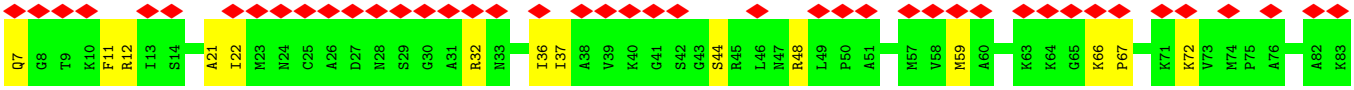
• Molecule 41: 60S ribosomal protein L21(A)

Chain BQ:



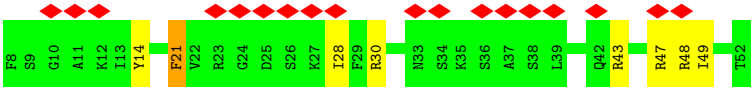
• Molecule 42: 60S ribosomal protein L23

Chain BR:



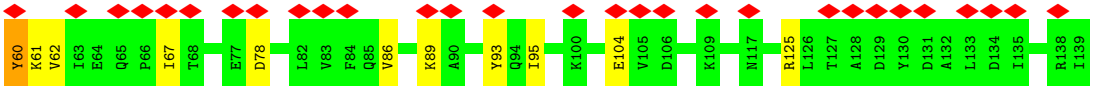
• Molecule 43: 60S ribosomal protein L24(A)

Chain BS:



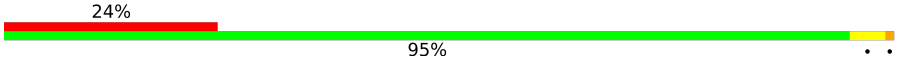
• Molecule 44: 60S ribosomal protein L25

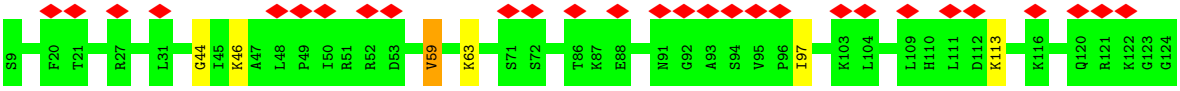
Chain BT:



• Molecule 45: 60S ribosomal protein L26(A)

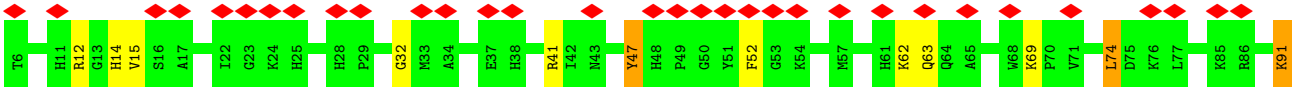
Chain BU:

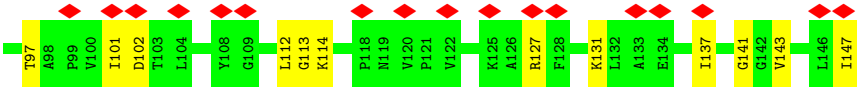




• Molecule 46: 60S ribosomal protein L28

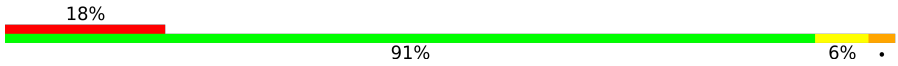
Chain BV:

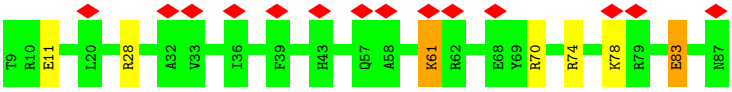




• Molecule 47: 60S ribosomal protein L31(A)

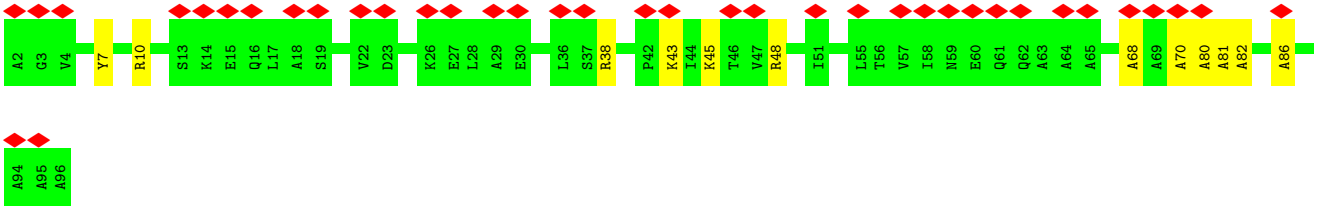
Chain BW:





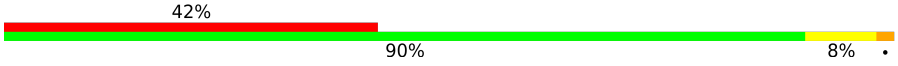
• Molecule 48: 60S ribosomal protein L35

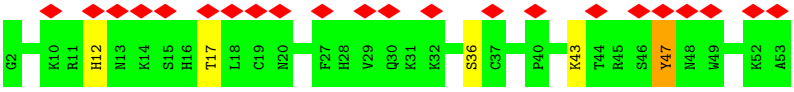
Chain BX:



• Molecule 49: 60S ribosomal protein L37(A)

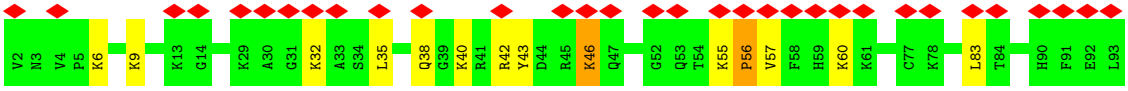
Chain BY:





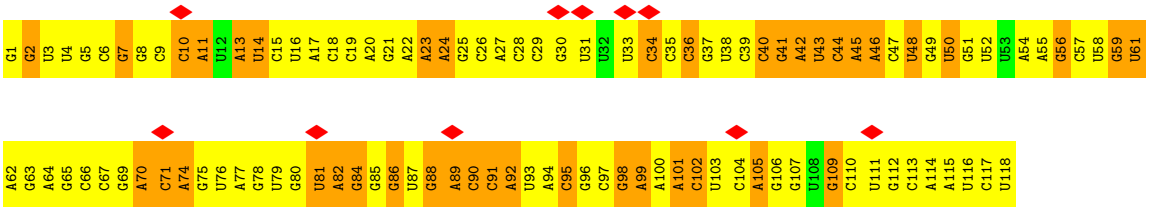
• Molecule 50: 60S ribosomal protein L42

Chain BZ:



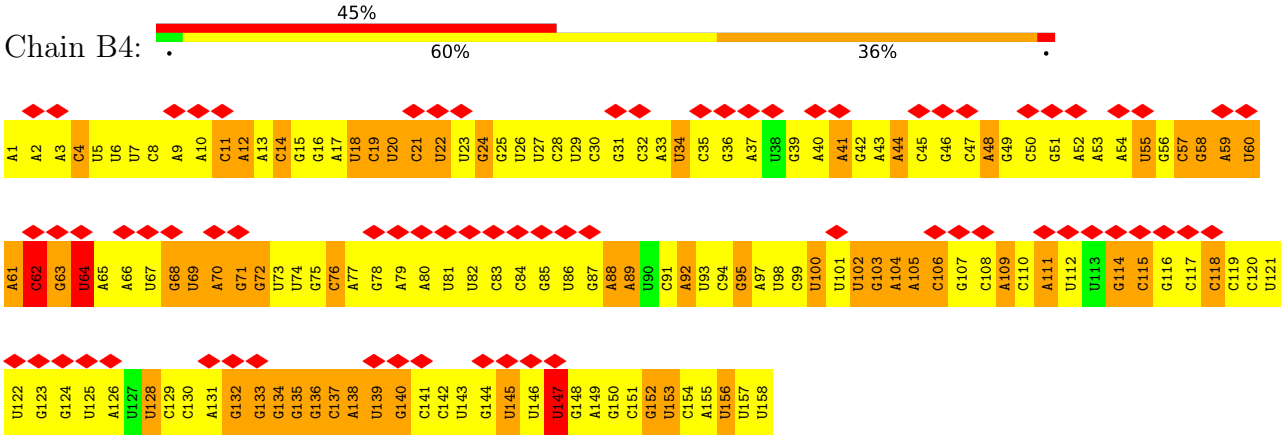
• Molecule 51: 5S ribosomal RNA

Chain B3:



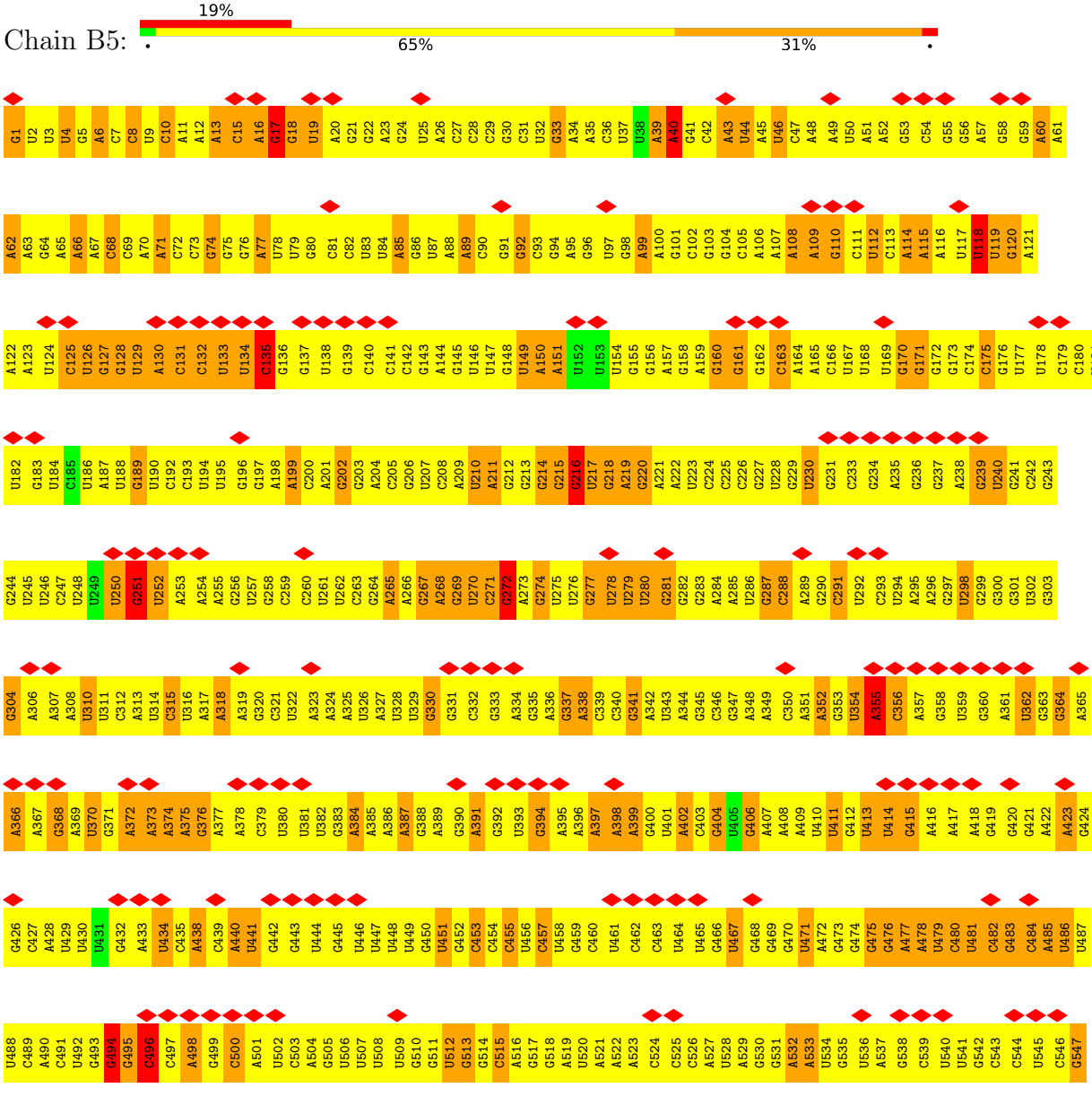
• Molecule 52: 5.8S ribosomal RNA

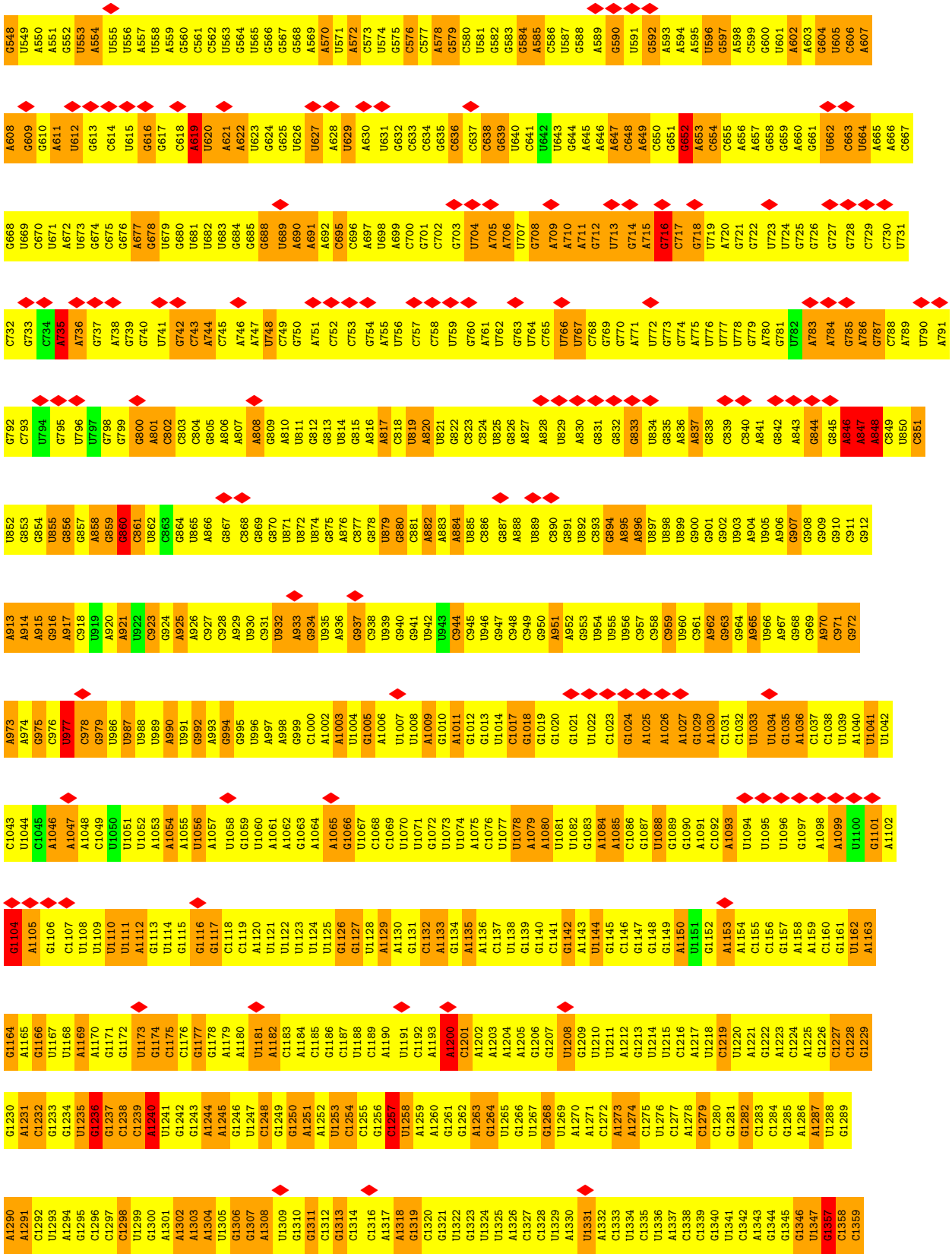
Chain B4:

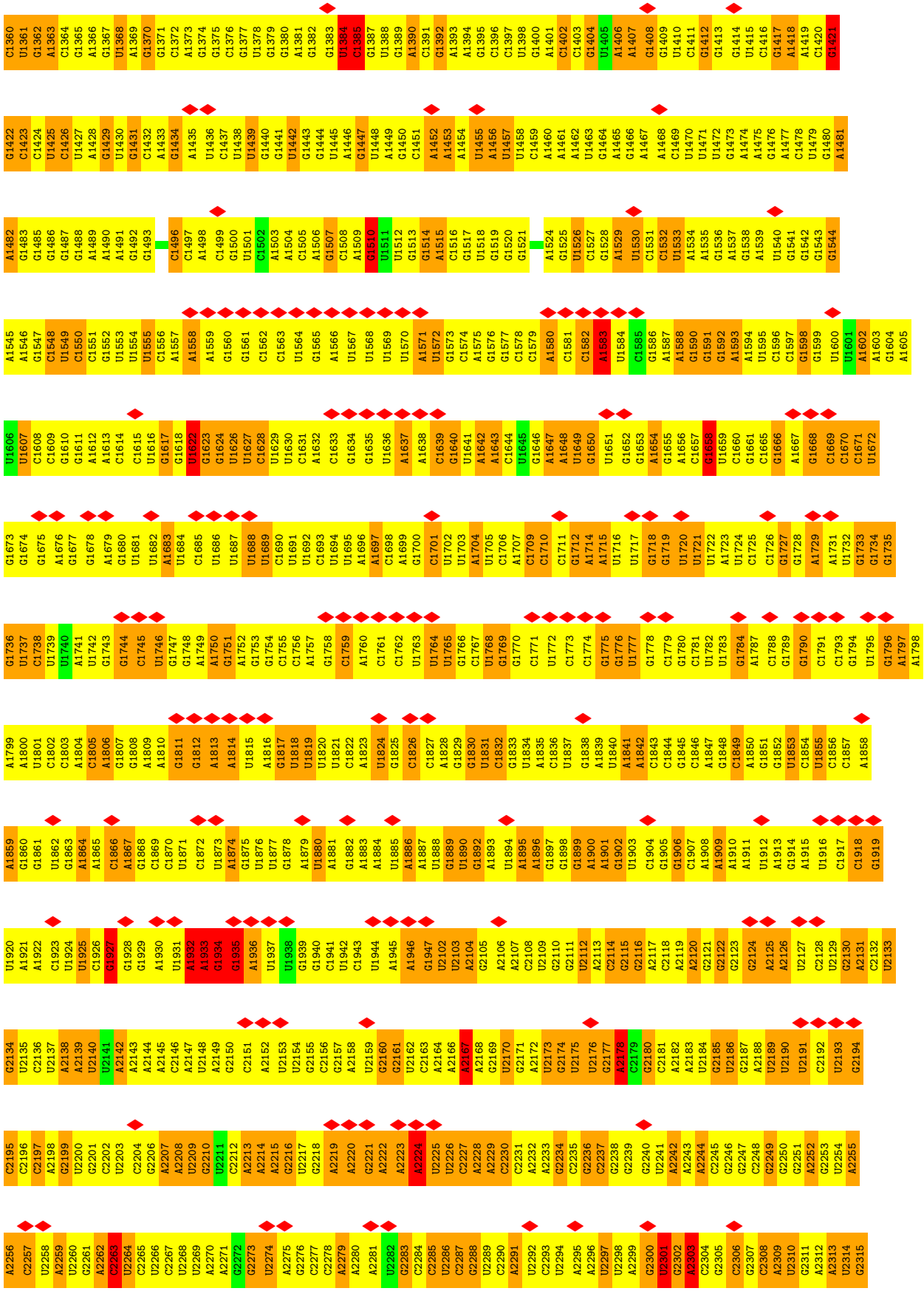


• Molecule 53: 26S ribosomal RNA

Chain B5:



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G1422 C1423 C1424 U1425 C1426 U1427 A1428 G1429 U1430 G1431 C1432 A1433 G1434 A1435 U1436 C1437 U1438 U1439 G1440 G1441 U1442 G1443 G1444 U1445 A1446 G1447 U1448 A1449 G1450 C1451 A1452 A1453 A1454 U1455 A1456 U1457 U1458 C1459 A1460 A1461 A1462 U1463 G1464 A1465 G1466 A1467 A1468 C1469 U1470 U1471 U1472 G1473 A1474 A1475 G1476 A1477 C1478 U1479 G1480 A1481
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A1859 G1860 G1861 U1862 G1863 A1864 A1865 C1866 A1867 G1868 C1869 C1870 U1871 C1872 U1873 A1874 G1875 U1876 U1877 G1878 A1879 U1880 A1881 G1882 A1883 A1884 U1885 A1886 A1887 U1888 G1889 U1890 G1892 A1893 U1894 A1895 A1896 G1897 G1898 G1899 A1900 A1901 G1902 U1903 C1904 G1905 G1906 C1907 A1908 A1909 A1910 A1911 U1912 A1913 G1914 A1915 U1916 C1917 C1918 G1919
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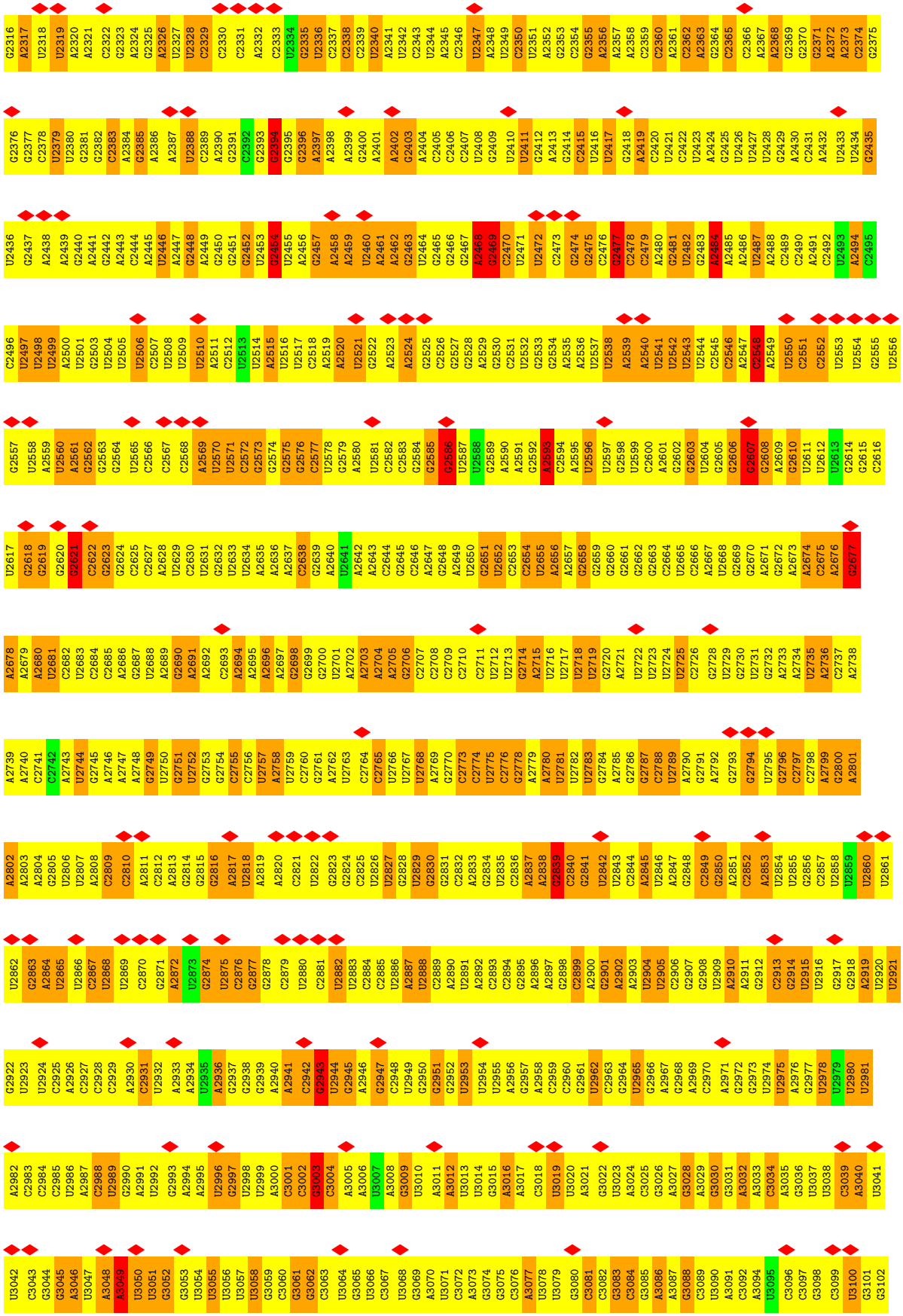

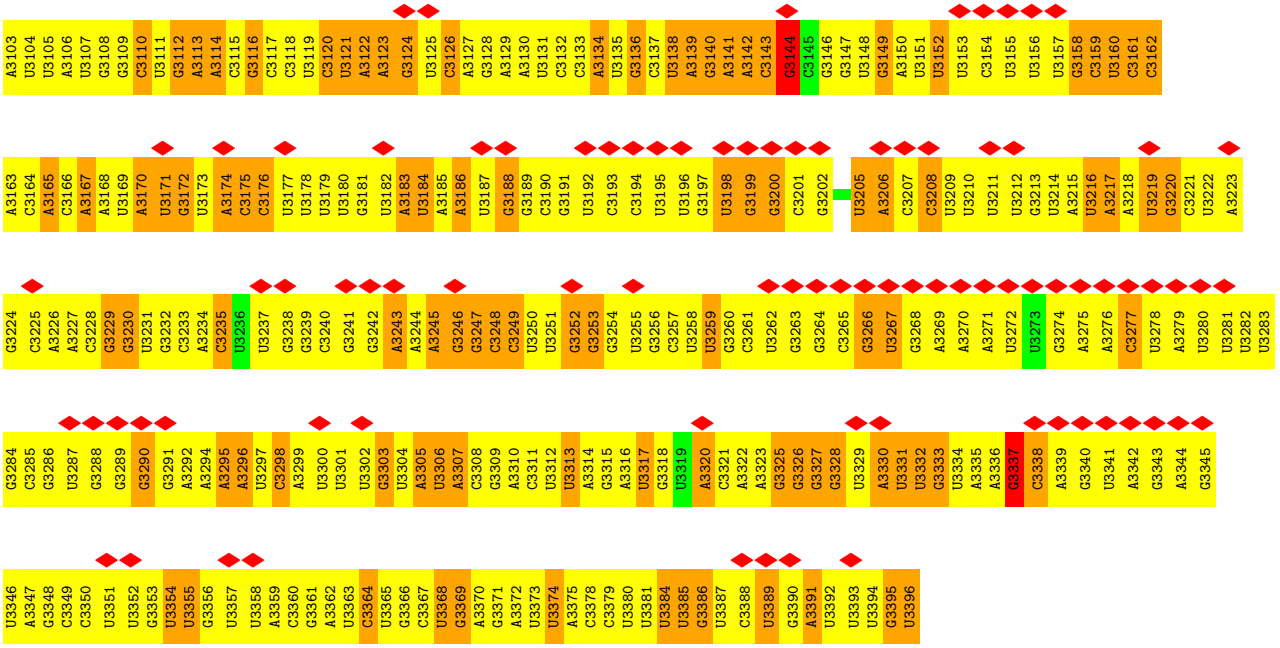
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A3163 C3164 A3165 C3166 A3167 A3168 U3169 A3170 U3171 G3172 U3173 A3174 C3175 C3176 U3177 U3178 U3179 U3180 G3181 U3182 A3183 U3184 A3185 A3186 U3187 G3188 G3189 C3190 G3191 U3192 C3193 C3194 U3195 U3196 G3197 U3198 G3199 G3200 C3201 G3202 U3205 A3206 C3207 C3208 U3209 U3210 U3211 U3212 G3213 U3214 A3215 U3216 A3217 A3218 U3219 G3220 C3221 U3222 A3223
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4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	102689	Depositor
Resolution determination method	Not provided	
CTF correction method	Not provided	
Microscope	FEI TECNAI F30	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	25	Depositor
Minimum defocus (nm)	1400	Depositor
Maximum defocus (nm)	4000	Depositor
Magnification	39000	Depositor
Image detector	KODAK SO-163 FILM	Depositor
Maximum map value	280.857	Depositor
Minimum map value	-103.711	Depositor
Average map value	7.703	Depositor
Map value standard deviation	27.906	Depositor
Recommended contour level	70.4	Depositor
Map size (Å)	381.3, 381.3, 381.3	wwPDB
Map dimensions	205, 205, 205	wwPDB
Map angles (°)	90, 90, 90	wwPDB
Pixel spacing (Å)	1.86, 1.86, 1.86	Depositor

5 Model quality (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: PSU, M2G, YYG, OMG, 5MU, 5MC, H2U, 1MA, 2MG, OMC, 7MG

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	AA	1.91	76/41893 (0.2%)	2.21	3096/65278 (4.7%)
2	AB	0.87	0/1535	0.91	0/2097
3	AC	0.94	0/1488	1.00	0/1996
4	AD	0.93	0/1035	1.13	5/1390 (0.4%)
5	AE	0.86	0/1227	0.99	0/1663
6	AG	0.91	0/1472	0.98	1/1982 (0.1%)
7	AH	0.95	2/1008 (0.2%)	1.17	2/1351 (0.1%)
8	AI	2.93	6/1106 (0.5%)	1.15	5/1481 (0.3%)
9	AJ	0.85	0/781	1.04	2/1053 (0.2%)
10	AK	0.93	0/935	1.07	0/1257
11	AL	0.88	0/920	0.98	0/1226
12	AM	0.94	0/1094	1.08	2/1468 (0.1%)
13	AN	3.66	2/427 (0.5%)	1.42	4/567 (0.7%)
14	AO	0.92	0/707	1.04	0/950
15	AQ	0.96	0/656	1.04	0/885
16	AS	0.90	0/559	1.02	2/748 (0.3%)
17	AR	0.91	1/2463 (0.0%)	1.24	7/3350 (0.2%)
18	AT	0.96	2/1118 (0.2%)	1.10	6/1498 (0.4%)
19	A7	3.12	162/1483 (10.9%)	3.79	362/2311 (15.7%)
20	B0	0.91	0/898	1.03	0/1201
21	B1	1.04	0/431	1.09	0/570
22	B2	0.85	0/760	0.89	0/1020
23	B8	0.94	0/965	1.09	4/1298 (0.3%)
24	B9	0.94	0/546	1.14	3/729 (0.4%)
25	BA	0.84	0/1709	0.97	0/2295
26	BB	0.95	0/1882	1.06	1/2528 (0.0%)
27	BC	0.91	0/2953	1.05	3/3974 (0.1%)
28	BD	0.89	0/1987	0.98	4/2690 (0.1%)
29	BE	0.94	0/1956	1.11	8/2646 (0.3%)
30	BF	0.85	0/1593	0.98	2/2160 (0.1%)
31	BG	0.80	0/853	1.01	0/1153
32	BH	0.89	0/1437	1.06	0/1935

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
33	BI	0.96	0/1352	1.12	3/1815 (0.2%)
34	BJ	0.97	0/1212	1.03	0/1622
35	BK	1.98	6/1049 (0.6%)	1.04	1/1408 (0.1%)
36	BL	1.01	0/1652	1.03	1/2211 (0.0%)
37	BM	0.97	2/1341 (0.1%)	1.33	6/1808 (0.3%)
38	BN	0.93	0/1212	1.03	4/1631 (0.2%)
39	BO	0.92	0/943	0.97	0/1274
40	BP	0.94	0/1334	0.98	0/1791
41	BQ	0.91	0/909	0.98	1/1216 (0.1%)
42	BR	0.92	0/992	1.13	2/1333 (0.2%)
43	BS	1.03	0/380	1.12	2/504 (0.4%)
44	BT	0.85	0/649	1.00	2/873 (0.2%)
45	BU	0.93	0/927	0.96	0/1237
46	BV	0.88	0/1152	1.07	2/1542 (0.1%)
47	BW	0.99	0/673	1.06	0/894
48	BX	0.82	0/607	1.03	2/818 (0.2%)
49	BY	0.95	0/413	1.10	2/548 (0.4%)
50	BZ	0.91	0/761	1.12	3/1006 (0.3%)
51	B3	1.34	1/2686 (0.0%)	2.18	192/4184 (4.6%)
52	B4	1.35	0/3719	2.19	267/5791 (4.6%)
53	B5	1.35	3/75857 (0.0%)	2.17	5569/118271 (4.7%)
All	All	1.46	263/179697 (0.1%)	1.97	9578/268527 (3.6%)

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
1	AA	2	28
2	AB	0	1
4	AD	0	3
5	AE	0	1
7	AH	1	0
8	AI	0	3
9	AJ	0	3
10	AK	0	4
12	AM	0	3
13	AN	0	2
14	AO	0	4
19	A7	0	44
20	B0	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
23	B8	0	3
24	B9	0	3
26	BB	1	4
27	BC	0	1
28	BD	0	3
29	BE	1	7
30	BF	1	0
31	BG	2	2
32	BH	0	3
33	BI	0	2
34	BJ	0	3
35	BK	0	2
36	BL	1	7
37	BM	0	5
38	BN	0	2
39	BO	0	1
40	BP	0	4
42	BR	0	3
43	BS	0	1
44	BT	0	1
45	BU	0	1
46	BV	0	3
47	BW	0	2
48	BX	2	1
49	BY	0	1
50	BZ	0	5
51	B3	1	0
52	B4	0	6
53	B5	33	112
All	All	45	285

The worst 5 of 263 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	AA	856	A	N3-C4	94.83	1.91	1.34
1	AA	856	A	C5-C4	83.45	1.97	1.38
1	AA	1200	A	N3-C4	80.10	1.82	1.34
1	AA	501	U	C2-N3	76.02	1.91	1.37
1	AA	856	A	C6-N1	74.78	1.87	1.35

The worst 5 of 9578 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	AA	1545	A	O5'-P-OP1	-67.13	30.14	110.70
1	AA	864	U	P-O3'-C3'	-44.04	66.85	119.70
1	AA	1516	C	O5'-P-OP2	-30.31	74.33	110.70
1	AA	1213	A	O5'-P-OP1	-23.91	82.01	110.70
1	AA	1519	G	O3'-P-O5'	23.73	149.08	104.00

5 of 45 chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
1	AA	109	G	C3'
1	AA	933	C	C2'
7	AH	34	ILE	CB
26	BB	161	ASP	CA
29	BE	216	GLU	CA

5 of 285 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	AA	225	A	Sidechain
1	AA	244	A	Sidechain
1	AA	474	A	Sidechain
1	AA	475	A	Sidechain
1	AA	80	A	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	AA	37458	0	18828	602	0
2	AB	1500	0	1524	1	0
3	AC	1469	0	1534	1	0
4	AD	1018	0	1067	1	0
5	AE	1207	0	1274	0	0
6	AG	1456	0	1523	2	0
7	AH	992	0	1027	39	0
8	AI	1087	0	1145	19	0
9	AJ	771	0	829	2	0
10	AK	924	0	949	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
11	AL	906	0	970	1	0
12	AM	1077	0	1107	19	0
13	AN	417	0	408	22	0
14	AO	694	0	740	13	0
15	AQ	643	0	688	2	0
16	AS	548	0	574	3	0
17	AR	2410	0	2367	538	0
18	AT	1102	0	1112	38	0
19	A7	1648	0	830	56	0
20	B0	881	0	926	1	0
21	B1	424	0	459	1	0
22	B2	752	0	803	1	0
23	B8	947	0	972	19	0
24	B9	539	0	555	1	0
25	BA	1683	0	1772	3	0
26	BB	1848	0	1908	16	0
27	BC	2887	0	2964	3	0
28	BD	1950	0	2019	3	0
29	BE	1913	0	1842	1	0
30	BF	1561	0	1633	1	0
31	BG	844	0	909	0	0
32	BH	1418	0	1483	4	0
33	BI	1326	0	1368	2	0
34	BJ	1195	0	1230	15	0
35	BK	1038	0	1110	23	0
36	BL	1618	0	1673	1	0
37	BM	1317	0	1407	63	0
38	BN	1189	0	1201	0	0
39	BO	931	0	1010	0	0
40	BP	1317	0	1389	113	0
41	BQ	893	0	924	0	0
42	BR	977	0	1026	15	0
43	BS	371	0	382	1	0
44	BT	642	0	679	0	0
45	BU	916	0	996	0	0
46	BV	1123	0	1160	2	0
47	BW	663	0	700	0	0
48	BX	605	0	661	1	0
49	BY	403	0	398	0	0
50	BZ	749	0	815	0	0
51	B3	2403	0	1219	0	0
52	B4	3329	0	1685	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
53	B5	67775	0	34047	227	0
All	All	165754	0	111821	1335	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 5.

The worst 5 of 1335 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)
35:BK:121:PHE:CZ	35:BK:121:PHE:CE1	1.78	1.71
35:BK:121:PHE:CZ	35:BK:121:PHE:CE2	1.79	1.69
35:BK:121:PHE:CE2	35:BK:121:PHE:CD2	1.76	1.69
35:BK:121:PHE:CE1	35:BK:121:PHE:CD1	1.80	1.69
35:BK:121:PHE:CD2	35:BK:121:PHE:CG	1.82	1.68

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
2	AB	191/193 (99%)	173 (91%)	16 (8%)	2 (1%)	15 55
3	AC	186/188 (99%)	148 (80%)	28 (15%)	10 (5%)	2 19
4	AD	120/158 (76%)	97 (81%)	16 (13%)	7 (6%)	1 18
5	AE	160/162 (99%)	141 (88%)	13 (8%)	6 (4%)	3 24
6	AG	184/186 (99%)	156 (85%)	20 (11%)	8 (4%)	2 22
7	AH	121/125 (97%)	105 (87%)	11 (9%)	5 (4%)	3 23
8	AI	136/138 (99%)	106 (78%)	21 (15%)	9 (7%)	1 16
9	AJ	94/96 (98%)	77 (82%)	14 (15%)	3 (3%)	4 26

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
10	AK	123/125 (98%)	99 (80%)	20 (16%)	4 (3%)	4 26
11	AL	116/118 (98%)	89 (77%)	25 (22%)	2 (2%)	9 42
12	AM	128/130 (98%)	103 (80%)	20 (16%)	5 (4%)	3 23
13	AN	48/50 (96%)	36 (75%)	8 (17%)	4 (8%)	1 12
14	AO	82/84 (98%)	68 (83%)	11 (13%)	3 (4%)	3 24
15	AQ	78/80 (98%)	66 (85%)	11 (14%)	1 (1%)	12 48
16	AS	69/71 (97%)	54 (78%)	12 (17%)	3 (4%)	2 22
17	AR	311/313 (99%)	282 (91%)	28 (9%)	1 (0%)	41 77
18	AT	137/141 (97%)	110 (80%)	21 (15%)	6 (4%)	2 22
20	B0	107/109 (98%)	75 (70%)	20 (19%)	12 (11%)	0 7
21	B1	46/48 (96%)	36 (78%)	9 (20%)	1 (2%)	6 35
22	B2	96/98 (98%)	87 (91%)	7 (7%)	2 (2%)	7 36
23	B8	116/118 (98%)	85 (73%)	25 (22%)	6 (5%)	2 19
24	B9	70/72 (97%)	48 (69%)	16 (23%)	6 (9%)	1 12
25	BA	211/213 (99%)	172 (82%)	30 (14%)	9 (4%)	2 22
26	BB	241/243 (99%)	174 (72%)	53 (22%)	14 (6%)	1 18
27	BC	360/362 (99%)	279 (78%)	68 (19%)	13 (4%)	3 25
28	BD	255/257 (99%)	208 (82%)	41 (16%)	6 (2%)	6 33
29	BE	235/237 (99%)	175 (74%)	47 (20%)	13 (6%)	2 19
30	BF	211/213 (99%)	150 (71%)	55 (26%)	6 (3%)	5 30
31	BG	111/113 (98%)	88 (79%)	20 (18%)	3 (3%)	5 31
32	BH	177/179 (99%)	146 (82%)	25 (14%)	6 (3%)	3 26
33	BI	163/165 (99%)	123 (76%)	31 (19%)	9 (6%)	2 19
34	BJ	149/151 (99%)	112 (75%)	33 (22%)	4 (3%)	5 31
35	BK	136/138 (99%)	107 (79%)	22 (16%)	7 (5%)	2 19
36	BL	190/192 (99%)	156 (82%)	29 (15%)	5 (3%)	5 31
37	BM	176/178 (99%)	134 (76%)	34 (19%)	8 (4%)	2 22
38	BN	148/150 (99%)	122 (82%)	23 (16%)	3 (2%)	7 38
39	BO	119/121 (98%)	92 (77%)	23 (19%)	4 (3%)	3 26
40	BP	174/176 (99%)	155 (89%)	15 (9%)	4 (2%)	6 34
41	BQ	114/116 (98%)	94 (82%)	16 (14%)	4 (4%)	3 25

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
42	BR	129/131 (98%)	96 (74%)	28 (22%)	5 (4%)	3 23
43	BS	43/45 (96%)	33 (77%)	10 (23%)	0	100 100
44	BT	78/80 (98%)	59 (76%)	16 (20%)	3 (4%)	3 24
45	BU	114/116 (98%)	95 (83%)	15 (13%)	4 (4%)	3 25
46	BV	140/142 (99%)	98 (70%)	31 (22%)	11 (8%)	1 13
47	BW	77/79 (98%)	58 (75%)	16 (21%)	3 (4%)	3 23
48	BX	84/86 (98%)	63 (75%)	14 (17%)	7 (8%)	1 12
49	BY	50/52 (96%)	39 (78%)	10 (20%)	1 (2%)	7 38
50	BZ	90/92 (98%)	68 (76%)	18 (20%)	4 (4%)	2 22
All	All	6694/6830 (98%)	5337 (80%)	1095 (16%)	262 (4%)	5 23

5 of 262 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	AC	81	PRO
3	AC	179	GLN
4	AD	96	VAL
5	AE	86	VAL
5	AE	226	THR

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
2	AB	161/161 (100%)	160 (99%)	1 (1%)	86 92
3	AC	152/152 (100%)	149 (98%)	3 (2%)	55 74
4	AD	113/142 (80%)	103 (91%)	10 (9%)	10 31
5	AE	127/127 (100%)	122 (96%)	5 (4%)	32 56
6	AG	155/155 (100%)	150 (97%)	5 (3%)	39 61
7	AH	106/106 (100%)	100 (94%)	6 (6%)	20 45
8	AI	115/115 (100%)	107 (93%)	8 (7%)	15 40

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
9	AJ	90/90 (100%)	86 (96%)	4 (4%)	28 53
10	AK	95/95 (100%)	88 (93%)	7 (7%)	13 38
11	AL	98/98 (100%)	94 (96%)	4 (4%)	30 55
12	AM	115/115 (100%)	107 (93%)	8 (7%)	15 40
13	AN	45/45 (100%)	40 (89%)	5 (11%)	6 22
14	AO	74/74 (100%)	70 (95%)	4 (5%)	22 47
15	AQ	71/71 (100%)	68 (96%)	3 (4%)	30 54
16	AS	57/57 (100%)	56 (98%)	1 (2%)	59 77
17	AR	257/257 (100%)	246 (96%)	11 (4%)	29 53
18	AT	114/114 (100%)	102 (90%)	12 (10%)	7 24
20	B0	94/94 (100%)	89 (95%)	5 (5%)	22 47
21	B1	44/44 (100%)	41 (93%)	3 (7%)	16 41
22	B2	82/82 (100%)	80 (98%)	2 (2%)	49 69
23	B8	100/100 (100%)	87 (87%)	13 (13%)	4 18
24	B9	55/55 (100%)	52 (94%)	3 (6%)	21 47
25	BA	194/194 (100%)	183 (94%)	11 (6%)	20 45
26	BB	186/186 (100%)	176 (95%)	10 (5%)	22 47
27	BC	302/302 (100%)	282 (93%)	20 (7%)	16 41
28	BD	199/199 (100%)	188 (94%)	11 (6%)	21 47
29	BE	199/199 (100%)	187 (94%)	12 (6%)	19 44
30	BF	143/143 (100%)	135 (94%)	8 (6%)	21 46
31	BG	89/89 (100%)	82 (92%)	7 (8%)	12 35
32	BH	160/160 (100%)	151 (94%)	9 (6%)	21 46
33	BI	141/141 (100%)	134 (95%)	7 (5%)	24 49
34	BJ	129/129 (100%)	120 (93%)	9 (7%)	15 40
35	BK	112/112 (100%)	107 (96%)	5 (4%)	27 52
36	BL	164/164 (100%)	157 (96%)	7 (4%)	29 53
37	BM	119/119 (100%)	108 (91%)	11 (9%)	9 29
38	BN	122/122 (100%)	118 (97%)	4 (3%)	38 61
39	BO	99/99 (100%)	96 (97%)	3 (3%)	41 63
40	BP	118/118 (100%)	113 (96%)	5 (4%)	30 54

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
41	BQ	87/87 (100%)	81 (93%)	6 (7%)	15 40
42	BR	102/102 (100%)	96 (94%)	6 (6%)	19 45
43	BS	38/38 (100%)	32 (84%)	6 (16%)	2 13
44	BT	71/71 (100%)	64 (90%)	7 (10%)	8 26
45	BU	100/100 (100%)	98 (98%)	2 (2%)	55 74
46	BV	113/113 (100%)	103 (91%)	10 (9%)	10 31
47	BW	69/69 (100%)	65 (94%)	4 (6%)	20 45
48	BX	55/55 (100%)	53 (96%)	2 (4%)	35 59
49	BY	42/42 (100%)	39 (93%)	3 (7%)	14 39
50	BZ	81/81 (100%)	76 (94%)	5 (6%)	18 43
All	All	5554/5583 (100%)	5241 (94%)	313 (6%)	25 46

5 of 313 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
35	BK	96	LYS
44	BT	95	ILE
36	BL	191	TRP
40	BP	111	ASP
47	BW	61	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 47 such sidechains are listed below:

Mol	Chain	Res	Type
30	BF	231	ASN
34	BJ	47	GLN
31	BG	191	ASN
32	BH	157	ASN
36	BL	138	GLN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	AA	1757/1761 (99%)	380 (21%)	79 (4%)
19	A7	75/76 (98%)	8 (10%)	3 (4%)
51	B3	112/113 (99%)	40 (35%)	4 (3%)

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Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
52	B4	156/157 (99%)	55 (35%)	10 (6%)
53	B5	3169/3170 (99%)	942 (29%)	139 (4%)
All	All	5269/5277 (99%)	1425 (27%)	235 (4%)

5 of 1425 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	AA	2	A
1	AA	3	U
1	AA	4	C
1	AA	9	U
1	AA	27	U

5 of 235 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
53	B5	554	A
53	B5	3121	U
53	B5	1240	A
53	B5	3110	C
53	B5	2651	G

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

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

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
19	5MC	A7	40	19	18,22,23	1.61	4 (22%)	26,32,35	2.38	12 (46%)
19	5MU	A7	54	19	19,22,23	1.37	2 (10%)	28,32,35	2.50	11 (39%)
19	YYG	A7	37	19	31,42,43	1.76	6 (19%)	33,62,65	3.51	12 (36%)
19	2MG	A7	10	19	18,26,27	1.75	7 (38%)	16,38,41	1.57	3 (18%)
19	PSU	A7	39	19	18,21,22	1.64	6 (33%)	22,30,33	1.77	6 (27%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
19	5MC	A7	49	19	18,22,23	1.03	1 (5%)	26,32,35	2.23	12 (46%)
19	H2U	A7	16	19	18,21,22	1.93	4 (22%)	21,30,33	1.82	6 (28%)
19	M2G	A7	26	19	20,27,28	2.10	6 (30%)	22,40,43	1.96	9 (40%)
19	OMG	A7	34	19	18,26,27	1.56	4 (22%)	19,38,41	1.43	3 (15%)
19	H2U	A7	17	19	18,21,22	2.55	7 (38%)	21,30,33	2.56	5 (23%)
19	OMC	A7	32	19	19,22,23	1.39	3 (15%)	26,31,34	1.95	8 (30%)
19	PSU	A7	55	19	18,21,22	1.72	3 (16%)	22,30,33	1.40	2 (9%)
19	7MG	A7	46	19	22,26,27	2.07	3 (13%)	29,39,42	2.46	10 (34%)
19	1MA	A7	58	19	16,25,26	1.44	3 (18%)	18,37,40	1.62	4 (22%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
19	5MC	A7	40	19	-	2/7/25/26	0/2/2/2
19	5MU	A7	54	19	-	0/7/25/26	0/2/2/2
19	YYG	A7	37	19	-	9/20/42/43	0/3/4/4
19	2MG	A7	10	19	-	0/5/27/28	0/3/3/3
19	PSU	A7	39	19	-	3/7/25/26	0/2/2/2
19	5MC	A7	49	19	-	0/7/25/26	0/2/2/2
19	H2U	A7	16	19	-	0/7/38/39	0/2/2/2
19	M2G	A7	26	19	-	0/7/29/30	0/3/3/3
19	OMG	A7	34	19	-	0/5/27/28	0/3/3/3
19	H2U	A7	17	19	-	0/7/38/39	0/2/2/2
19	OMC	A7	32	19	-	0/9/27/28	0/2/2/2
19	PSU	A7	55	19	-	1/7/25/26	0/2/2/2
19	7MG	A7	46	19	-	2/7/37/38	0/3/3/3
19	1MA	A7	58	19	-	0/3/25/26	0/3/3/3

The worst 5 of 59 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
19	A7	46	7MG	C8-N9	-7.83	1.41	1.46
19	A7	17	H2U	C2-N3	-6.18	1.26	1.38
19	A7	17	H2U	C4-N3	-5.65	1.28	1.37
19	A7	26	M2G	C2-N3	4.82	1.36	1.30
19	A7	16	H2U	C2-N1	4.61	1.42	1.35

The worst 5 of 103 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
19	A7	37	YYG	C11-C12-N1	-13.78	98.76	106.53
19	A7	17	H2U	N3-C2-N1	8.86	126.03	116.65
19	A7	54	5MU	C6-C5-C4	6.71	123.64	118.03
19	A7	40	5MC	C5-C6-N1	-6.70	116.45	123.34
19	A7	37	YYG	C24-O23-C21	6.65	123.52	115.66

There are no chirality outliers.

5 of 17 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
19	A7	39	PSU	O4'-C1'-C5-C4
19	A7	39	PSU	O4'-C1'-C5-C6
19	A7	40	5MC	O4'-C4'-C5'-O5'
19	A7	37	YYG	N20-C15-C16-O18
19	A7	37	YYG	N20-C15-C16-O17

There are no ring outliers.

3 monomers are involved in 5 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
19	A7	40	5MC	3	0
19	A7	37	YYG	1	0
19	A7	10	2MG	1	0

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)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
7	AH	1
18	AT	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	AH	32:LYS	C	33:VAL	N	2.59
1	AT	78:LYS	C	79:LEU	N	2.49

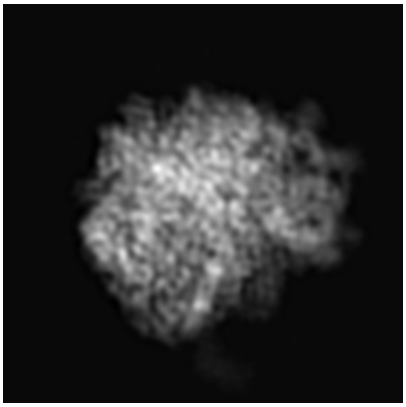
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-1345. These allow visual inspection of the internal detail of the map and identification of artifacts.

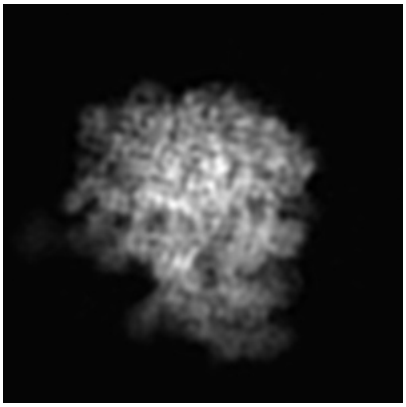
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

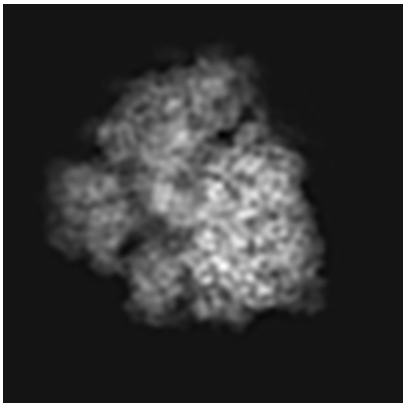
6.1.1 Primary map



X



Y

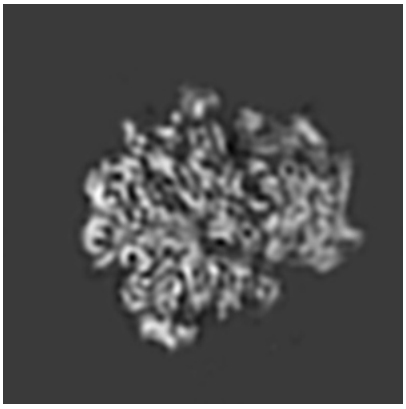


Z

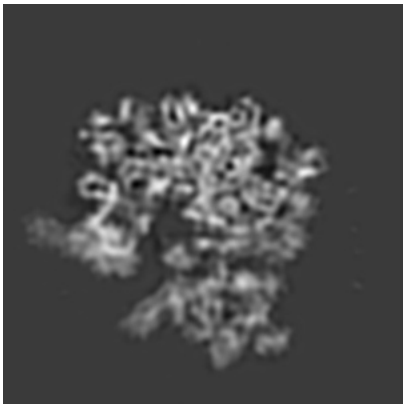
The images above show the map projected in three orthogonal directions.

6.2 Central slices

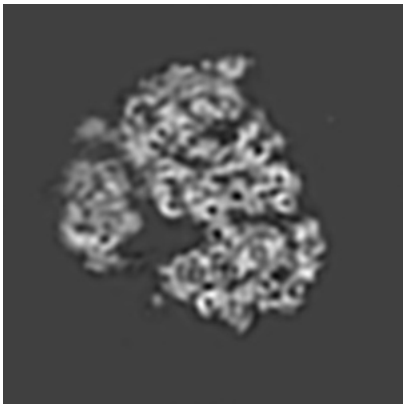
6.2.1 Primary map



X Index: 102



Y Index: 102

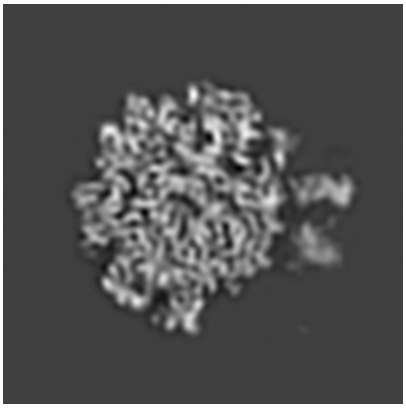


Z Index: 102

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

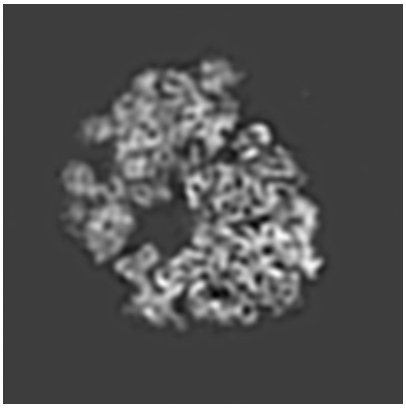
6.3 Largest variance slices (i)

6.3.1 Primary map



X Index: 123

Y Index: 72

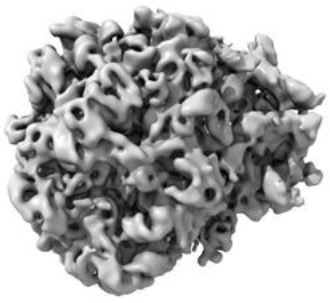


Z Index: 95

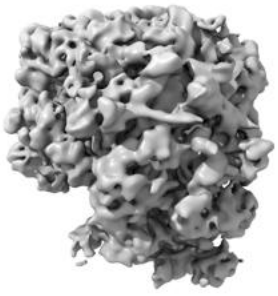
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal surface views (i)

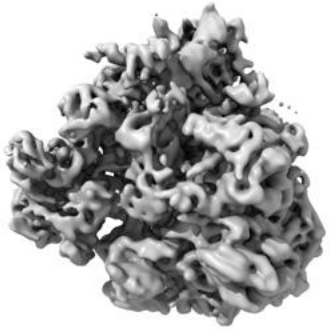
6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 70.4. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

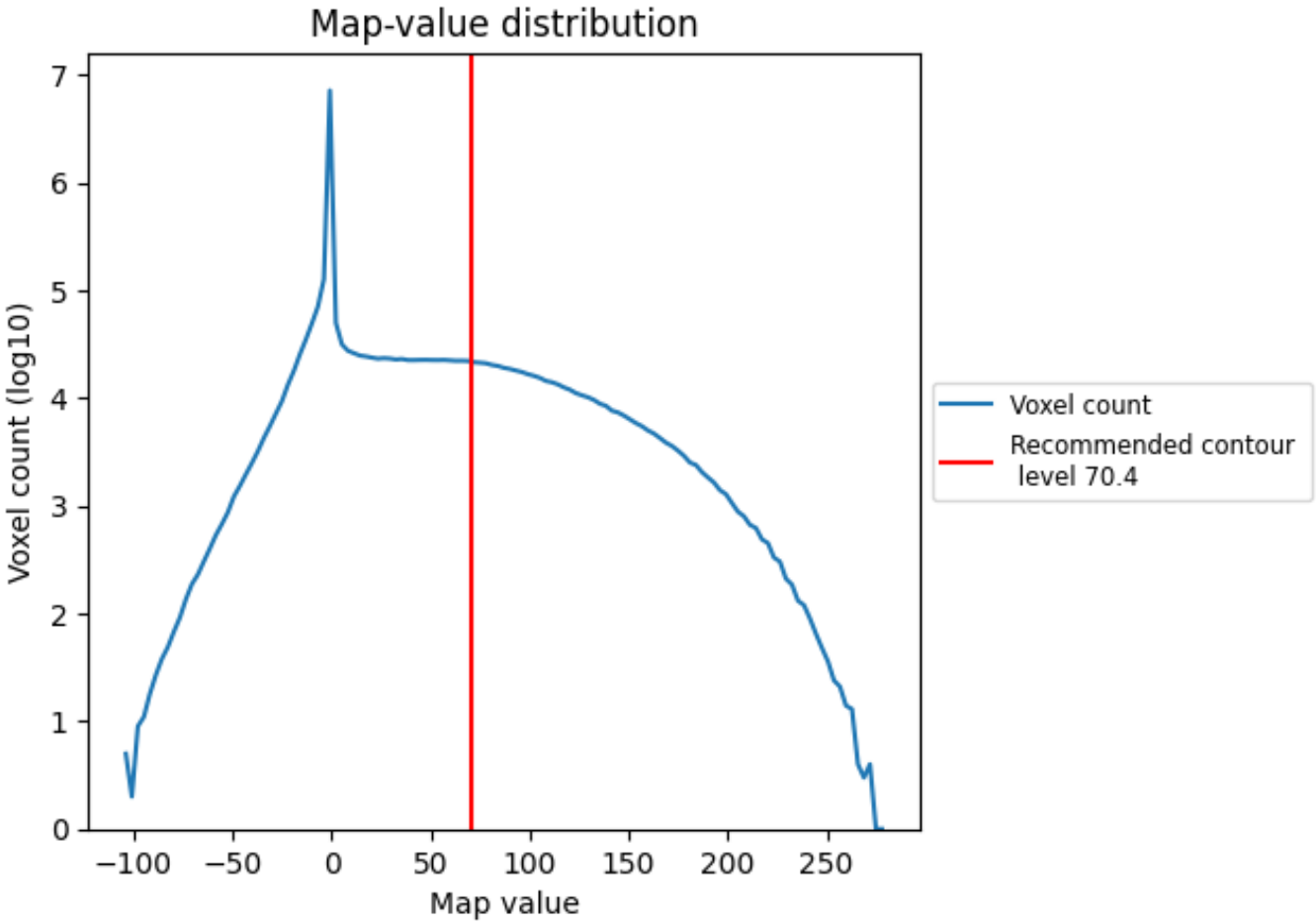
6.5 Mask visualisation (i)

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

7 Map analysis

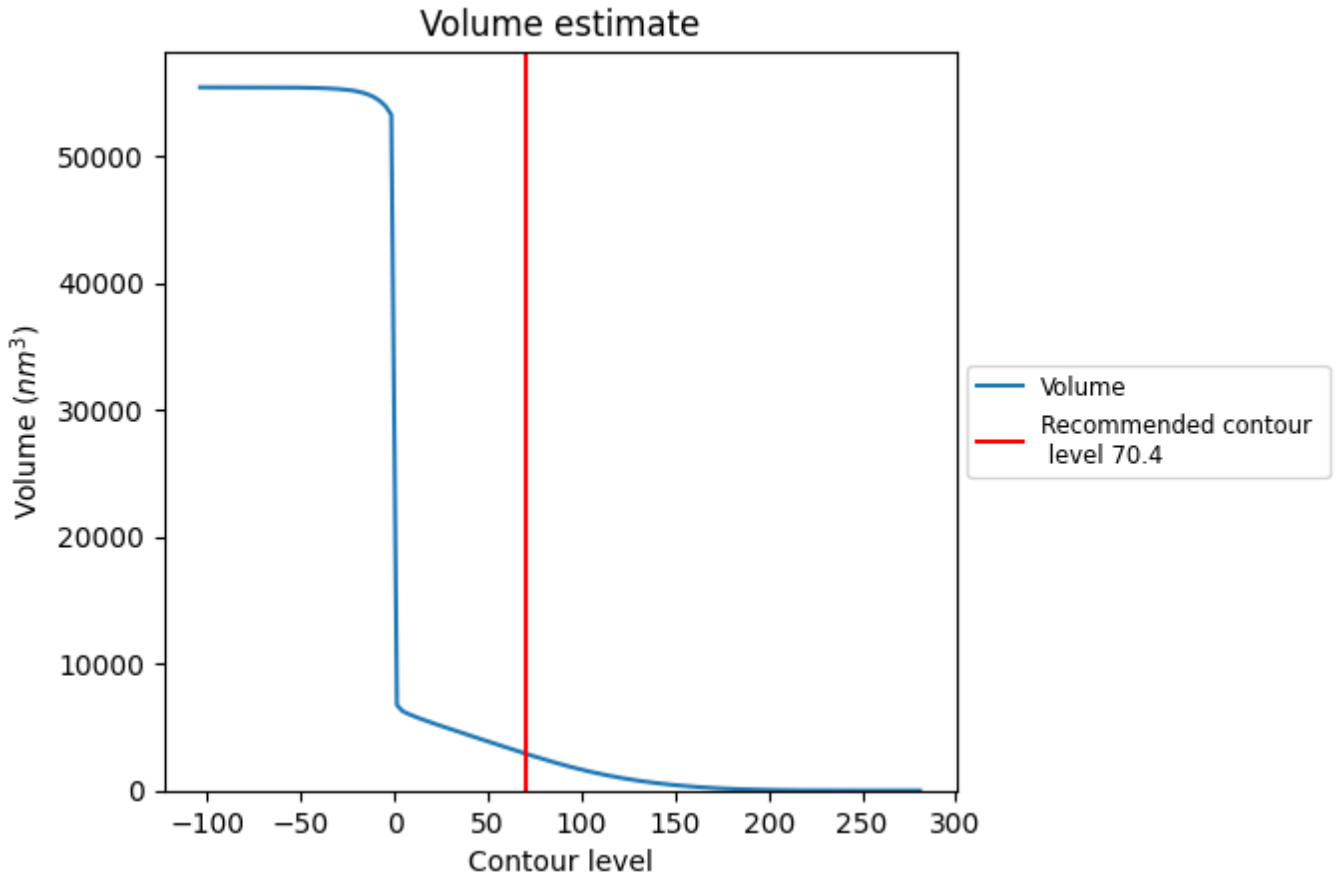
This section contains the results of statistical analysis of the map.

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.

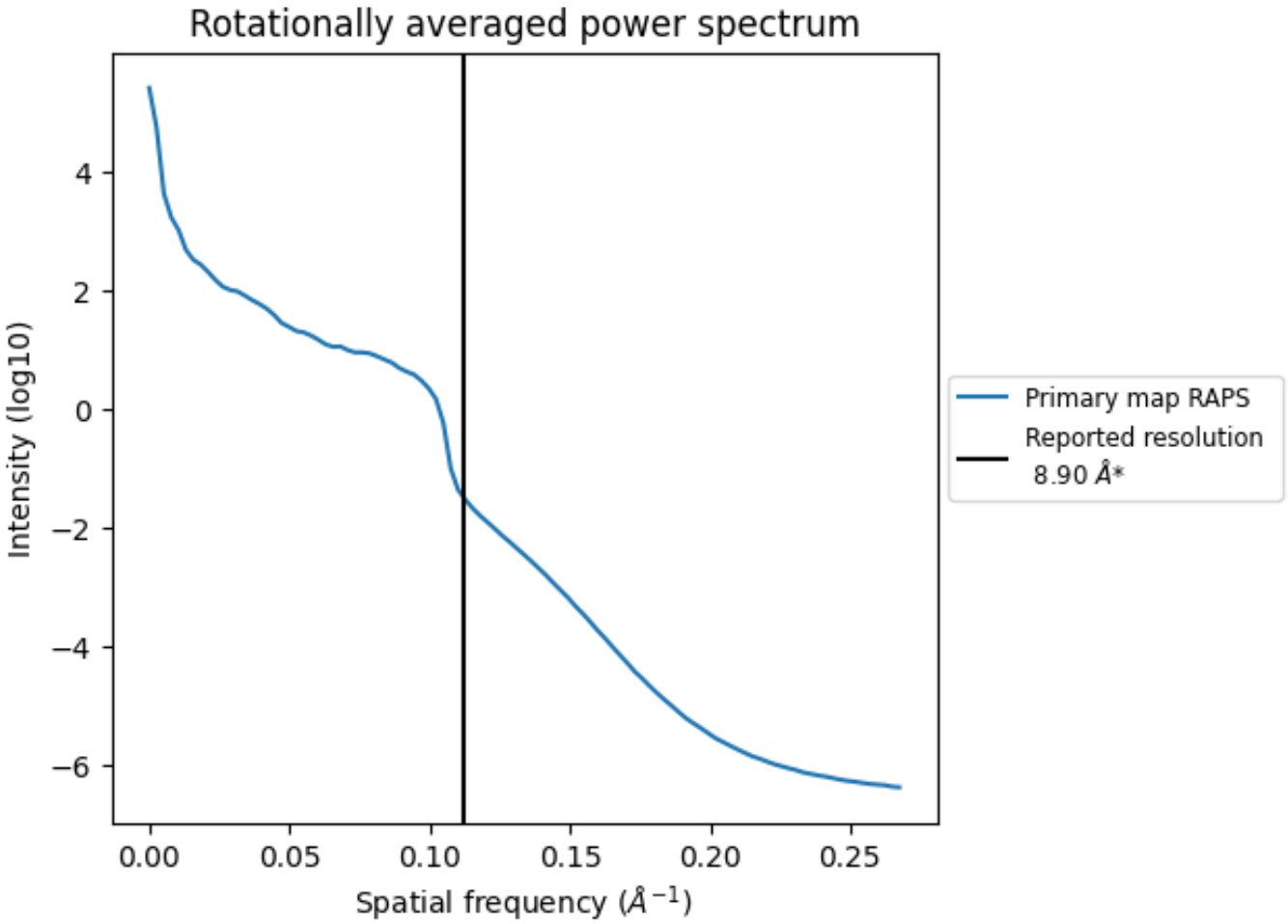
7.2 Volume estimate (i)



The volume at the recommended contour level is 2899 nm^3; this corresponds to an approximate mass of 2619 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 0.112 Å^{-1}

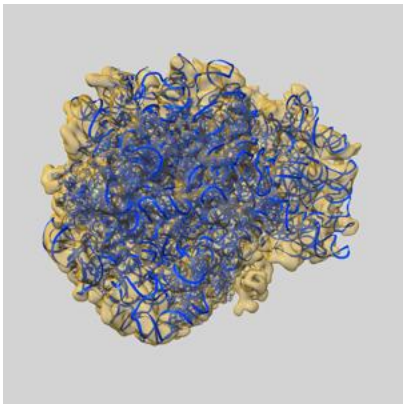
8 Fourier-Shell correlation

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

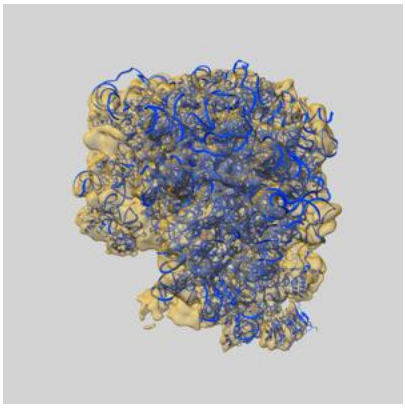
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-1345 and PDB model 4V7H. Per-residue inclusion information can be found in section 3 on page 13.

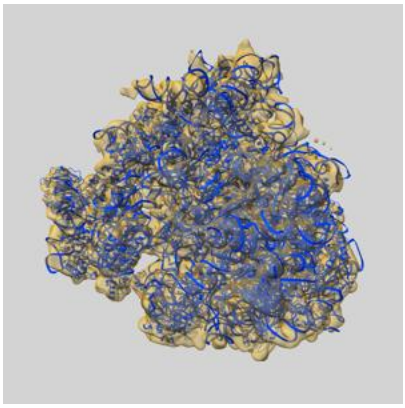
9.1 Map-model overlay



X



Y



Z

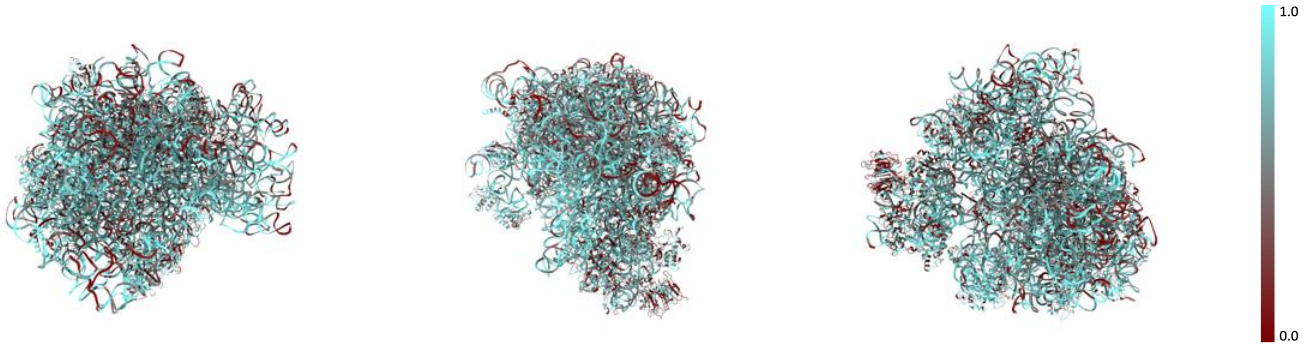
The images above show the 3D surface view of the map at the recommended contour level 70.4 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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.

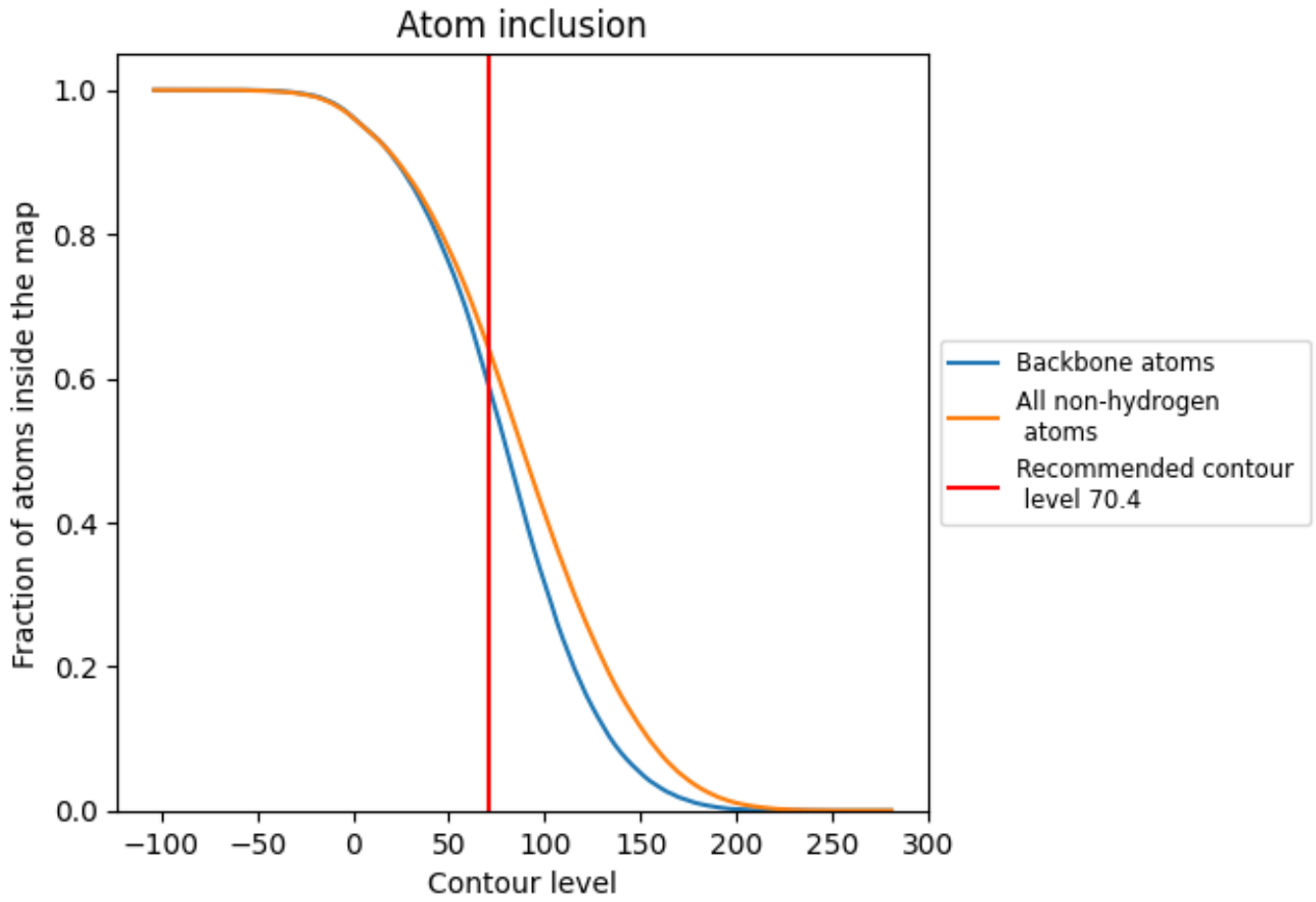
9.3 Atom inclusion mapped to coordinate model



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 (70.4).

9.4 Atom inclusion (i)



At the recommended contour level, 59% of all backbone atoms, 64% 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 (70.4) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.6438	0.0590
A7	0.6250	0.0690
AA	0.7147	0.0810
AB	0.5863	0.0440
AC	0.4373	0.0790
AD	0.6272	0.0740
AE	0.4932	0.0380
AG	0.5127	0.0470
AH	0.4521	0.0510
AI	0.4307	0.0380
AJ	0.4365	0.0600
AK	0.5067	0.0250
AL	0.4451	0.0330
AM	0.6323	0.0330
AN	0.5586	0.0070
AO	0.3761	0.0450
AQ	0.4541	0.0400
AR	0.3516	0.0550
AS	0.5709	0.0410
AT	0.4883	0.0450
B0	0.4679	0.0460
B1	0.5211	0.0470
B2	0.6662	0.0540
B3	0.7915	0.0860
B4	0.5149	0.0090
B5	0.6860	0.0610
B8	0.6475	0.0680
B9	0.4464	0.0210
BA	0.5855	0.0200
BB	0.4575	0.0210
BC	0.5453	0.0230
BD	0.6213	0.0550
BE	0.7260	0.0290
BF	0.5322	0.0470
BG	0.6527	0.0250

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Chain	Atom inclusion	Q-score
BH	0.5830	0.0570
BI	0.4173	0.0070
BJ	0.7084	0.0700
BK	0.5706	0.0460
BL	0.5068	0.0290
BM	0.5467	0.0580
BN	0.5853	0.0310
BO	0.6282	0.0600
BP	0.6033	0.0800
BQ	0.5989	0.0300
BR	0.3652	0.0500
BS	0.5490	0.0290
BT	0.5166	0.0780
BU	0.6367	0.0850
BV	0.5748	0.0340
BW	0.7116	0.0670
BX	0.5117	0.0720
BY	0.5077	-0.0070
BZ	0.5466	0.0380