



## wwPDB EM Validation Summary Report ⓘ

Apr 29, 2024 – 04:37 pm BST

PDB ID : 2J28  
EMDB ID : EMD-1261  
Title : MODEL OF E. COLI SRP BOUND TO 70S RNCS  
Authors : Halic, M.; Blau, M.; Becker, T.; Mielke, T.; Pool, M.R.; Wild, K.; Sinning, I.; Beckmann, R.  
Deposited on : 2006-08-16  
Resolution : 9.50 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](mailto: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>.

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

EMDB validation analysis : 0.0.1.dev92  
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) : 2.36.2

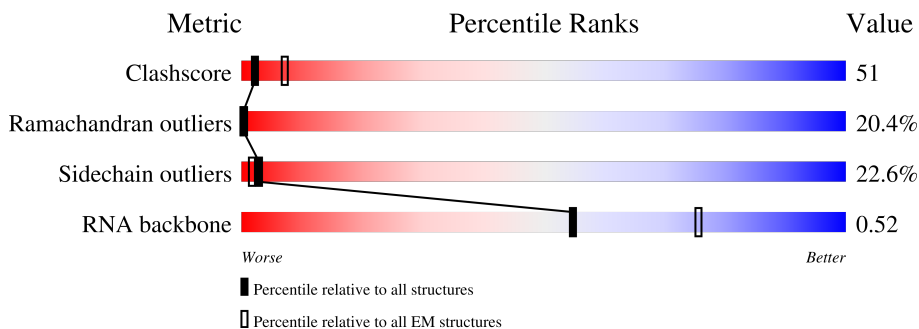
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 9.50 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.






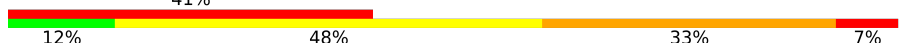
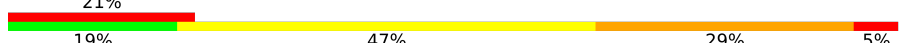
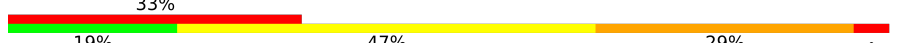
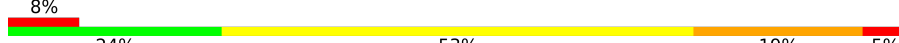
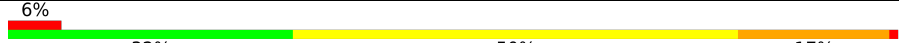

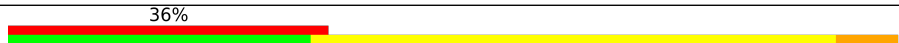
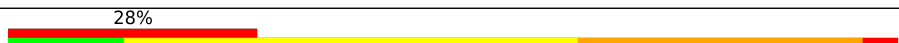
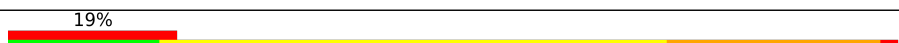
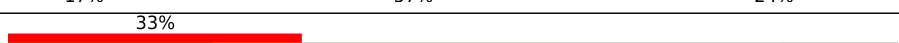
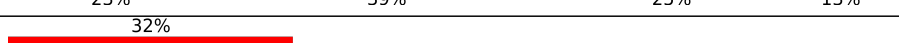
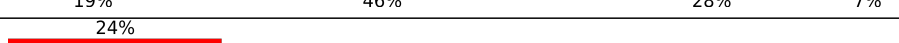
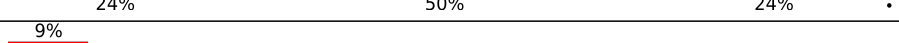
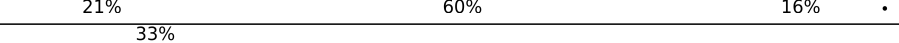
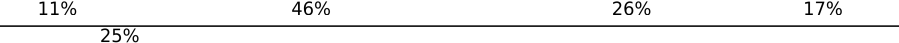
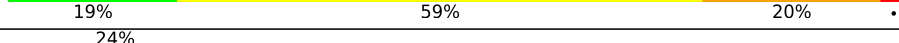

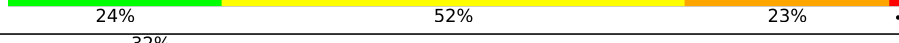



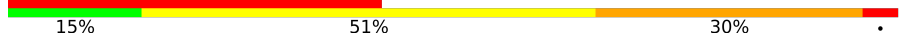
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

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  $\geq 3$ , 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  $\leq 5\%$ . 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	56	
2	1	54	
3	2	46	
4	3	64	
5	4	38	
6	7	18	
7	8	74	

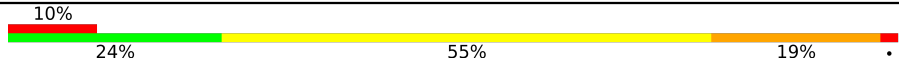
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Mol	Chain	Length	Quality of chain
8	9	430	
9	A	117	
10	B	2904	
11	C	267	
12	D	209	
13	E	201	
14	F	178	
15	G	176	
16	H	149	
17	I	141	
18	J	140	
19	K	121	
20	L	144	
21	M	136	
22	N	127	
23	O	117	
24	P	114	
25	Q	117	
26	R	103	
27	S	110	
28	T	99	
29	U	102	
30	V	94	
31	W	84	
32	X	63	

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Mol	Chain	Length	Quality of chain
33	Y	58	
34	Z	70	

## 2 Entry composition

There are 36 unique types of molecules in this entry. The entry contains 95358 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
			Total	C	N	O	S		
1	0	56	444	269	94	80	1	0	0

- Molecule 2 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
2	1	54	441	284	81	76	0	0

- Molecule 3 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	2	46	377	228	90	57	2	0	0

- Molecule 4 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	3	64	504	323	105	74	2	0	0

- Molecule 5 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	4	38	302	185	65	48	4	0	0

- Molecule 6 is a protein called SIGNAL SEQUENCE.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
6	7	18	149	103	23	23	0	0

- Molecule 7 is a RNA chain called 4.5S SIGNAL RECOGNITION PARTICLE RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	8	74	Total	C	N	O	P	0	0
			1590	709	295	512	74		

- Molecule 8 is a protein called Signal recognition particle protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	9	430	Total	C	N	O	S	0	0
			3306	2072	595	617	22		

- Molecule 9 is a RNA chain called 5S RIBOSOMAL RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	A	117	Total	C	N	O	P	0	0
			2507	1116	459	815	117		

- Molecule 10 is a RNA chain called 23S RIBOSOMAL RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	B	2841	Total	C	N	O	P	0	0
			60995	27210	11229	19715	2841		

- Molecule 11 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	C	267	Total	C	N	O	S	0	0
			2053	1271	416	359	7		

- Molecule 12 is a protein called 50S ribosomal protein L3.

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

- Molecule 13 is a protein called 50S ribosomal protein L4.

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

- Molecule 14 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	F	178	Total	C	N	O	S	0	0
			1420	905	251	258	6		

- Molecule 15 is a protein called 50S ribosomal protein L6.

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

- Molecule 16 is a protein called 50S ribosomal protein L9.

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

- Molecule 17 is a protein called 50S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	I	141	Total	C	N	O	S	0	0
			1032	651	179	196	6		

- Molecule 18 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	J	140	Total	C	N	O	S	0	0
			1112	704	210	194	4		

- Molecule 19 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	K	121	Total	C	N	O	S	0	0
			930	582	179	164	5		

- Molecule 20 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	L	144	Total	C	N	O	S	0	0
			1053	654	207	190	2		

- Molecule 21 is a protein called 50S ribosomal protein L16.

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

- Molecule 22 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	N	127	Total	C	N	O	S	0	0
			1008	621	204	178	5		

- Molecule 23 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	O	117	Total	C	N	O	S	0	0
			900	557	179	163	1		

- Molecule 24 is a protein called 50S ribosomal protein L19.

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

- Molecule 25 is a protein called 50S ribosomal protein L20.

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

- Molecule 26 is a protein called 50S ribosomal protein L21.

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

- Molecule 27 is a protein called 50S ribosomal protein L22.

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

- Molecule 28 is a protein called 50S ribosomal protein L23.



Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
28	T	99	777	491	145	139	2	0	0

- Molecule 29 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
29	U	102	779	492	146	141		0	0

- Molecule 30 is a protein called 50S ribosomal protein L25.

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

- Molecule 31 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
31	W	84	634	391	129	113	1	0	0

- Molecule 32 is a protein called 50S ribosomal protein L29.

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

- Molecule 33 is a protein called 50S ribosomal protein L30.

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

- Molecule 34 is a protein called 50S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
34	Z	70	549	339	104	100	6	0	0

- Molecule 35 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
35	B	110	Total 110	Mg 110	0
35	N	1	Total 1	Mg 1	0

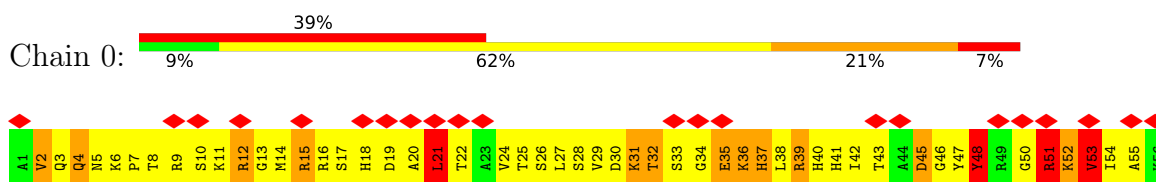
- Molecule 36 is water.

Mol	Chain	Residues	Atoms		AltConf
36	B	506	Total 506	O 506	0
36	N	6	Total 6	O 6	0

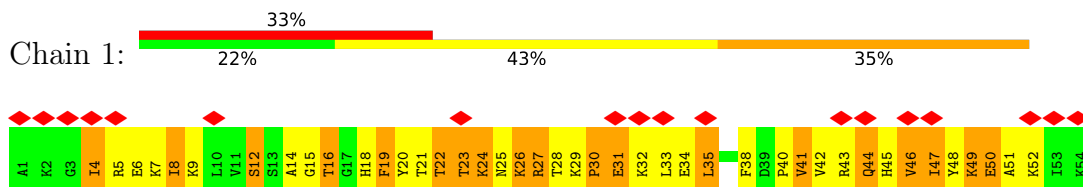
### 3 Residue-property plots

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.

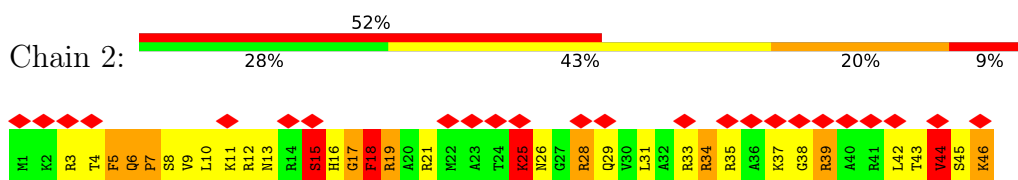
- Molecule 1: 50S ribosomal protein L32



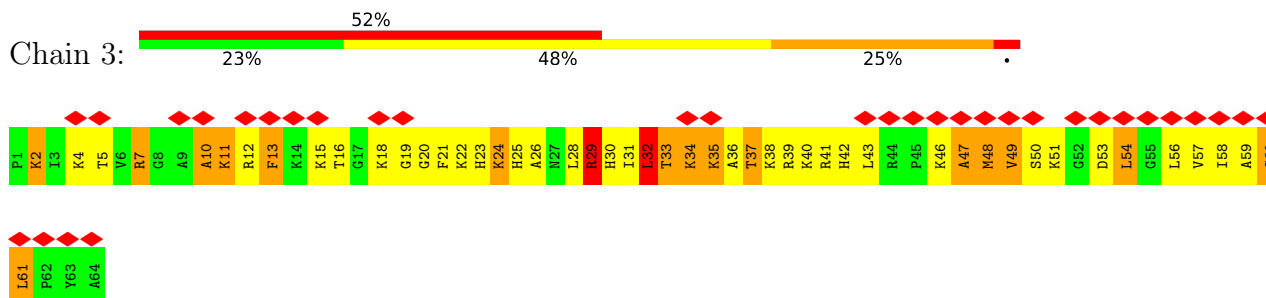
- Molecule 2: 50S ribosomal protein L33



- Molecule 3: 50S ribosomal protein L34

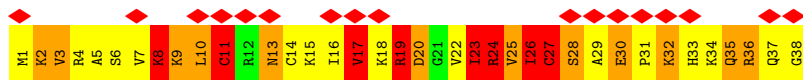


- Molecule 4: 50S ribosomal protein L35



- Molecule 5: 50S ribosomal protein L36





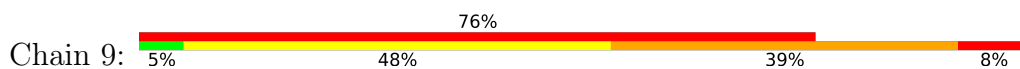
• Molecule 6: SIGNAL SEQUENCE



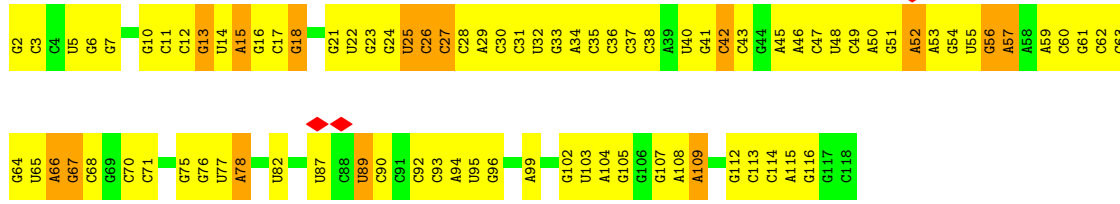
• Molecule 7: 4.5S SIGNAL RECOGNITION PARTICLE RNA



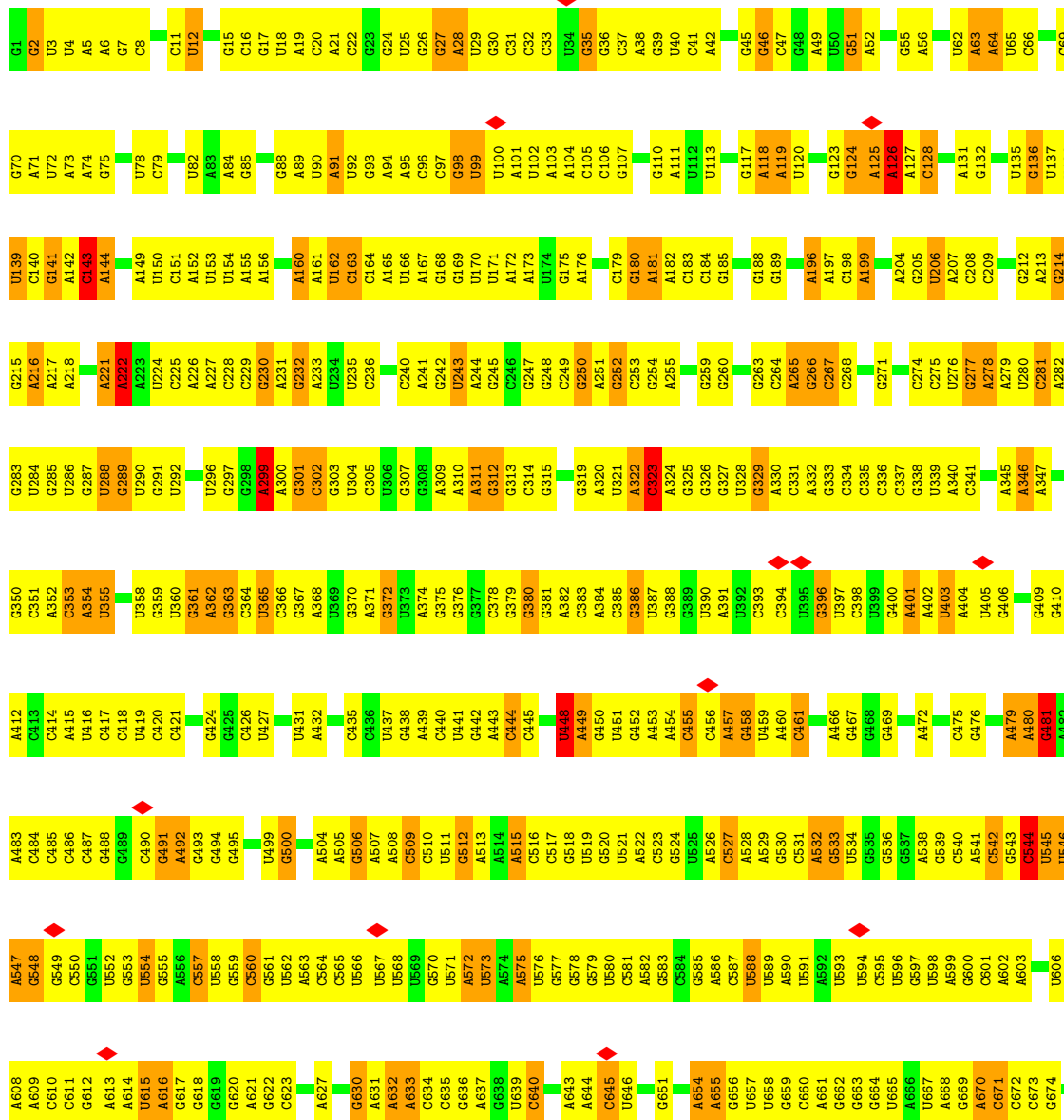
• Molecule 8: Signal recognition particle protein



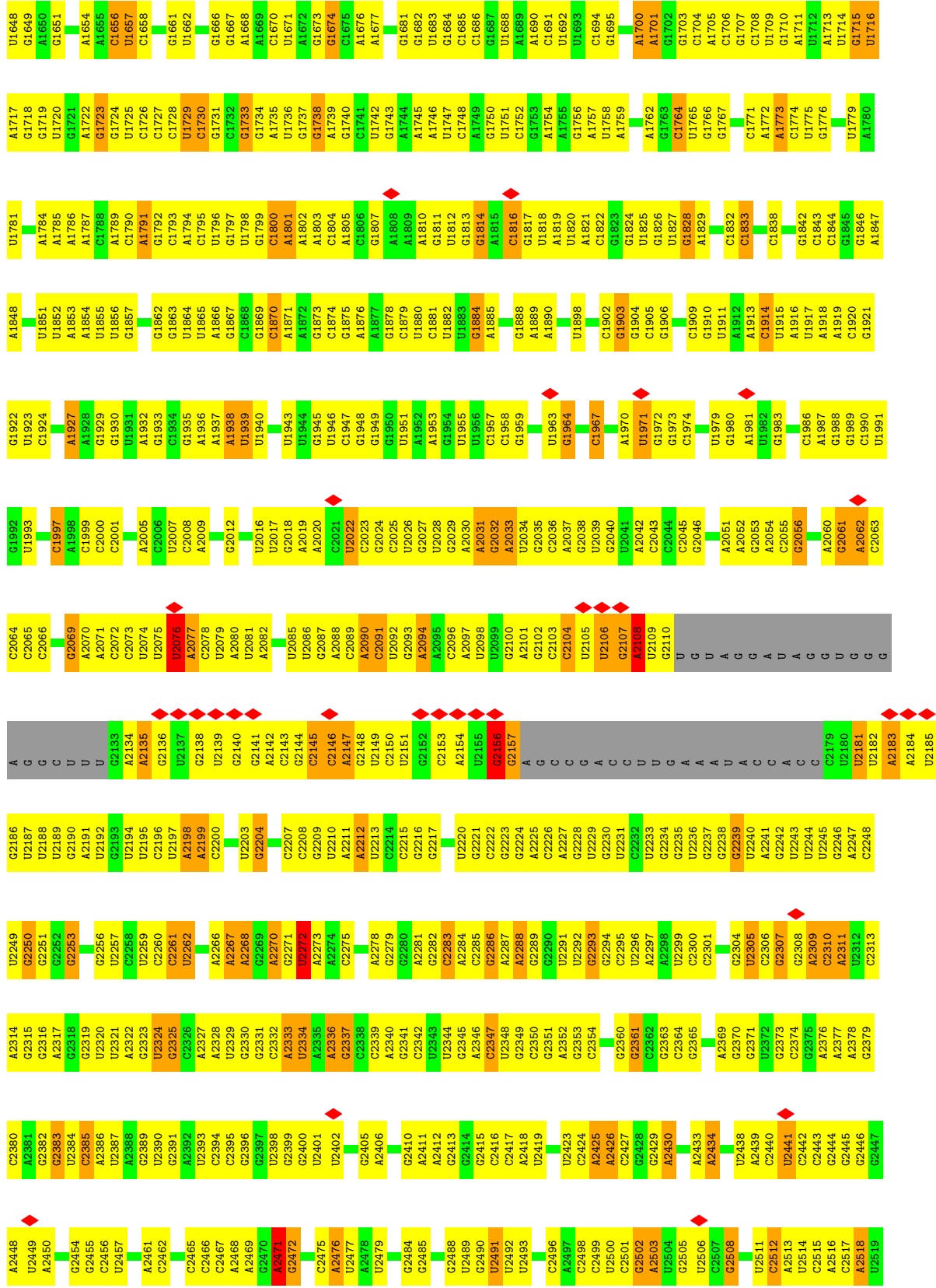
• Molecule 9: 5S RIBOSOMAL RNA

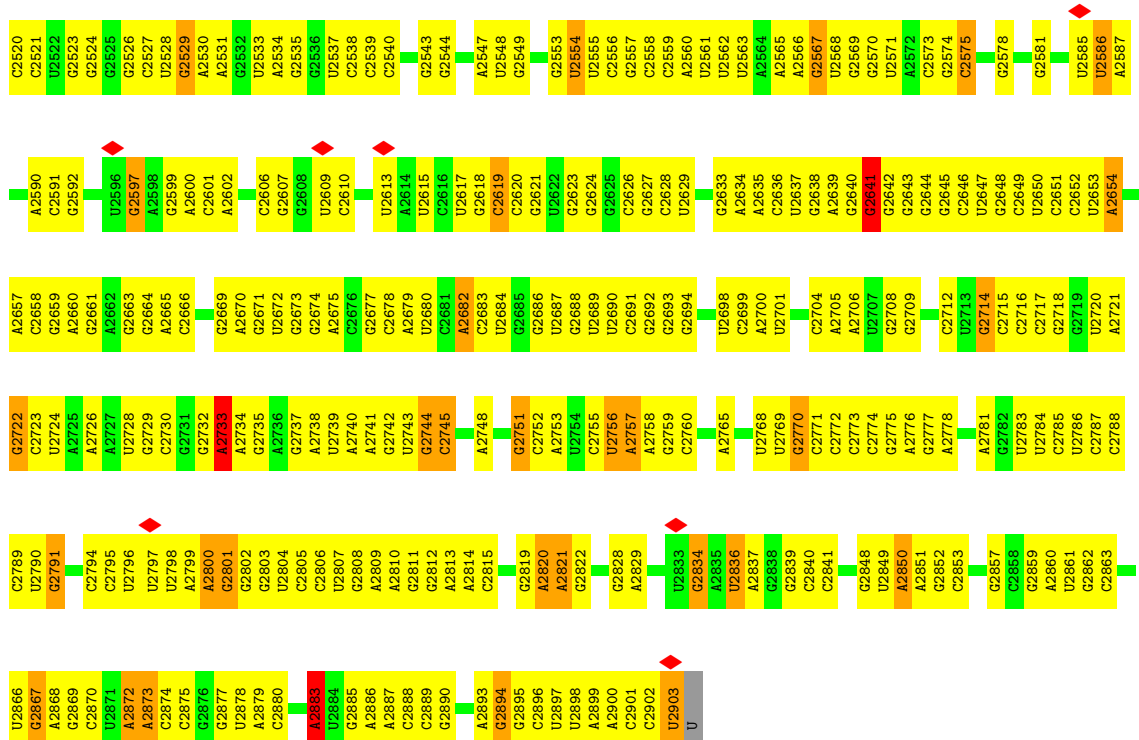


• Molecule 10: 23S RIBOSOMAL RNA

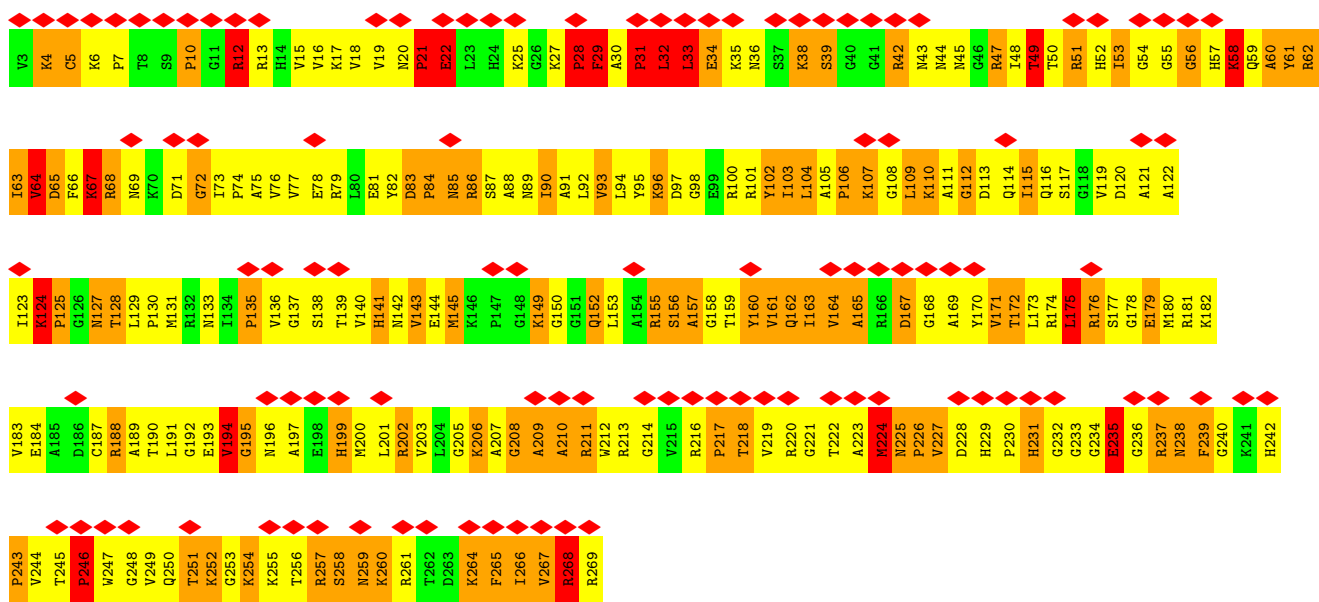


A1572	A1508	U1438	A1365	C1298	G1237	C1170	G1106	A1027	C961	A899	C838	G763	C678
G1573	A1509	A1489	G1368	G1289	G1238	G1171	G1107	A1028	G962	A900	U839	U763	C679
C1574	G1510	U1440	G1300	G1300	U1239	A1172	U1108	A1029	U963	C901	C841	A764	C680
U1578	G1511	G1441	A1301	A1301	U1240	U1173	C1109	C1030	C964	C902	G841	C765	G681
U1512	G1512	U1442	A1302	G1303	A1241	U1174	G1110	U1033	C985	G903	U843	U766	G682
G1514	G1513	G1443	A1303	A1304	U1242	A1175	A1111	U1034	G966	G904	G843		
A1515	G1514	U1375	C1305	C1305	A1244	U1176	G1112	G1034	U967	A905	A844	G770	A885
G1516	G1515	U1376	G1309	G1309	A1245	C1177	U1113	G1042	C968	U906	U845	G771	U886
U1583	G1516	C1446	G1310	G1310	A1246	U1178	C1114	C1043	G907	G907	U846	G772	C887
U1584	G1517	G1447	A1311	A1311	A1247	U1180	G1115	U1043	C908	A908	U847	U773	U688
C1585	G1518	G1448	G1312	G1312	U1248	U1181	G1116	A1046	G970	A910	U848	G774	A689
A1586	G1519	U1449	U1313	U1313	U1249	C1182	C1118	A1047	A972	A911	G775	G775	G690
G1587	G1520	G1450	U1314	U1314	G1250	U1183	U1119	G1047	A973	C912	C851	G777	C692
G1588	C1451	C1451	G1315	G1315	C1251	U1184	U1119	A1050	G974	U913	U852	G778	A699
U1589	G1452	G1452	C1316	C1316	U1252	U1185	G1120	A1051	A975	U913	C853	U779	A699
A1590	A1453	A1453	U1316	U1316	G1253	U1186	C1121	G1052	A976	C915	G854	G780	G700
A1528	C1454	C1454	G1317	G1317	A1254	U1187	G1122	A1057	A981	G916	G855	A781	G704
A1529	G1455	A1385	U1318	U1318	G1255	U1188	G1124	U1058	C982	A917	G856	A782	A705
G1530	G1456	C1386	C1319	C1319	U1256	U1189	G1125	U1059	A983	U919	G857	A783	A705
A1531	U1457	A1387	G1320	G1320	G1257	A1190	A1126	U1060	A984	U919	G858	A784	U709
A1532	U1458	G1388	A1321	A1321	U1258	U1191	A1127	U1061	C987	A920	U859	A785	U710
U1599	U1459	U1394	A1322	A1322	A1259	U1192	A1128	G1062	A988	A921	U860	A786	U710
U1534	U1460	A1395	C1323	C1323	U1260	U1193	G1129	G1063	A989	C922	A861	A787	G713
A1535	C1461	U1396	G1324	G1324	C1261	U1194	U1130	U1064	A990	A920	G862	A788	U714
C1536	C1462	U1397	U1325	U1325	A1262	U1195	G1131	U1065	A991	A921	G863	A789	A715
G1537	C1463	U1398	U1326	U1326	U1263	U1196	U1132	G1066	C987	A922	G864	A790	A716
G1538	G1464	C1399	A1327	A1327	A1264	U1197	G1133	U1067	A988	A923	G865	A791	C717
U1539	G1465	U1400	A1328	A1328	U1265	U1198	A1134	G1068	A989	U929	G866	A792	A718
G1540	U1466	U1401	U1329	U1329	U1266	U1199	C1135	A1069	A990	A930	G867	A793	A719
U1542	A1467	G1401	U1330	U1330	U1267	U1200	G1136	U1070	A991	G930	U869	A794	C719
A1543	G1471	U1405	C1331	C1331	A1268	U1202	G1137	A1071	A992	U931	U870	A795	U720
A1544	U1474	U1406	G1332	G1332	C1270	U1203	G1138	C1076	G997	U932	U871	C806	A721
A1545	U1475	G1407	U1333	U1333	G1271	U1204	U1139	A1077	C998	A933	U872	C806	A722
G1546	G1476	G1408	G1334	G1334	A1272	A1205	C1140	U1078	U999	U934	C873	U810	C723
C1547	U1477	U1409	C1335	C1335	U1273	U1141	U1141	C1079	A1000	C935	G874	U811	U724
A1548	G1478	G1410	U1336	U1336	A1274	G1206	A1142	A1080	A1001	A936	G875	C812	G725
A1549	U1479	U1411	A1337	A1337	U1275	G1210	A1143	U1081	A1002	C937	C876	U813	G726
C1550	U1480	U1412	G1341	G1341	A1276	C1211	A1144	U1082	C1005	G938	A877	C814	C737
A1551	U1481	A1413	A1342	A1342	G1277	U1212	C1145	U1083	C1006	U939	C878	C817	G728
A1552	G1482	C1414	U1343	U1343	C1278	A1213	C1146	A1084	C1007	G940	G	C818	G729
U1553	G1483	G1415	C1344	C1344	G1279	U1214	A1147	U1085	C1008	A941	G	A819	A730
U1554	G1484	U1416	U1345	U1345	U1280	G1215	U1148	A1086	A1009	G942	G	A819	A730
G1555	U1484	U1416	G1346	G1346	G1281	G1216	G1149	U1087	A1010	A943	G	C737	C737
C1556	U1485	A1419	A1347	A1347	U1282	U1219	C1150	A1088	A1011	C944	G	G822	G738
C1557	U1486	G1420	C1348	C1348	U1283	U1220	A1151	A1089	G1011	A945	U	C923	U741
U1559	C1487	G1421	C1349	C1349	A1284	G1221	C1152	U1090	U1012	C946	C	U824	U741
G1560	C1488	G1422	U1351	U1351	A1285	C1222	C1153	G1091	C1013	A947	U	A825	A742
U1561	A1490	G1423	C1352	C1352	A1286	U1223	G1154	U1092	A1014	G949	C	U826	A743
C1562	C1493	G1424	U1353	U1353	U1287	G1224	A1155	G1093	U1015	G950	C	U827	U744
U1562	A1494	A1427	A1354	A1354	G1288	U1225	A1156	U1094	U1018	C951	C	U828	G745
U1563	G1495	C1428	G1355	G1355	C1289	A1226	G1162	A1095	U1019	C952	G	U829	U746
C1564	A1496	U1429	U1356	U1356	U1290	G1227	G1163	U1096	A1020	G955	A	U830	U747
C1565	A1496	C1291	G1357	G1357	C1291	U1228	C1164	U1097	A1021	U955	C	G831	A753
A1566	A1496	G1292	U1359	U1359	G1292	G1229	C1165	U1098	G1022	C956	C	U832	U754
U1567	A1504	C1293	G1360	G1360	C1293	U1230	G1166	A1099	A1023	C957	U	A833	U755
G1568	A1505	U1294	G1361	G1361	U1294	A1230	G1167	U1099	U1024	U958	U	G834	U756
A1569	U1506	C1362	C1362	C1362	G1295	A1231	C1168	A1099	G1025	A959	C	C835	A756
A1570	C1507	G1363	G1363	G1363	U1296	G1232	U1169	U1101	G1026	A960	C	G836	G757
A1571	U1647	G1364	G1364	G1364	C1297	G1236	A1169	U1105				C837	C758

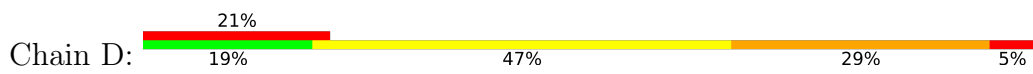




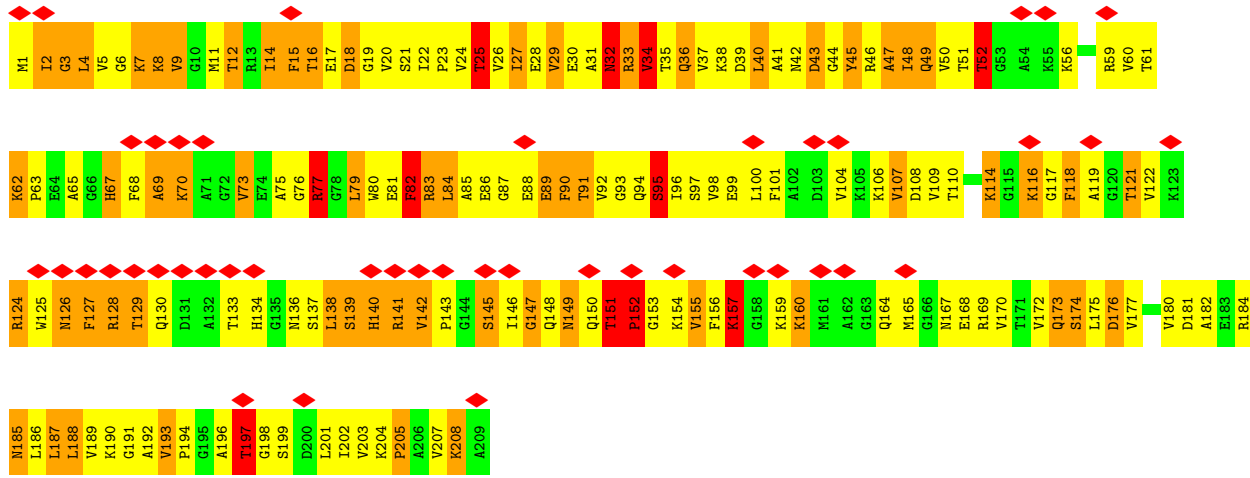
• Molecule 11: 50S ribosomal protein L2



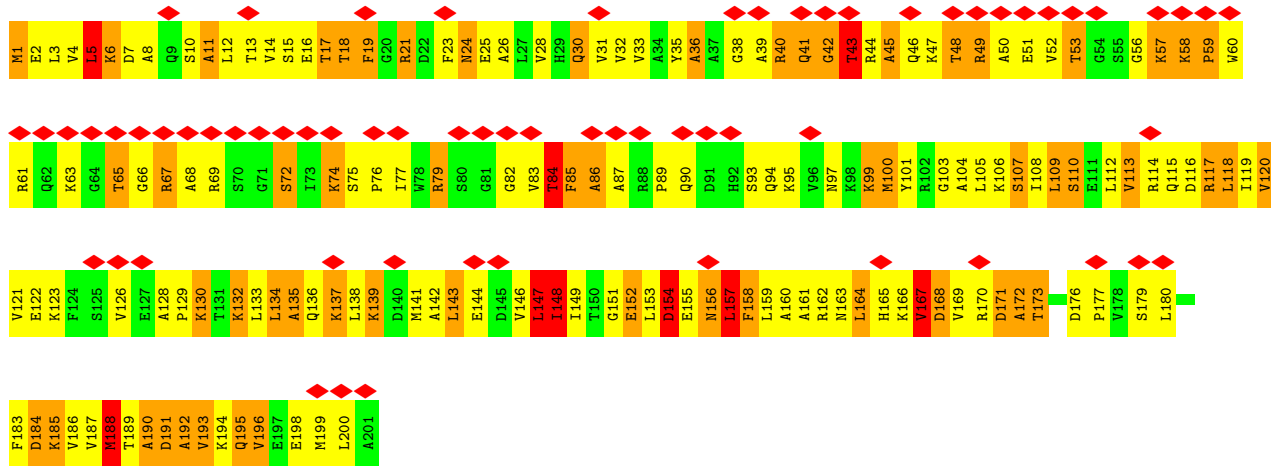
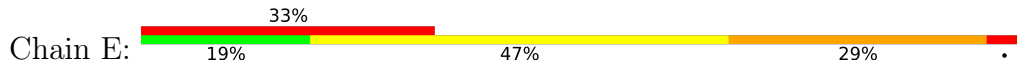
• Molecule 12: 50S ribosomal protein L3



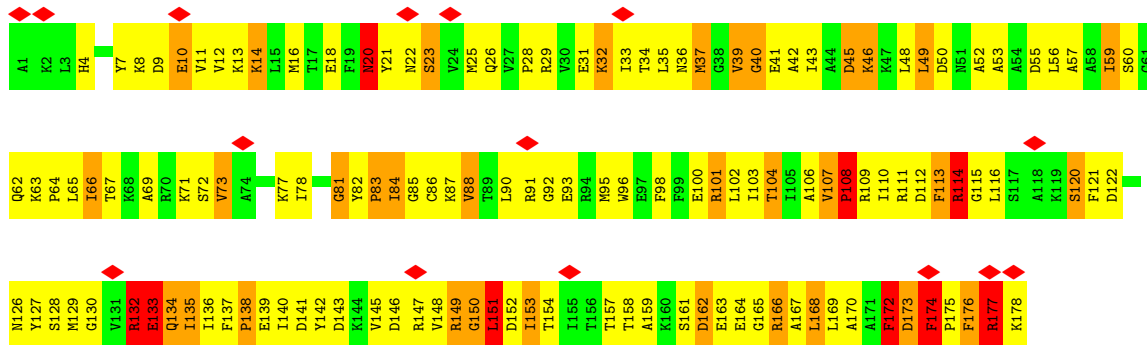




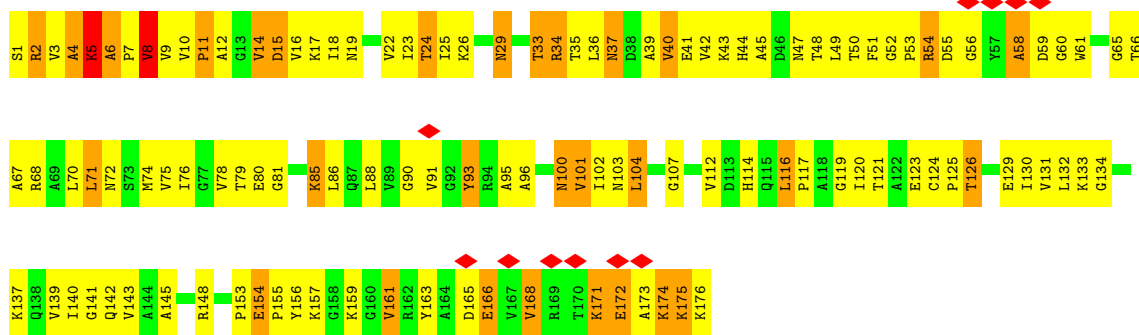
• Molecule 13: 50S ribosomal protein L4



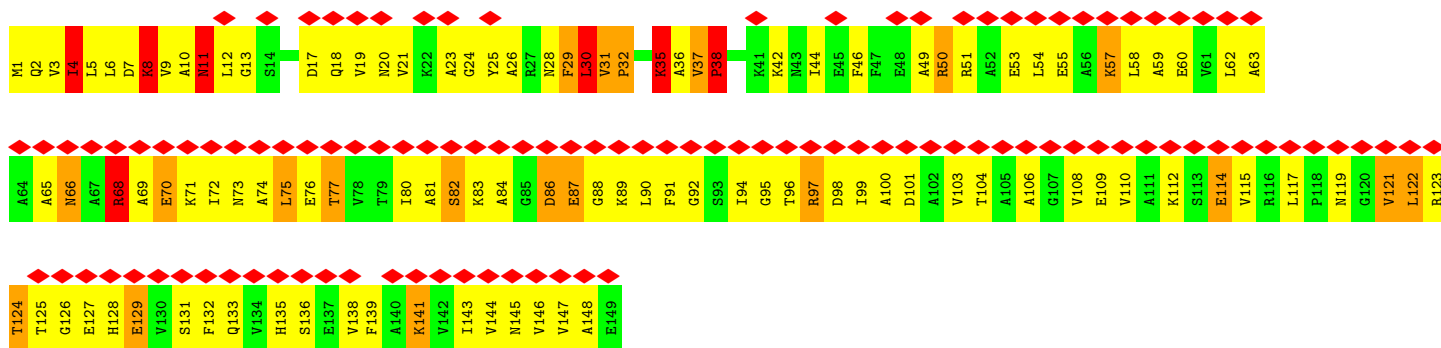
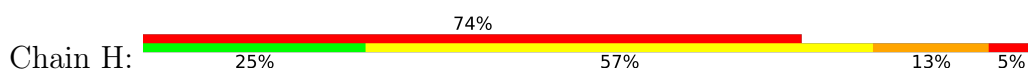
• Molecule 14: 50S ribosomal protein L5



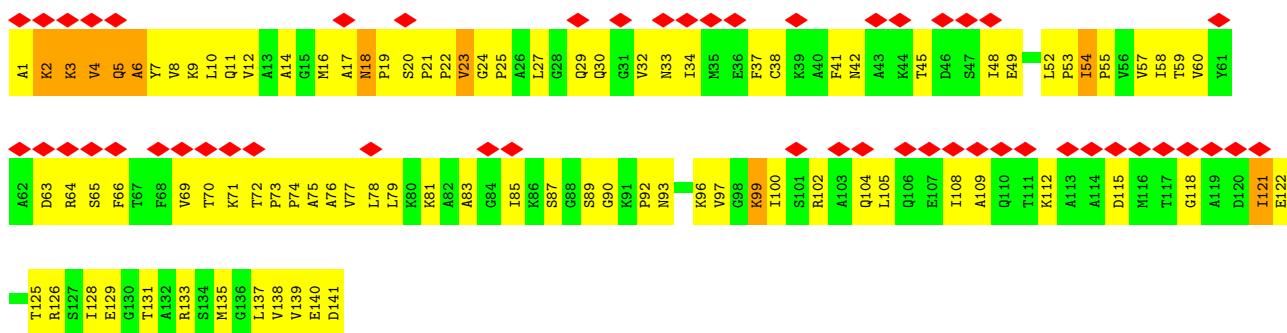
• Molecule 15: 50S ribosomal protein L6



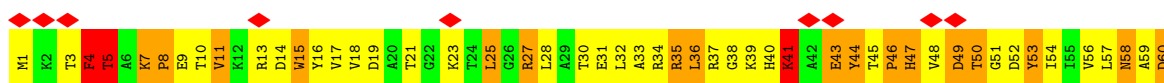
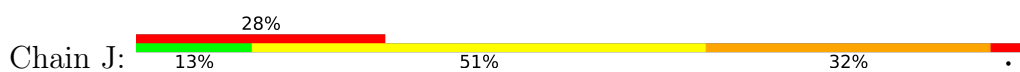
• Molecule 16: 50S ribosomal protein L9



• Molecule 17: 50S ribosomal protein L11

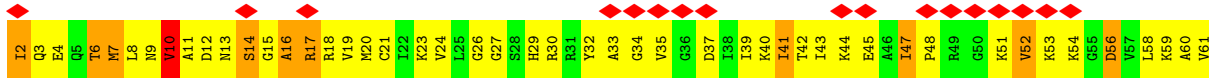
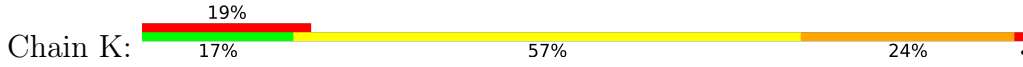


• Molecule 18: 50S ribosomal protein L13

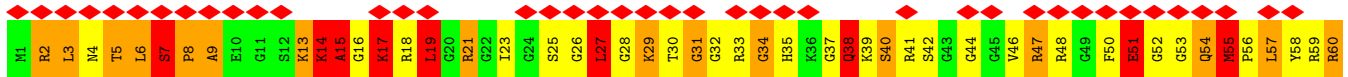
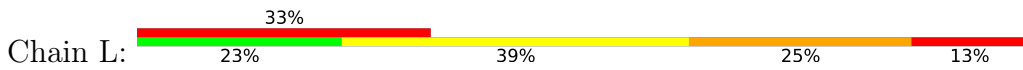




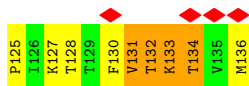
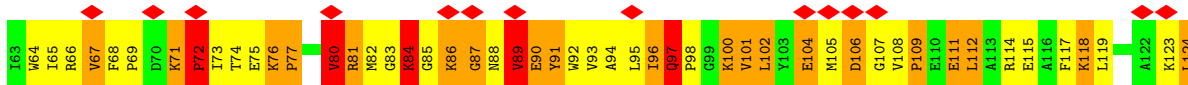
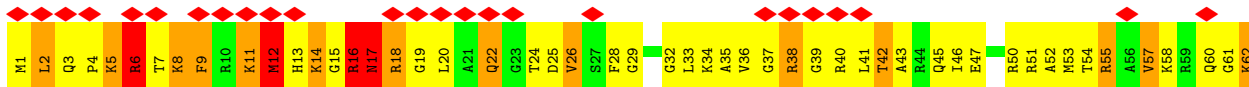
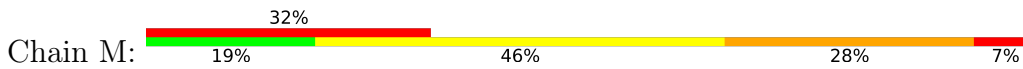
• Molecule 19: 50S ribosomal protein L14



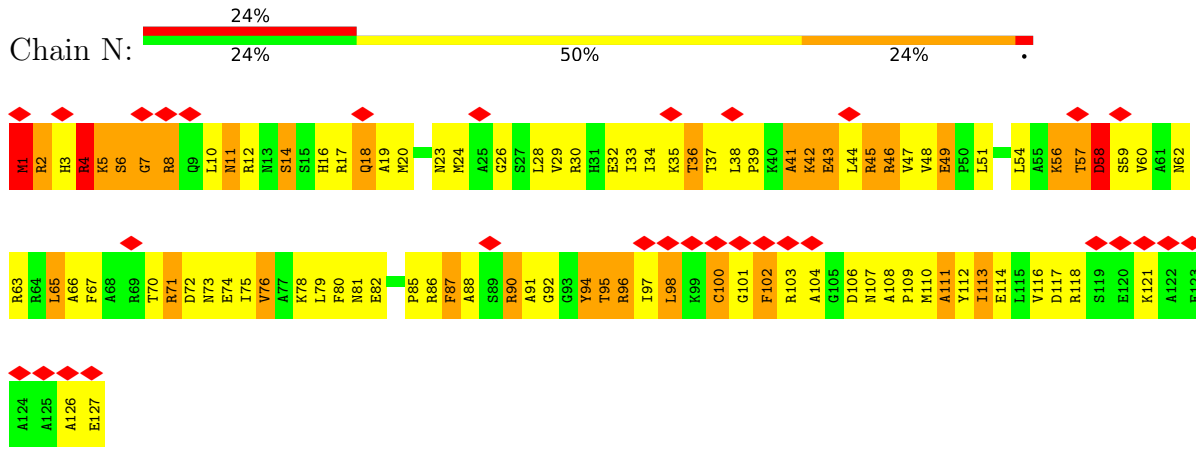
• Molecule 20: 50S ribosomal protein L15



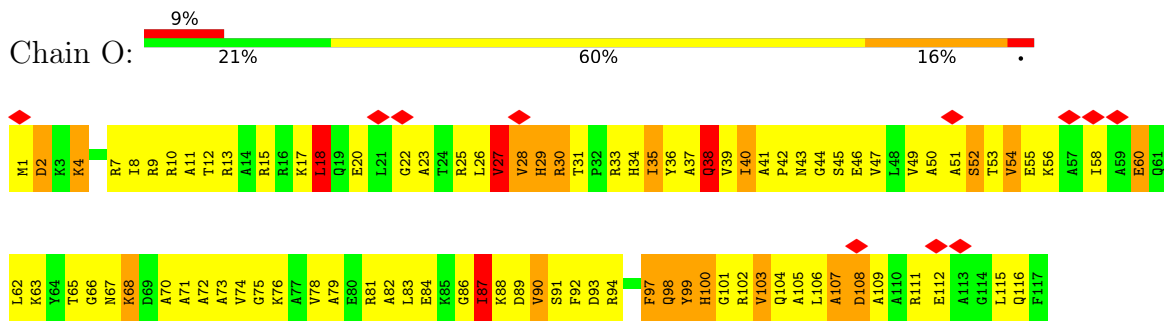
• Molecule 21: 50S ribosomal protein L16



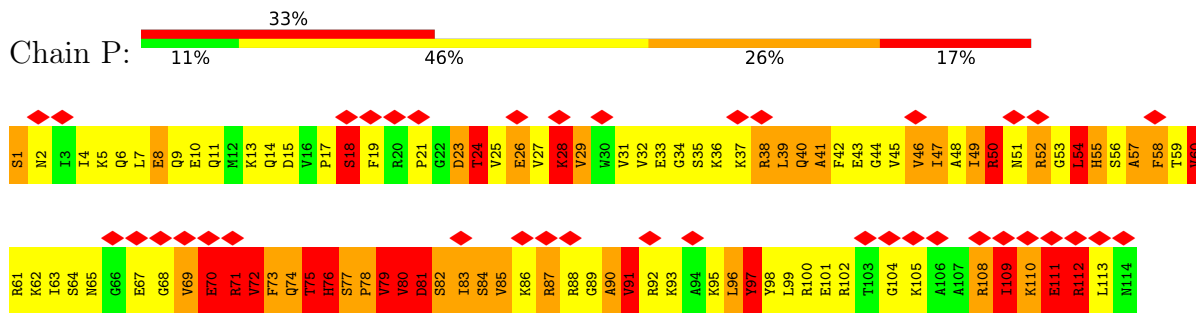
• Molecule 22: 50S ribosomal protein L17



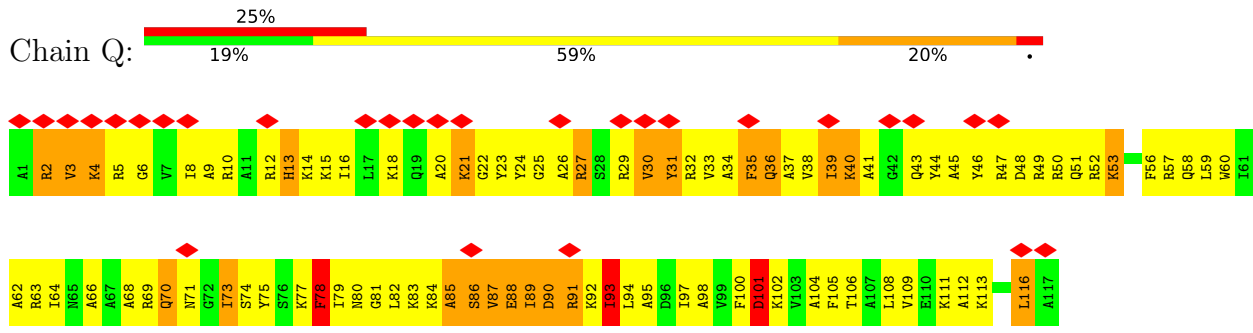
• Molecule 23: 50S ribosomal protein L18



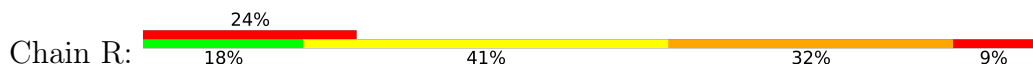
• Molecule 24: 50S ribosomal protein L19

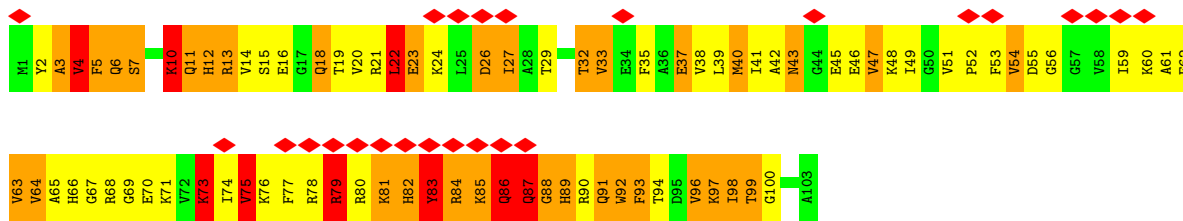


• Molecule 25: 50S ribosomal protein L20

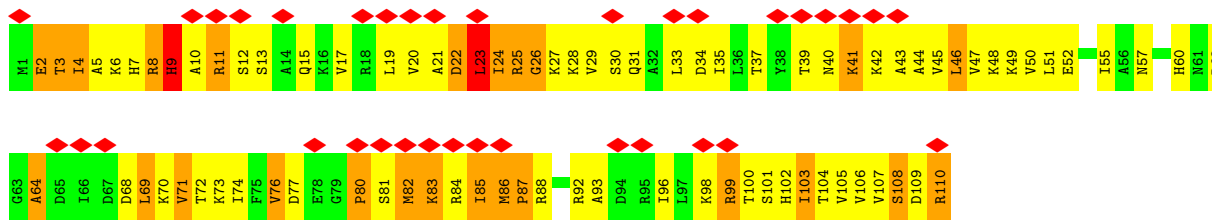


• Molecule 26: 50S ribosomal protein L21

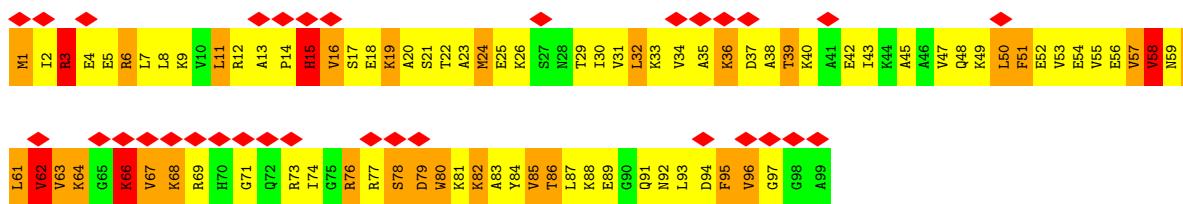
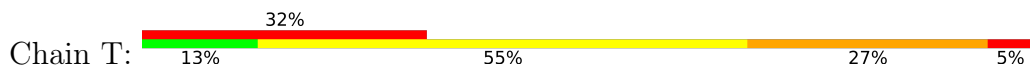




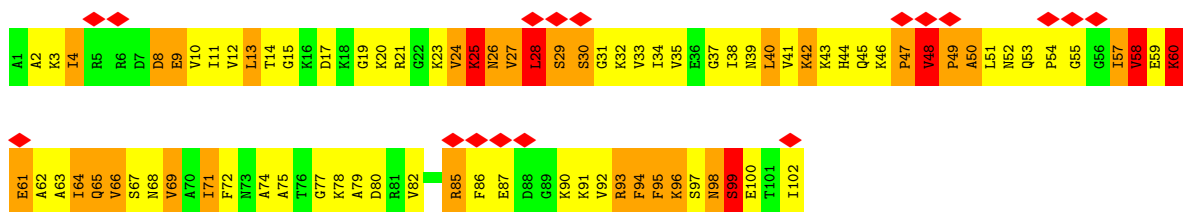
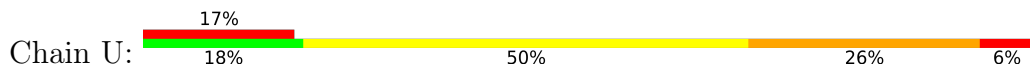
• Molecule 27: 50S ribosomal protein L22



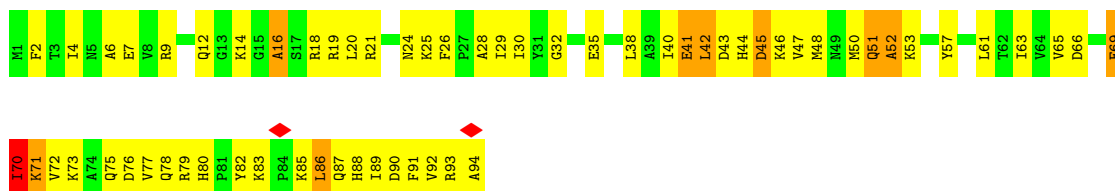
• Molecule 28: 50S ribosomal protein L23



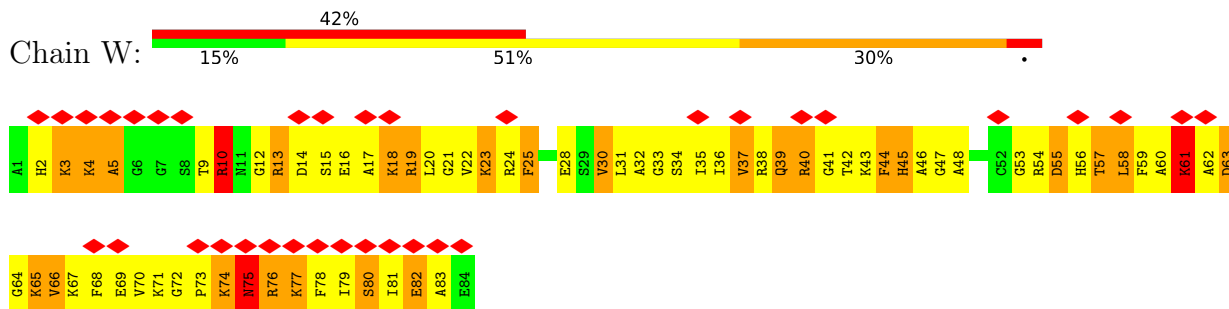
• Molecule 29: 50S ribosomal protein L24



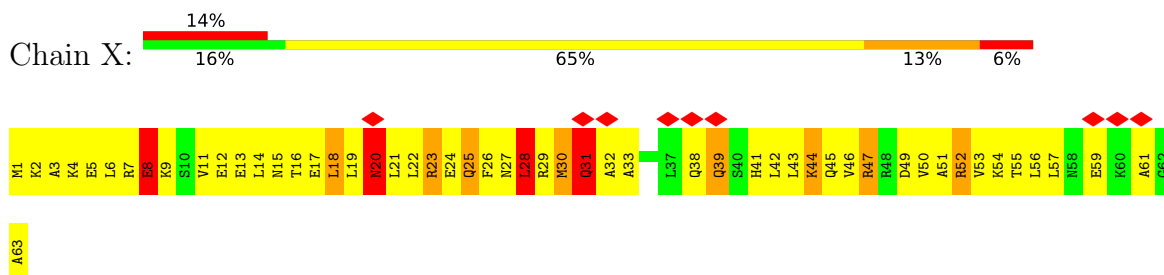
• Molecule 30: 50S ribosomal protein L25



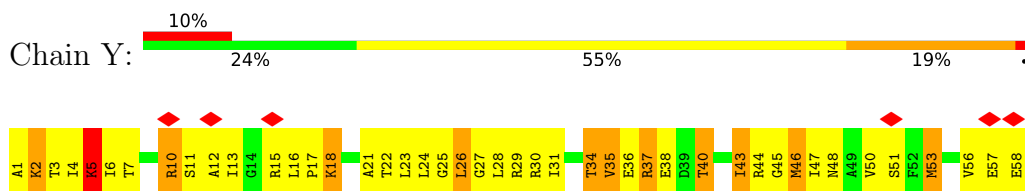
• Molecule 31: 50S ribosomal protein L27



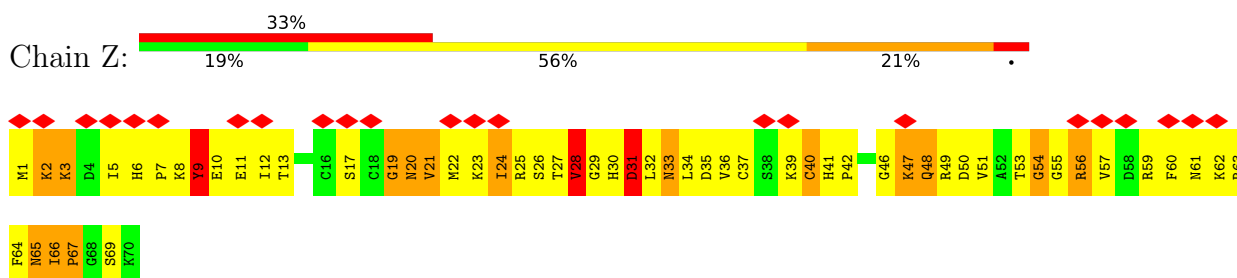
• Molecule 32: 50S ribosomal protein L29



• Molecule 33: 50S ribosomal protein L30



• Molecule 34: 50S ribosomal protein L31



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	Not provided	
Resolution determination method	FSC 0.5 CUT-OFF	Depositor
CTF correction method	Not provided	
Microscope	FEI TECNAI F30	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	Not provided	
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	KODAK SO-163 FILM	Depositor
Maximum map value	7.522	Depositor
Minimum map value	-4.419	Depositor
Average map value	0.037	Depositor
Map value standard deviation	0.632	Depositor
Recommended contour level	0.704	Depositor
Map size ( $\text{\AA}$ )	361.62, 361.62, 361.62	wwPDB
Map dimensions	294, 294, 294	wwPDB
Map angles ( $^\circ$ )	90, 90, 90	wwPDB
Pixel spacing ( $\text{\AA}$ )	1.23, 1.23, 1.23	Depositor

## 5 Model quality

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: MG

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
1	0	0.41	0/450	0.97	3/599 (0.5%)
2	1	0.32	0/448	0.69	0/594
3	2	0.30	0/380	0.60	0/498
4	3	0.39	0/513	0.80	1/676 (0.1%)
5	4	0.32	0/303	0.77	0/397
6	7	0.55	0/153	0.72	0/207
7	8	1.57	10/1775 (0.6%)	1.71	18/2755 (0.7%)
8	9	4.09	56/3329 (1.7%)	2.78	80/4446 (1.8%)
9	A	0.29	0/2803	0.77	0/4371
10	B	0.34	18/68314 (0.0%)	0.79	78/106569 (0.1%)
11	C	0.40	0/2092	0.90	9/2813 (0.3%)
12	D	0.37	0/1586	0.82	4/2134 (0.2%)
13	E	0.70	4/1571 (0.3%)	0.83	5/2113 (0.2%)
14	F	0.41	1/1444 (0.1%)	1.00	10/1937 (0.5%)
15	G	0.30	0/1343	0.67	1/1816 (0.1%)
16	H	0.34	0/1122	0.71	1/1515 (0.1%)
17	I	0.60	4/1046 (0.4%)	0.76	4/1410 (0.3%)
18	J	0.32	0/1135	0.76	3/1529 (0.2%)
19	K	0.35	0/939	0.99	4/1258 (0.3%)
20	L	0.74	1/1062 (0.1%)	1.58	25/1413 (1.8%)
21	M	0.39	0/1093	0.85	5/1460 (0.3%)
22	N	0.37	0/1021	0.80	3/1364 (0.2%)
23	O	0.31	0/910	0.64	0/1219
24	P	0.58	0/929	1.40	16/1242 (1.3%)
25	Q	0.36	0/960	0.75	0/1278
26	R	0.39	0/829	0.82	3/1107 (0.3%)
27	S	0.26	0/864	0.60	0/1156
28	T	0.45	1/784 (0.1%)	0.80	1/1048 (0.1%)
29	U	0.37	0/787	0.94	7/1051 (0.7%)
30	V	0.25	0/766	0.46	0/1025
31	W	0.39	0/642	0.81	2/848 (0.2%)
32	X	0.29	0/510	0.66	0/677



Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
33	Y	0.32	0/453	0.69	1/605 (0.2%)
34	Z	0.52	0/559	0.91	1/745 (0.1%)
All	All	0.84	95/102915 (0.1%)	0.95	285/153875 (0.2%)

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	0	0	1
7	8	0	1
8	9	1	15
9	A	0	1
10	B	1	65
11	C	0	2
24	P	0	1
26	R	0	1
34	Z	0	1
All	All	2	88

The worst 5 of 95 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
8	9	300	VAL	CB-CG1	107.27	3.78	1.52
8	9	299	ASP	CB-CG	88.52	3.37	1.51
8	9	333	ASP	CB-CG	82.89	3.25	1.51
8	9	300	VAL	CB-CG2	75.72	3.11	1.52
8	9	370	ASP	CB-CG	68.24	2.95	1.51

The worst 5 of 285 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	9	374	VAL	O-C-N	-71.21	8.76	122.70
8	9	300	VAL	CG1-CB-CG2	-43.96	40.56	110.90
8	9	300	VAL	CA-CB-CG2	-40.13	50.71	110.90
8	9	300	VAL	CA-CB-CG1	-38.94	52.49	110.90
8	9	299	ASP	CA-CB-CG	-37.81	30.22	113.40

All (2) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
8	9	327	ASP	CA
10	B	2076	U	C3'

5 of 88 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	0	48	TYR	Sidechain
7	8	55	A	Sidechain
8	9	296	GLY	Peptide
8	9	299	ASP	Sidechain
8	9	319	LEU	Mainchain

## 5.2 Too-close contacts [i](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	0	444	0	461	83	0
2	1	441	0	485	69	0
3	2	377	0	418	65	0
4	3	504	0	574	112	0
5	4	302	0	343	83	0
6	7	149	0	152	103	0
7	8	1590	0	808	81	0
8	9	3306	0	3402	1820	0
9	A	2507	0	1270	95	0
10	B	60995	0	30676	2400	0
11	C	2053	0	2122	416	0
12	D	1565	0	1616	315	0
13	E	1552	0	1619	269	0
14	F	1420	0	1460	172	0
15	G	1323	0	1374	158	0
16	H	1111	0	1148	143	0
17	I	1032	0	1088	218	0
18	J	1112	0	1147	231	0
19	K	930	0	1000	130	0
20	L	1053	0	1129	233	0
21	M	1074	0	1157	191	0
22	N	1008	0	1045	132	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
23	O	900	0	935	132	0
24	P	917	0	965	206	0
25	Q	947	0	1022	160	0
26	R	816	0	839	178	0
27	S	857	0	922	120	0
28	T	777	0	839	204	0
29	U	779	0	834	138	0
30	V	753	0	780	72	0
31	W	634	0	656	154	0
32	X	509	0	541	138	0
33	Y	449	0	491	64	0
34	Z	549	0	552	104	0
35	B	110	0	0	0	0
35	N	1	0	0	0	0
36	B	506	0	0	7	0
36	N	6	0	0	1	0
All	All	95358	0	63870	8126	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 51.

The worst 5 of 8126 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)
8:9:410:VAL:CG1	10:B:485:C:H5''	1.27	1.65
8:9:145:ILE:CD1	8:9:161:PRO:HG2	1.17	1.64
8:9:334:PHE:CE2	8:9:420:PHE:HE2	1.02	1.63
8:9:2:PHE:CZ	8:9:295:LEU:HD13	1.31	1.62
8:9:334:PHE:CZ	8:9:420:PHE:CE2	1.87	1.62

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	54/56 (96%)	30 (56%)	15 (28%)	9 (17%)	0	3
2	1	52/54 (96%)	21 (40%)	22 (42%)	9 (17%)	0	3
3	2	44/46 (96%)	24 (54%)	12 (27%)	8 (18%)	0	3
4	3	62/64 (97%)	35 (56%)	17 (27%)	10 (16%)	0	3
5	4	36/38 (95%)	13 (36%)	11 (31%)	12 (33%)	0	0
6	7	16/18 (89%)	14 (88%)	2 (12%)	0	100	100
8	9	403/430 (94%)	154 (38%)	100 (25%)	149 (37%)	0	0
11	C	265/267 (99%)	97 (37%)	93 (35%)	75 (28%)	0	0
12	D	207/209 (99%)	96 (46%)	67 (32%)	44 (21%)	0	2
13	E	199/201 (99%)	87 (44%)	63 (32%)	49 (25%)	0	1
14	F	176/178 (99%)	92 (52%)	52 (30%)	32 (18%)	0	3
15	G	174/176 (99%)	117 (67%)	39 (22%)	18 (10%)	0	8
16	H	147/149 (99%)	84 (57%)	44 (30%)	19 (13%)	0	5
17	I	139/141 (99%)	123 (88%)	11 (8%)	5 (4%)	3	25
18	J	138/140 (99%)	70 (51%)	36 (26%)	32 (23%)	0	1
19	K	119/121 (98%)	72 (60%)	25 (21%)	22 (18%)	0	2
20	L	142/144 (99%)	66 (46%)	37 (26%)	39 (28%)	0	0
21	M	134/136 (98%)	79 (59%)	31 (23%)	24 (18%)	0	3
22	N	125/127 (98%)	82 (66%)	32 (26%)	11 (9%)	1	11
23	O	115/117 (98%)	64 (56%)	33 (29%)	18 (16%)	0	3
24	P	112/114 (98%)	42 (38%)	38 (34%)	32 (29%)	0	0
25	Q	115/117 (98%)	79 (69%)	22 (19%)	14 (12%)	0	6
26	R	101/103 (98%)	43 (43%)	30 (30%)	28 (28%)	0	0
27	S	108/110 (98%)	67 (62%)	20 (18%)	21 (19%)	0	2
28	T	97/99 (98%)	42 (43%)	33 (34%)	22 (23%)	0	2
29	U	100/102 (98%)	46 (46%)	41 (41%)	13 (13%)	0	5
30	V	92/94 (98%)	59 (64%)	27 (29%)	6 (6%)	1	16
31	W	82/84 (98%)	31 (38%)	29 (35%)	22 (27%)	0	0
32	X	61/63 (97%)	38 (62%)	15 (25%)	8 (13%)	0	5
33	Y	56/58 (97%)	35 (62%)	18 (32%)	3 (5%)	2	19

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
34	Z	68/70 (97%)	37 (54%)	22 (32%)	9 (13%)	0	5
All	All	3739/3826 (98%)	1939 (52%)	1037 (28%)	763 (20%)	0	2

5 of 763 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	0	31	LYS
1	0	35	GLU
1	0	45	ASP
2	1	12	SER
2	1	23	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	
1	0	47/47 (100%)	33 (70%)	14 (30%)	0	2
2	1	48/48 (100%)	33 (69%)	15 (31%)	0	2
3	2	38/38 (100%)	28 (74%)	10 (26%)	0	3
4	3	51/51 (100%)	40 (78%)	11 (22%)	1	6
5	4	34/34 (100%)	17 (50%)	17 (50%)	0	0
6	7	16/17 (94%)	16 (100%)	0	100	100
8	9	357/357 (100%)	329 (92%)	28 (8%)	12	36
11	C	213/213 (100%)	150 (70%)	63 (30%)	0	2
12	D	164/164 (100%)	113 (69%)	51 (31%)	0	2
13	E	165/165 (100%)	127 (77%)	38 (23%)	1	4
14	F	149/149 (100%)	122 (82%)	27 (18%)	1	10
15	G	137/137 (100%)	111 (81%)	26 (19%)	1	8
16	H	114/114 (100%)	90 (79%)	24 (21%)	1	6
17	I	109/109 (100%)	104 (95%)	5 (5%)	27	52
18	J	114/114 (100%)	85 (75%)	29 (25%)	0	3

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
19	K	102/102 (100%)	81 (79%)	21 (21%)	1	7
20	L	103/103 (100%)	68 (66%)	35 (34%)	0	1
21	M	109/109 (100%)	74 (68%)	35 (32%)	0	2
22	N	103/103 (100%)	76 (74%)	27 (26%)	0	3
23	O	87/87 (100%)	69 (79%)	18 (21%)	1	6
24	P	99/99 (100%)	67 (68%)	32 (32%)	0	2
25	Q	89/89 (100%)	71 (80%)	18 (20%)	1	7
26	R	84/84 (100%)	58 (69%)	26 (31%)	0	2
27	S	93/93 (100%)	77 (83%)	16 (17%)	2	11
28	T	83/83 (100%)	60 (72%)	23 (28%)	0	3
29	U	83/83 (100%)	60 (72%)	23 (28%)	0	3
30	V	78/78 (100%)	69 (88%)	9 (12%)	5	21
31	W	62/62 (100%)	45 (73%)	17 (27%)	0	3
32	X	55/55 (100%)	43 (78%)	12 (22%)	1	6
33	Y	48/48 (100%)	33 (69%)	15 (31%)	0	2
34	Z	62/62 (100%)	46 (74%)	16 (26%)	0	3
All	All	3096/3097 (100%)	2395 (77%)	701 (23%)	3	5

5 of 701 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
22	N	58	ASP
27	S	19	LEU
23	O	2	ASP
22	N	57	THR
24	P	97	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 96 such sidechains are listed below:

Mol	Chain	Res	Type
22	N	81	ASN
25	Q	80	ASN
23	O	34	HIS
24	P	11	GLN
26	R	86	GLN

### 5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
10	B	2837/2904 (97%)	481 (16%)	22 (0%)
7	8	68/74 (91%)	2 (2%)	1 (1%)
9	A	116/117 (99%)	20 (17%)	1 (0%)
All	All	3021/3095 (97%)	503 (16%)	24 (0%)

5 of 503 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
7	8	39	A
7	8	85	A
9	A	13	G
9	A	15	A
9	A	16	G

5 of 24 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
10	B	1211	C
10	B	2198	A
10	B	2076	U
10	B	2282	G
10	B	199	A

## 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](#)

Of 111 ligands modelled in this entry, 111 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
8	9	34
7	8	7

The worst 5 of 41 chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	8	86:G	O3'	87:G	P	10.90
1	9	315:GLN	C	316:ALA	N	5.35
1	8	22:U	O3'	23:G	P	4.45
1	9	352:GLY	C	353:LYS	N	4.18
1	9	370:ASP	C	371:LYS	N	3.83



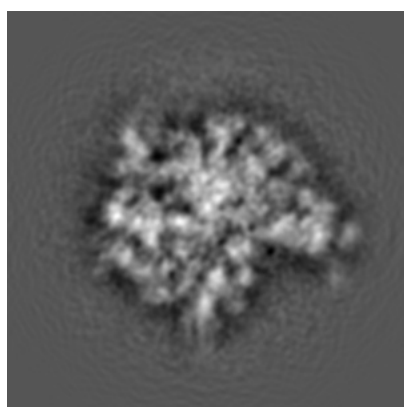
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-1261. These allow visual inspection of the internal detail of the map and identification of artifacts.

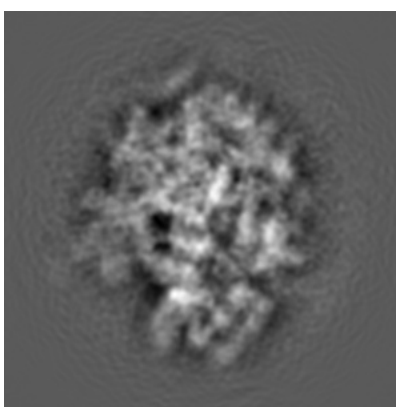
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

### 6.1 Orthogonal projections [i](#)

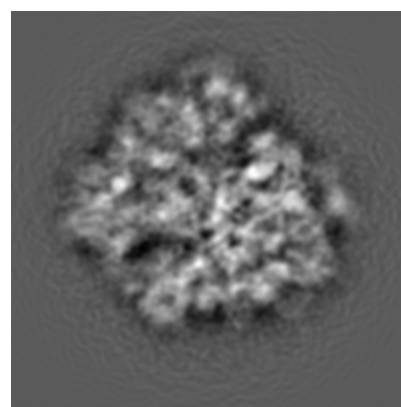
#### 6.1.1 Primary map



X



Y

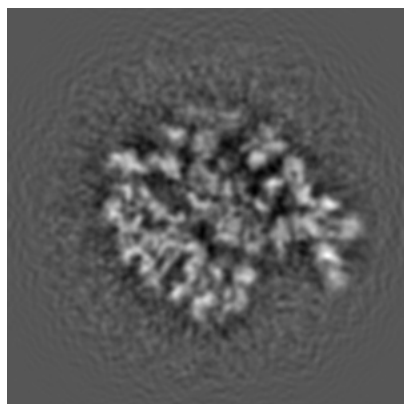


Z

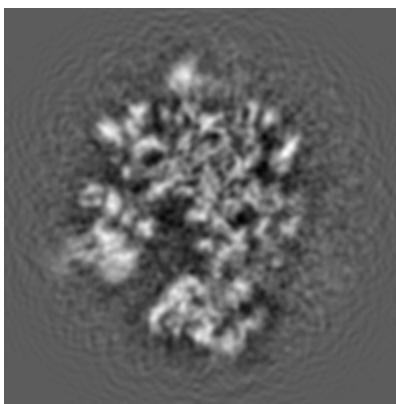
The images above show the map projected in three orthogonal directions.

### 6.2 Central slices [i](#)

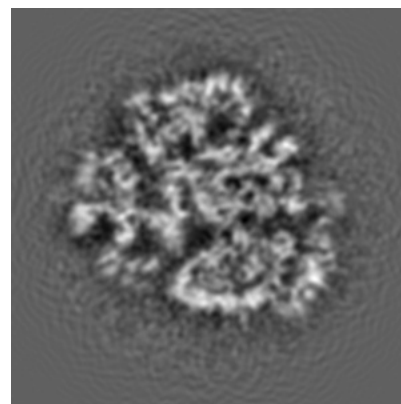
#### 6.2.1 Primary map



X Index: 147



Y Index: 147

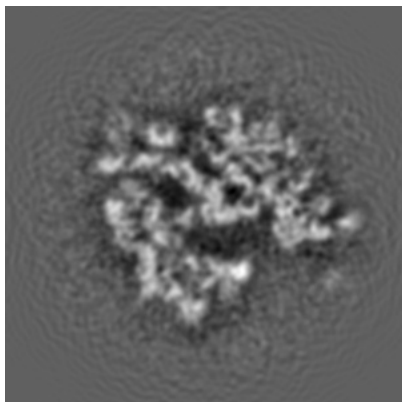


Z Index: 147

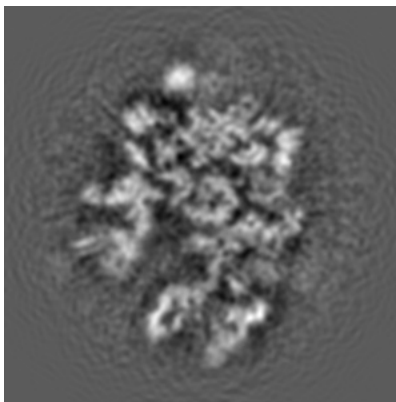
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [\(i\)](#)

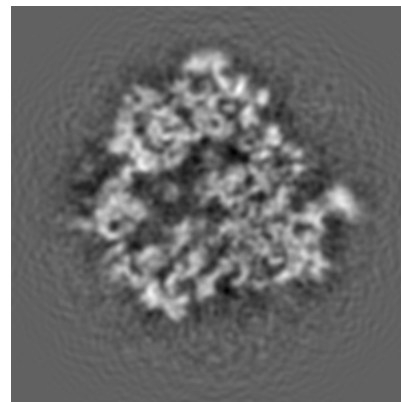
### 6.3.1 Primary map



X Index: 139



Y Index: 153

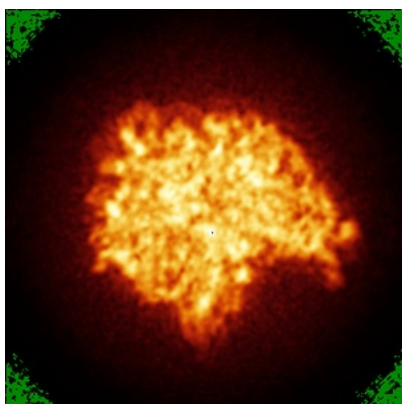


Z Index: 133

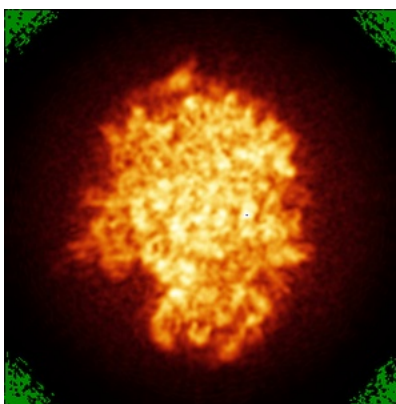
The images above show the largest variance slices of the map in three orthogonal directions.

## 6.4 Orthogonal standard-deviation projections (False-color) [\(i\)](#)

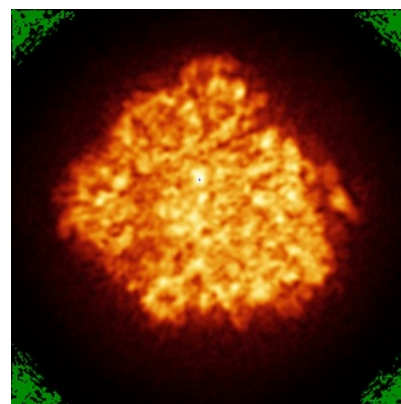
### 6.4.1 Primary map



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 0.704. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

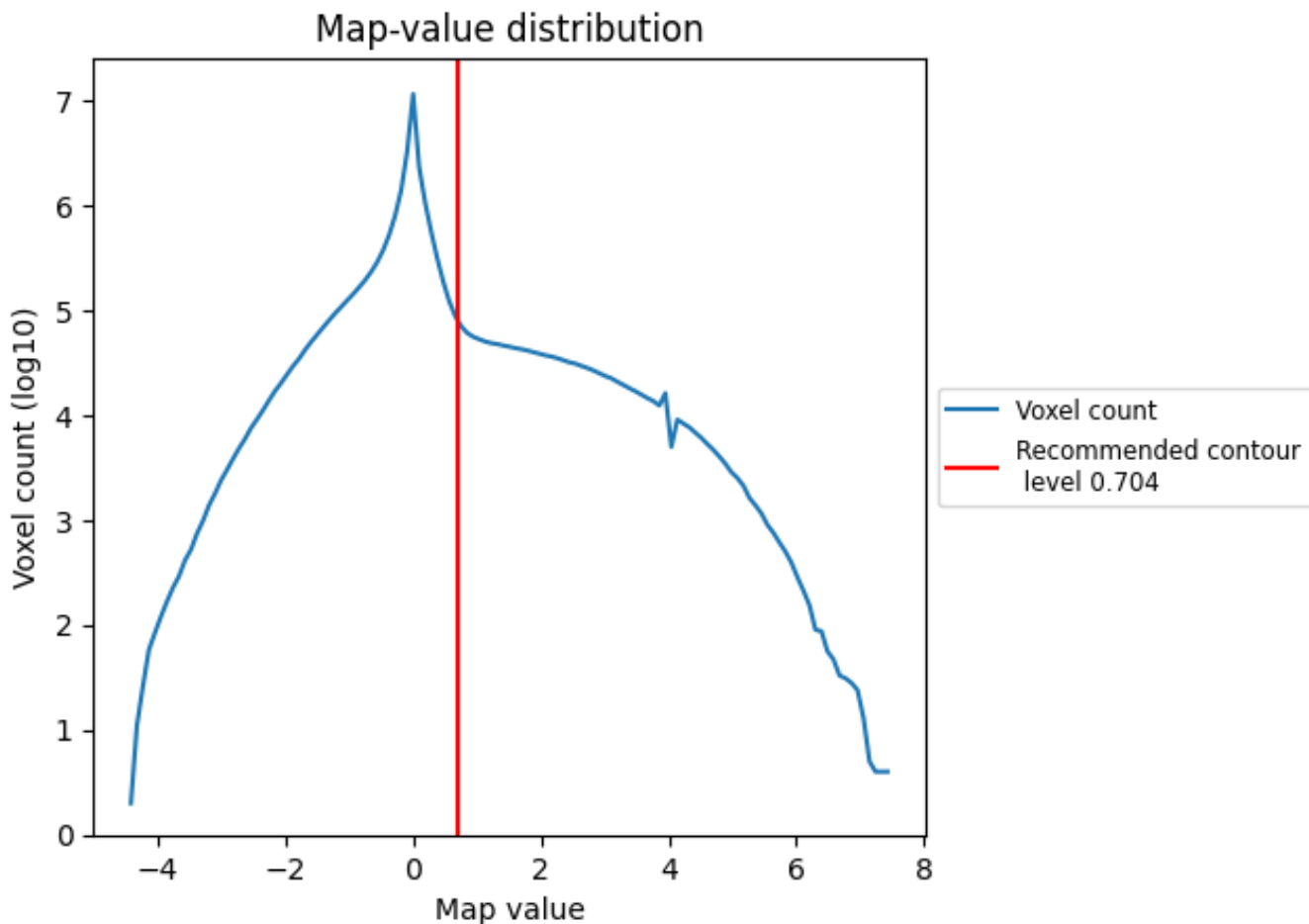
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

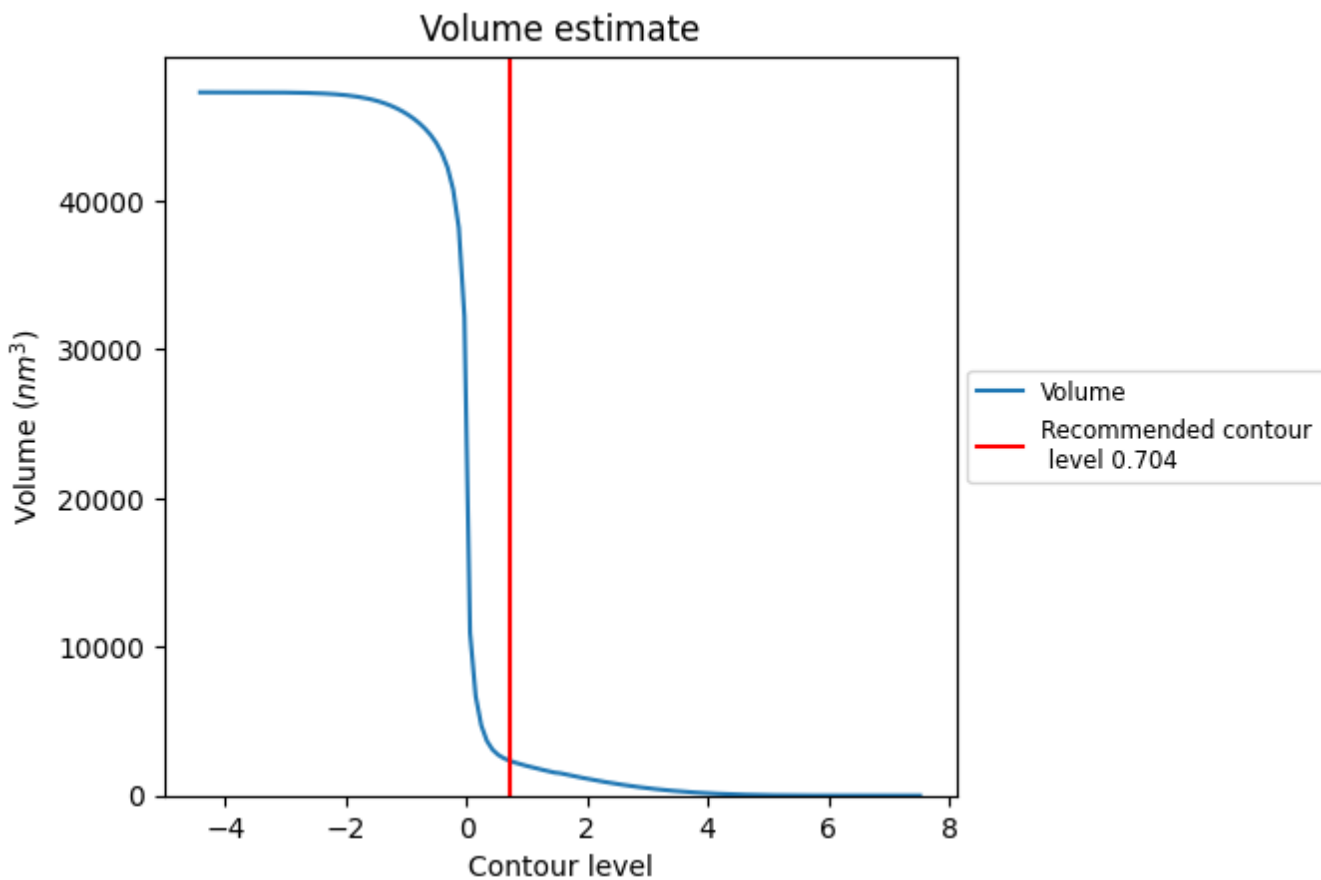
This section contains the results of statistical analysis of the map.

### 7.1 Map-value distribution [i](#)



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.

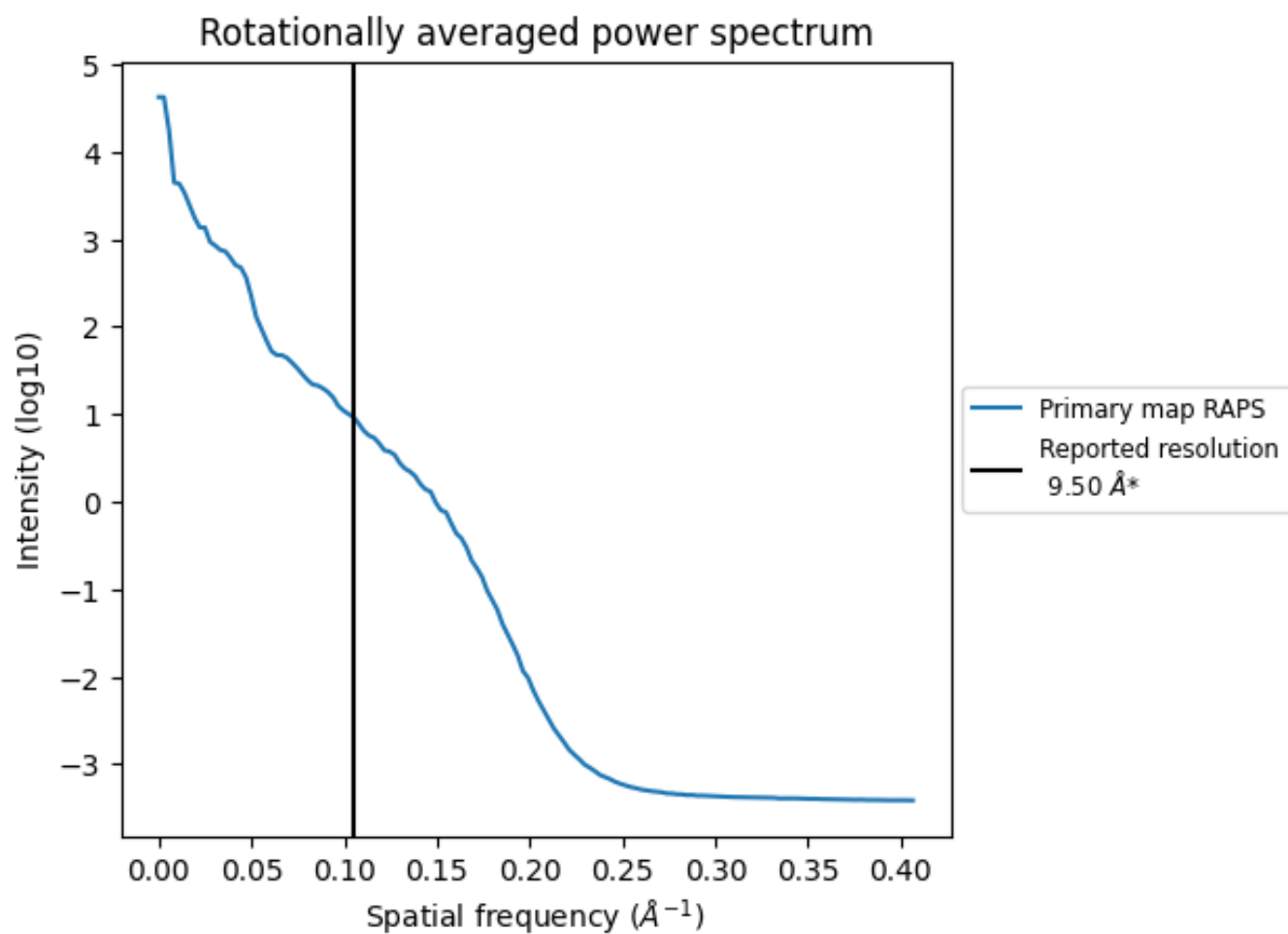
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 2362  $\text{nm}^3$ ; this corresponds to an approximate mass of 2133 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 0.105 Å<sup>-1</sup>

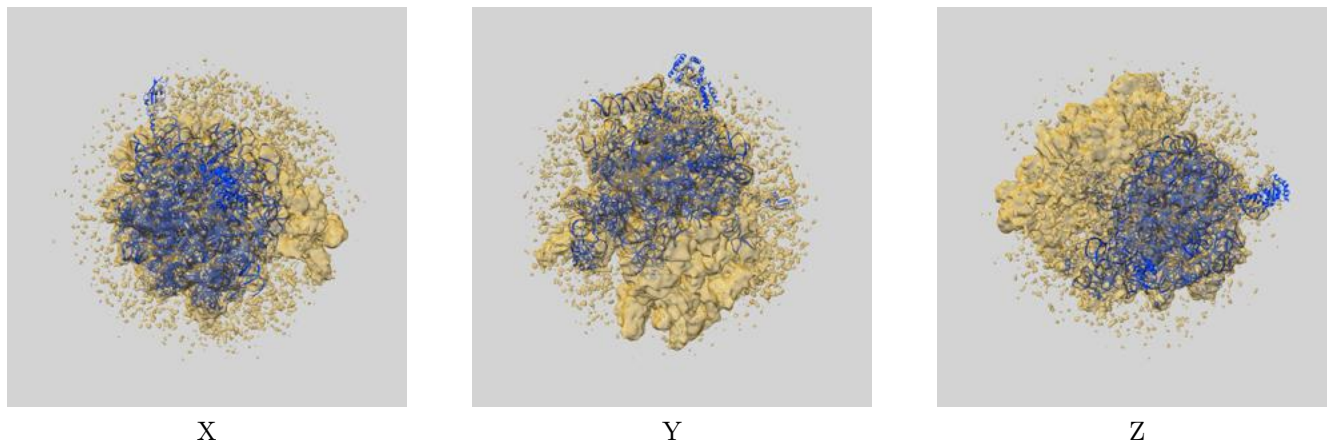
## 8 Fourier-Shell correlation

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

## 9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-1261 and PDB model 2J28. Per-residue inclusion information can be found in section 3 on page 11.

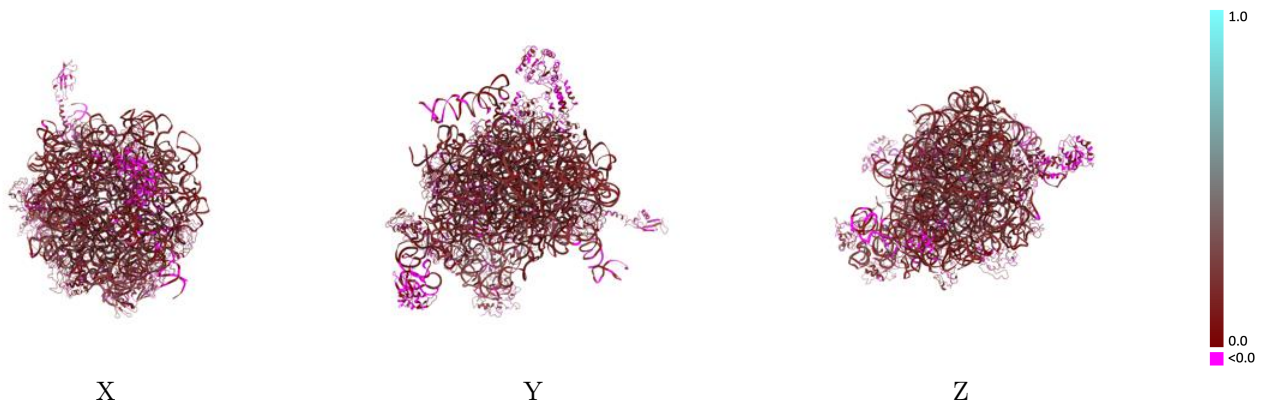
### 9.1 Map-model overlay [i](#)



The images above show the 3D surface view of the map at the recommended contour level 0.704 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

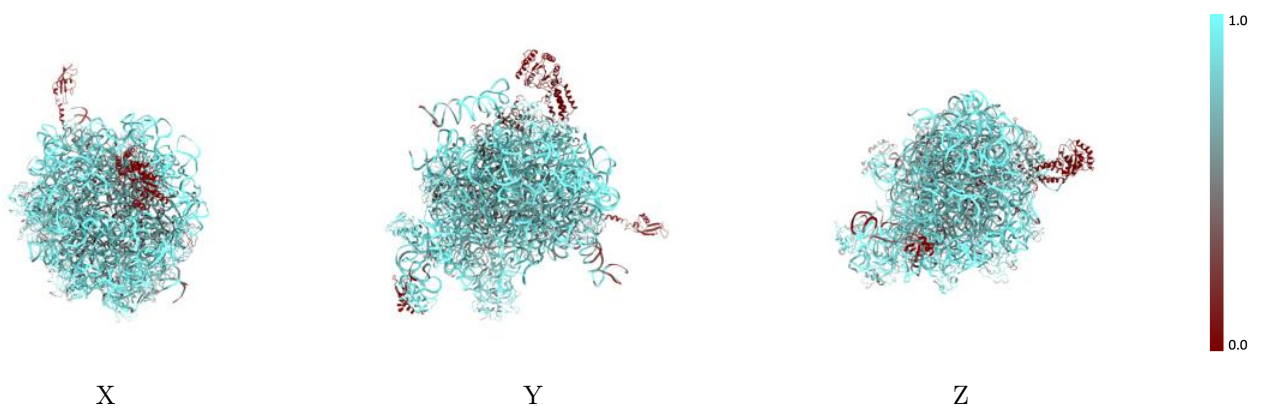


## 9.2 Q-score mapped to coordinate model [i](#)



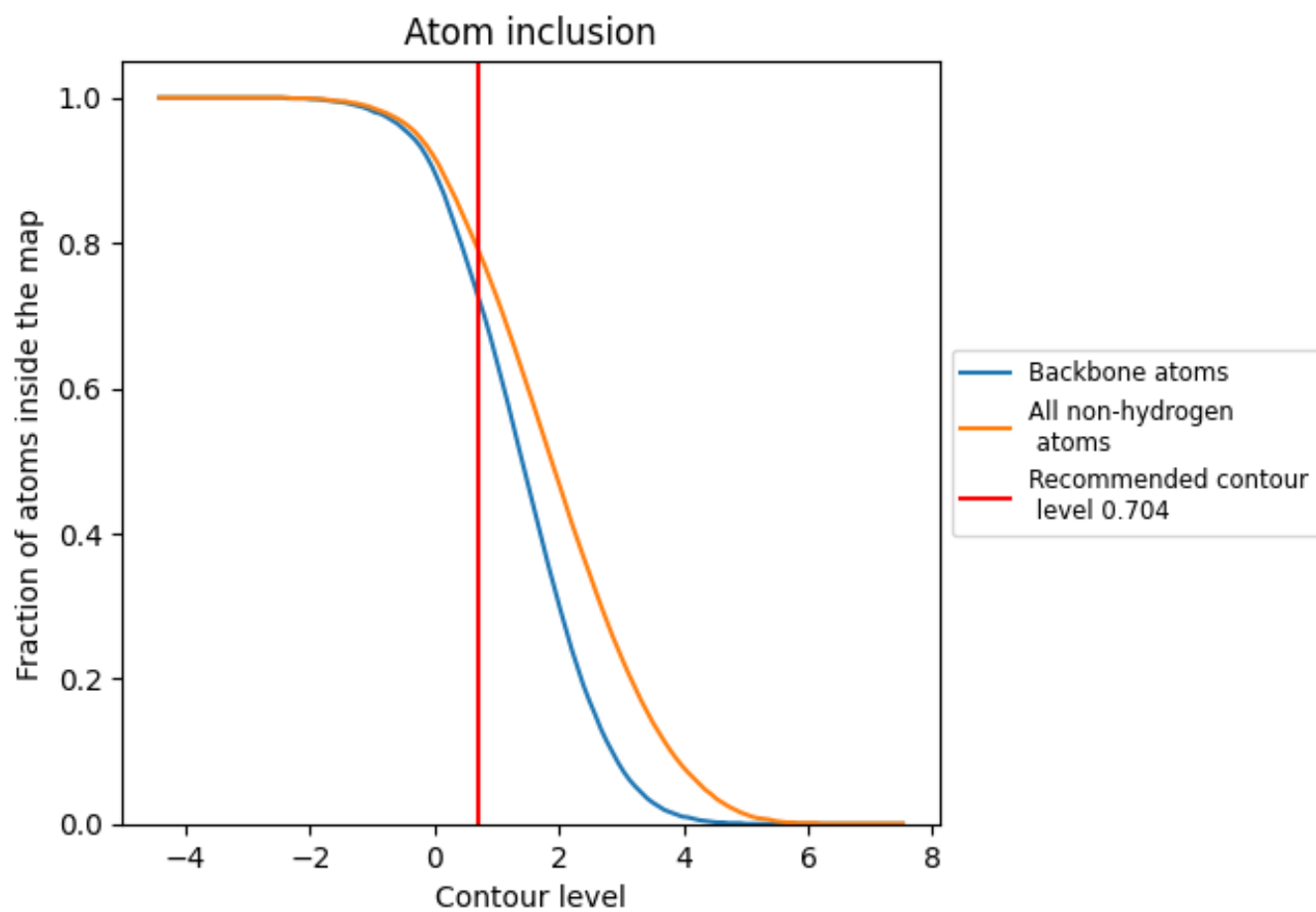
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

## 9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.704).







































































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 73% of all backbone atoms, 79% of all non-hydrogen atoms, are inside the map.

## 9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.704) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.7900	 0.1360
0	 0.5650	 0.1120
1	 0.5960	 0.0850
2	 0.4000	 0.0530
3	 0.4480	 0.0630
4	 0.4970	 0.0260
7	 0.5950	 0.0850
8	 0.8180	 0.0720
9	 0.2180	 0.0320
A	 0.9270	 0.1450
B	 0.8850	 0.1620
C	 0.5080	 0.0890
D	 0.6620	 0.1090
E	 0.6370	 0.0940
F	 0.8210	 0.0830
G	 0.8440	 0.1180
H	 0.2560	 0.0760
I	 0.5790	 0.0280
J	 0.6090	 0.1000
K	 0.6120	 0.1300
L	 0.5820	 0.0790
M	 0.5830	 0.0830
N	 0.6360	 0.1020
O	 0.7940	 0.0830
P	 0.6000	 0.1020
Q	 0.6560	 0.0990
R	 0.6910	 0.1060
S	 0.5800	 0.1180
T	 0.5930	 0.1040
U	 0.7260	 0.0880
V	 0.8860	 0.1160
W	 0.5240	 0.0560
X	 0.7280	 0.1110
Y	 0.7620	 0.1380
Z	 0.5910	 0.0890

