



# wwPDB EM Validation Summary Report ⓘ

Feb 22, 2024 – 11:57 AM EST

PDB ID : 4V4N  
EMDB ID : EMD-5691  
Title : Structure of the Methanococcus jannaschii ribosome-SecYEBeta channel complex  
Authors : Menetret, J.F.; Park, E.; Gumbart, J.C.; Ludtke, S.J.; Li, W.; Whynot, A.; Rapoport, T.A.; Akey, C.W.  
Deposited on : 2013-06-17  
Resolution : 9.00 Å (reported)  
Based on initial models : 3J20, 3J2L, 1RHZ, 3J21

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>.

---

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

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

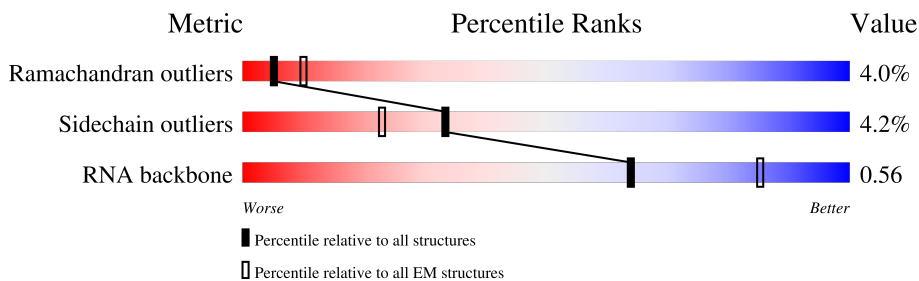
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 9.00 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.



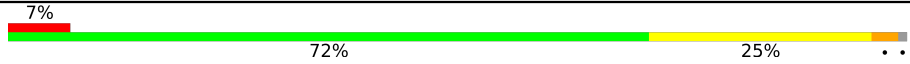







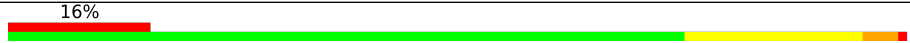

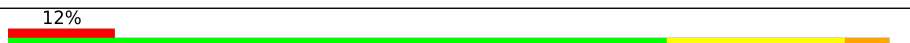


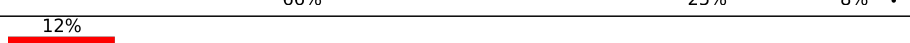
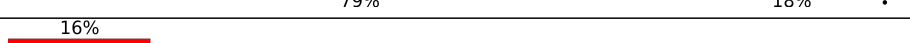
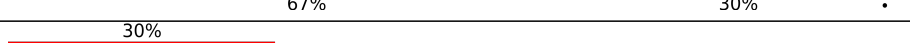
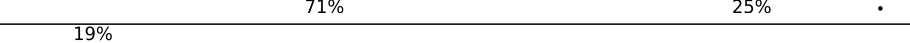
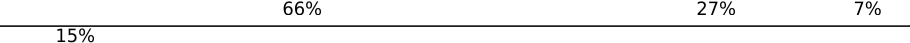
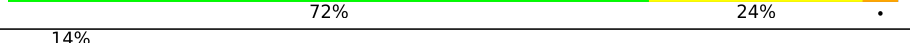






Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

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	A7	67	
2	A8	52	
3	Af	51	
4	AQ	150	
5	AS	150	
6	AT	84	
7	AU	121	
8	AW	72	

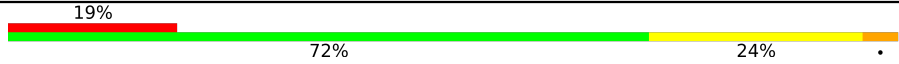
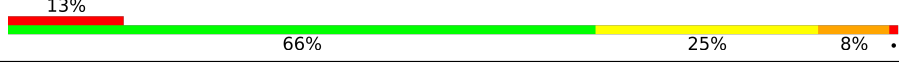
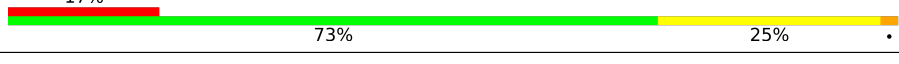



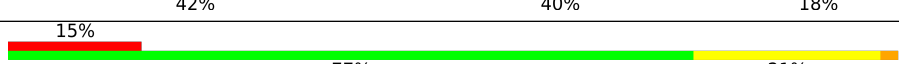
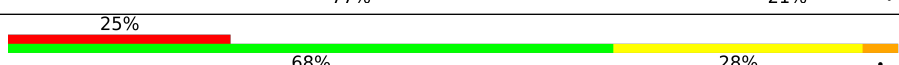
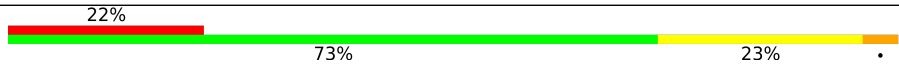


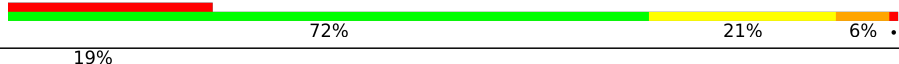
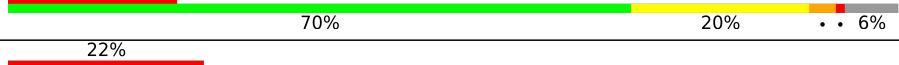

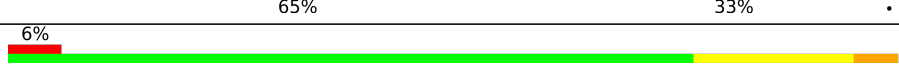










Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
9	AX	436	
10	B1	77	
11	B2	1495	
12	AG	123	
12	B3	123	
13	BA	190	
14	BB	202	
15	BC	186	
16	BD	172	
17	BE	241	
18	BF	217	
19	BG	125	
20	BH	215	
21	BI	129	
22	BJ	127	
23	BK	135	
24	BL	102	
25	BM	133	
26	BN	145	
27	BO	148	
28	BP	56	
29	BQ	158	
30	BR	113	
31	BS	67	
32	BT	111	

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
33	BU	144	
34	BV	99	
35	BW	63	
36	BX	71	
37	BY	50	
38	A1	3049	
39	A3	126	
40	A5	81	
40	AK	81	
41	AA	216	
42	Aa	92	
43	AB	239	
44	Ab	127	
45	AC	365	
46	AD	255	
47	Ad	89	
48	AE	186	
49	Ae	62	
50	AF	184	
51	Ag	45	
52	AH	134	
53	Ah	24	
54	AI	142	
55	Ai	78	
56	AJ	132	

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
57	Aj	94	
58	Ak	212	
59	AL	147	
60	AM	194	
61	AN	168	
62	AO	197	
63	AP	120	
64	AR	95	
65	AV	66	
66	AY	155	
67	AZ	99	

## 2 Entry composition [i](#)

There are 67 unique types of molecules in this entry. The entry contains 171094 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 Preprotein translocase subunit SecE.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A7	65	525	348	85	91	1	0	0

- Molecule 2 is a protein called Preprotein translocase subunit SecG.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
2	A8	32	258	172	42	44	0	0

- Molecule 3 is a protein called 50S ribosomal protein L39E.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	Af	51	445	284	98	62	1	0	0

- Molecule 4 is a protein called 50S ribosomal protein L19E.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	AQ	150	1256	794	255	202	5	0	0

- Molecule 5 is a protein called 50S ribosomal protein L22P.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	AS	150	1200	764	230	202	4	0	0

- Molecule 6 is a protein called 50S ribosomal protein L23P.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
6	AT	84	680	440	118	122	0	0

- Molecule 7 is a protein called 50S ribosomal protein L24P.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	AU	121	Total	C	N	O	S	0	0
			1008	637	195	172	4		

- Molecule 8 is a protein called 50S ribosomal protein L29P.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	AW	66	Total	C	N	O	S	0	0
			546	338	105	99	4		

- Molecule 9 is a protein called Protein translocase subunit SecY.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	AX	432	Total	C	N	O	S	0	0
			3309	2210	521	559	19		

- Molecule 10 is a RNA chain called E-tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	B1	77	Total	C	N	O	P	0	0
			1646	734	303	533	76		

- Molecule 11 is a RNA chain called 16S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	B2	1495	Total	C	N	O	P	0	0
			32132	14297	5954	10387	1494		

- Molecule 12 is a protein called 30S ribosomal protein L7AE.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	B3	123	Total	C	N	O	S	0	0
			939	599	155	181	4		
12	AG	123	Total	C	N	O	S	0	0
			939	599	155	181	4		

- Molecule 13 is a protein called 30S ribosomal protein S3AE.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	BA	190	Total	C	N	O	S	0	0
			1559	1007	273	274	5		

- Molecule 14 is a protein called 30S ribosomal protein S2P.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
14	BB	202	1623	1046	282	290	5	0	0

- Molecule 15 is a protein called 30S ribosomal protein S3P.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
15	BC	186	1460	933	271	252	4	0	0

- Molecule 16 is a protein called 30S ribosomal protein S4P.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
16	BD	172	1434	902	273	255	4	0	0

- Molecule 17 is a protein called 30S ribosomal protein S4E.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
17	BE	241	1976	1277	355	339	5	0	0

- Molecule 18 is a protein called 30S ribosomal protein S5P.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
18	BF	217	1717	1084	319	306	8	0	0

- Molecule 19 is a protein called 30S ribosomal protein S6E.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
19	BG	125	984	623	180	179	2	0	0

- Molecule 20 is a protein called 30S ribosomal protein S7P.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
20	BH	215	1736	1100	326	302	8	0	0

- Molecule 21 is a protein called 30S ribosomal protein S8P.



Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
21	BI	129	1028	668	178	180	2	0	0

- Molecule 22 is a protein called 30S ribosomal protein S8E.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
22	BJ	127	1004	622	207	174	1	0	0

- Molecule 23 is a protein called 30S ribosomal protein S9P.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
23	BK	135	1072	671	205	190	6	0	0

- Molecule 24 is a protein called 30S ribosomal protein S10P.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
24	BL	102	822	507	159	152	4	0	0

- Molecule 25 is a protein called 30S ribosomal protein S11P.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
25	BM	133	1004	623	200	179	2	0	0

- Molecule 26 is a protein called 30S ribosomal protein S12P.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
26	BN	145	1141	722	223	193	3	0	0

- Molecule 27 is a protein called 30S ribosomal protein S13P.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
27	BO	148	1189	746	237	200	6	0	0

- Molecule 28 is a protein called 30S ribosomal protein S14P.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	BP	56	Total	C	N	O	S	0	0
			462	292	95	69	6		

- Molecule 29 is a protein called 30S ribosomal protein S15P/S13E.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	BQ	158	Total	C	N	O	S	0	0
			1310	834	250	221	5		

- Molecule 30 is a protein called 30S ribosomal protein S17P.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	BR	113	Total	C	N	O	S	0	0
			934	592	177	160	5		

- Molecule 31 is a protein called 30S ribosomal protein S17E.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	BS	67	Total	C	N	O	S	0	0
			556	353	105	95	3		

- Molecule 32 is a protein called 30S ribosomal protein S19P.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	BT	111	Total	C	N	O	S	0	0
			924	594	173	151	6		

- Molecule 33 is a protein called 30S ribosomal protein S19E.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	BU	144	Total	C	N	O	S	0	0
			1176	758	212	205	1		

- Molecule 34 is a protein called 30S ribosomal protein S24E.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	BV	99	Total	C	N	O	S	0	0
			823	532	134	154	3		

- Molecule 35 is a protein called 30S ribosomal protein S27E.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	BW	63	Total	C	N	O	S	0	0
			478	306	85	81	6		

- Molecule 36 is a protein called 30S ribosomal protein S28E.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	BX	71	Total	C	N	O	S	0	0
			568	345	115	107	1		

- Molecule 37 is a protein called 30S ribosomal protein S27AE.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	BY	50	Total	C	N	O	S	0	0
			409	262	75	66	6		

- Molecule 38 is a RNA chain called 23S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	A1	2969	Total	C	N	O	P	0	0
			63885	28427	11905	20589	2964		

- Molecule 39 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	A3	126	Total	C	N	O	P	0	0
			2691	1199	492	875	125		

- Molecule 40 is a protein called 50S ribosomal protein L14E.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	A5	81	Total	C	N	O	S	0	0
			614	386	119	108	1		
40	AK	81	Total	C	N	O	S	0	0
			614	386	119	108	1		

- Molecule 41 is a protein called 50S ribosomal protein L1P.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	AA	216	Total	C	N	O	S	0	0
			1677	1068	300	304	5		

- Molecule 42 is a protein called 50S ribosomal protein L31E.

Mol	Chain	Residues	Atoms				AltConf	Trace
42	Aa	82	Total	C	N	O	0	0
			677	444	126	107		

- Molecule 43 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	AB	239	Total	C	N	O	S	0	0
			1838	1169	347	317	5		

- Molecule 44 is a protein called 50S ribosomal protein L32E.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	Ab	127	Total	C	N	O	S	0	0
			1075	689	217	168	1		

- Molecule 45 is a protein called 50S ribosomal protein L3P.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	AC	342	Total	C	N	O	S	0	0
			2717	1741	495	467	14		

- Molecule 46 is a protein called 50S ribosomal protein L4P.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	AD	255	Total	C	N	O	S	0	0
			2026	1288	391	342	5		

- Molecule 47 is a protein called 50S ribosomal protein L34E.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	Ad	89	Total	C	N	O	S	0	0
			740	463	158	108	11		

- Molecule 48 is a protein called 50S ribosomal protein L5P.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	AE	186	Total	C	N	O	S	0	0
			1489	937	278	265	9		

- Molecule 49 is a protein called 50S ribosomal protein L37E.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	Ae	62	Total	C	N	O	S	0	0
			506	312	111	78	5		

- Molecule 50 is a protein called 50S ribosomal protein L6P.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	AF	184	Total	C	N	O	S	0	0
			1476	956	252	266	2		

- Molecule 51 is a protein called 50S ribosomal protein L40E.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	Ag	45	Total	C	N	O	S	0	0
			372	236	76	56	4		

- Molecule 52 is a protein called 50S ribosomal protein L11P.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	AH	134	Total	C	N	O	S	0	0
			989	635	164	184	6		

- Molecule 53 is a protein called 50S ribosomal protein L41E.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	Ah	24	Total	C	N	O	S	0	0
			230	147	54	28	1		

- Molecule 54 is a protein called 50S ribosomal protein L13P.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	AI	142	Total	C	N	O	S	0	0
			1150	737	215	195	3		

- Molecule 55 is a protein called 50S ribosomal protein L37AE.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	Ai	78	Total	C	N	O	S	0	0
			590	368	122	95	5		

- Molecule 56 is a protein called 50S ribosomal protein L14P.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
56	AJ	132	1014	631	204	176	3	0	0

- Molecule 57 is a protein called 50S ribosomal protein L44E.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
57	Aj	94	788	499	162	122	5	0	0

- Molecule 58 is a protein called 50S ribosomal protein P0/L10E.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
58	AK	212	1633	1051	272	304	6	0	0

- Molecule 59 is a protein called 50S ribosomal protein L15P.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
59	AL	147	1154	727	227	195	5	0	0

- Molecule 60 is a protein called 50S ribosomal protein L15E.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
60	AM	194	1595	1020	316	253	6	0	0

- Molecule 61 is a protein called 50S ribosomal protein L10E/L16.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
61	AN	168	1379	872	268	233	6	0	0

- Molecule 62 is a protein called 50S ribosomal protein L18P.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
62	AO	197	1598	1021	299	275	3	0	0

- Molecule 63 is a protein called 50S ribosomal protein L18E.

Mol	Chain	Residues	Atoms					AltConf	Trace
63	AP	120	Total	C	N	O	S	0	0
			966	606	186	171	3		

- Molecule 64 is a protein called 50S ribosomal protein L21E.

Mol	Chain	Residues	Atoms					AltConf	Trace
64	AR	95	Total	C	N	O	S	0	0
			787	501	160	125	1		

- Molecule 65 is a protein called 50S ribosomal protein L24E.

Mol	Chain	Residues	Atoms					AltConf	Trace
65	AV	66	Total	C	N	O	S	0	0
			555	351	106	91	7		

- Molecule 66 is a protein called 50S ribosomal protein L30P.

Mol	Chain	Residues	Atoms					AltConf	Trace
66	AY	155	Total	C	N	O	S	0	0
			1243	788	235	213	7		

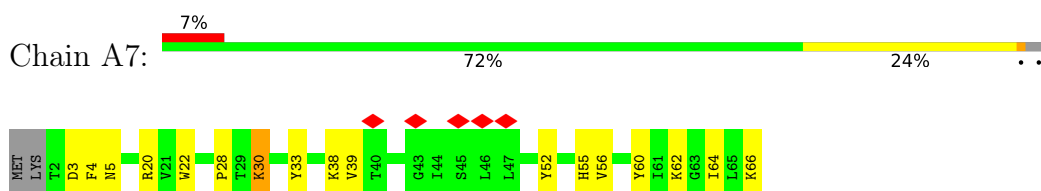
- Molecule 67 is a protein called 50S ribosomal protein L30E.

Mol	Chain	Residues	Atoms					AltConf	Trace
67	AZ	99	Total	C	N	O	S	0	0
			754	489	121	142	2		

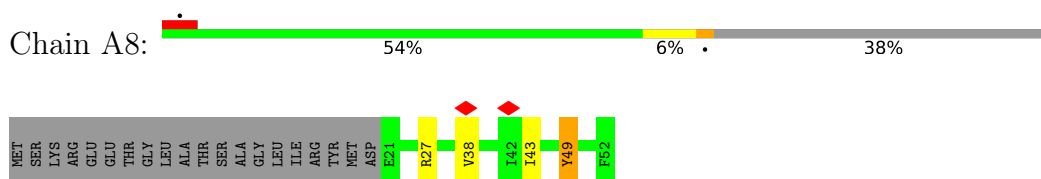
### 3 Residue-property plots [i](#)

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.

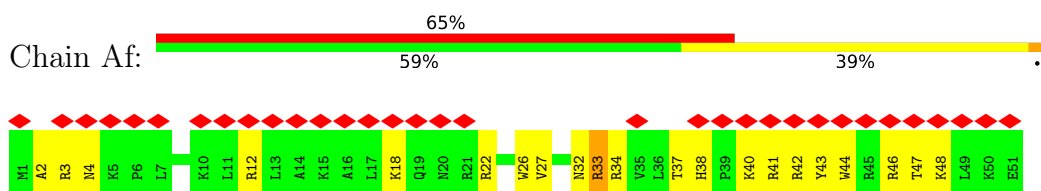
- Molecule 1: Preprotein translocase subunit SecE



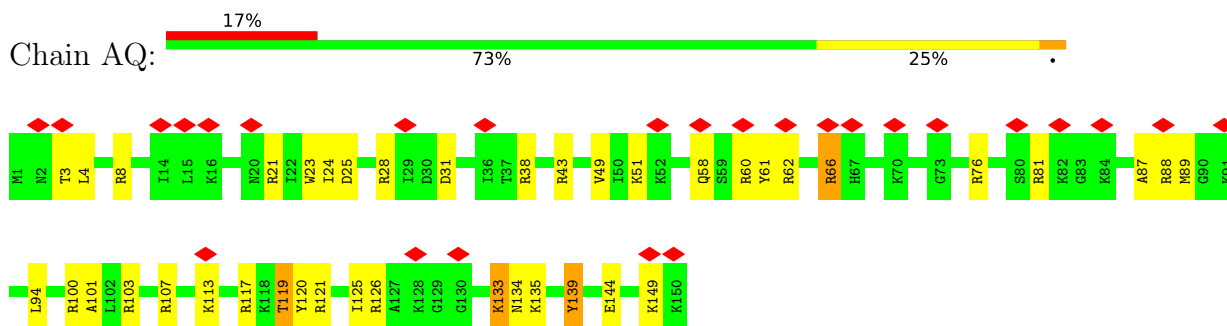
- Molecule 2: Preprotein translocase subunit SecG



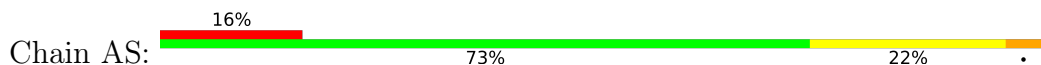
- Molecule 3: 50S ribosomal protein L39E



- Molecule 4: 50S ribosomal protein L19E



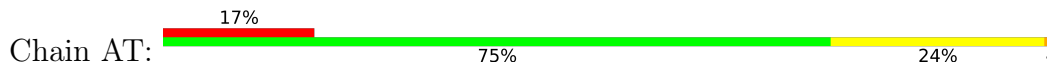
- Molecule 5: 50S ribosomal protein L22P



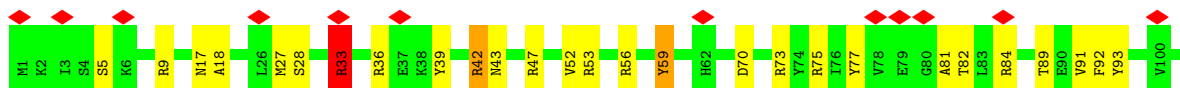
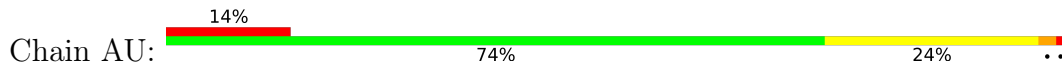




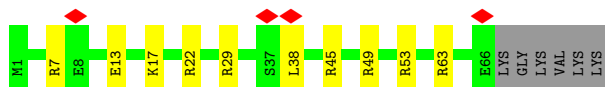
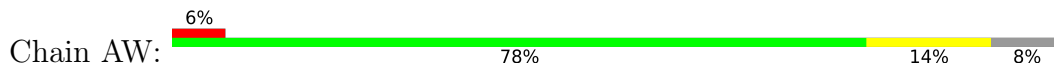
• Molecule 6: 50S ribosomal protein L23P



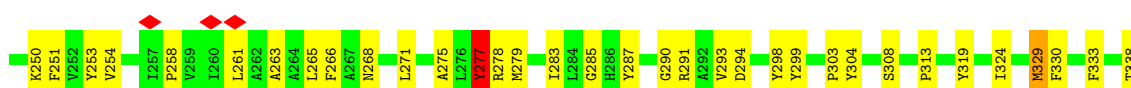
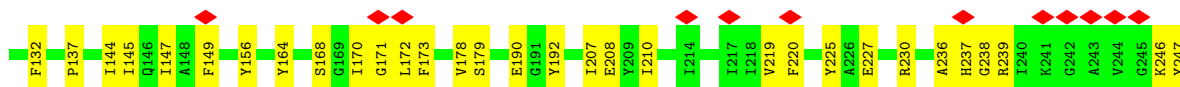
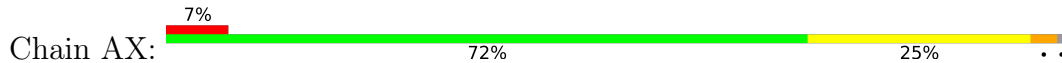
• Molecule 7: 50S ribosomal protein L24P

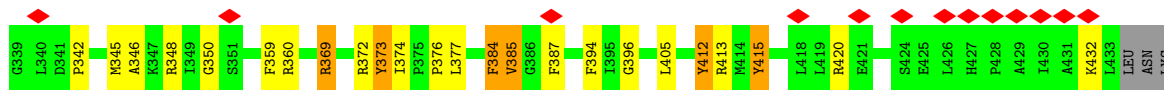


• Molecule 8: 50S ribosomal protein L29P

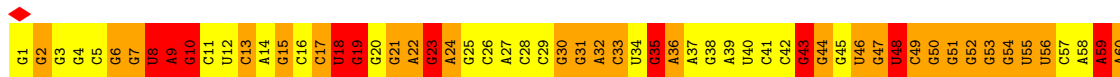
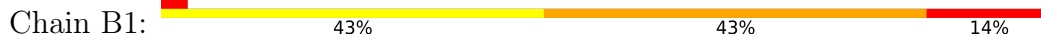


• Molecule 9: Protein translocase subunit SecY

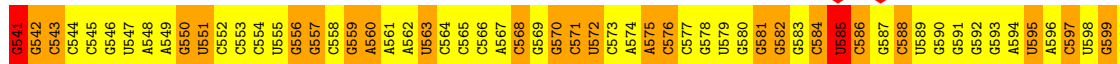
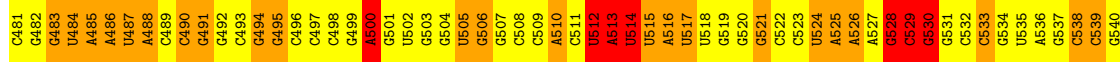
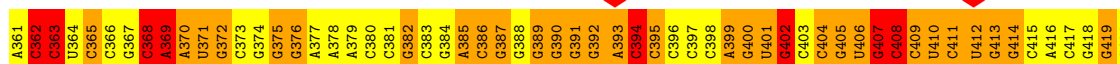
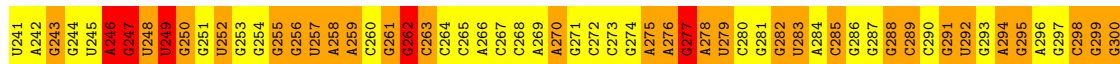
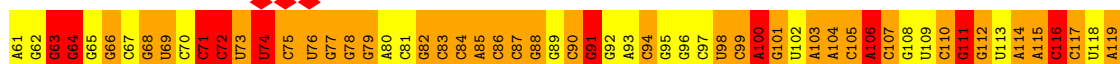




• Molecule 10: E-tRNA

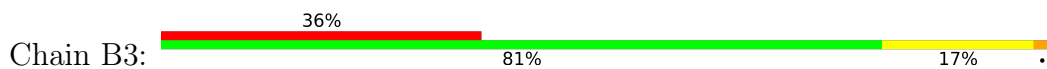


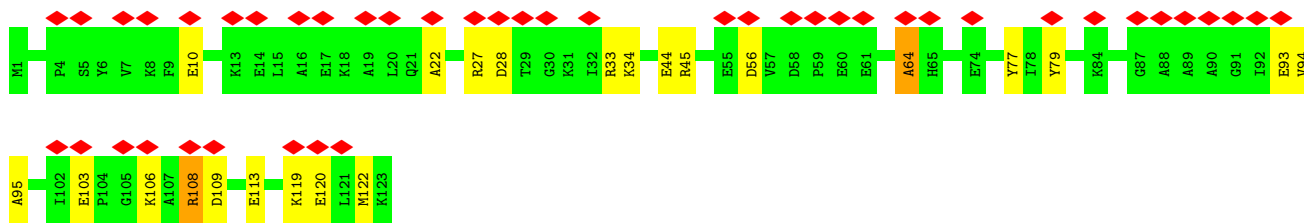
• Molecule 11: 16S ribosomal RNA



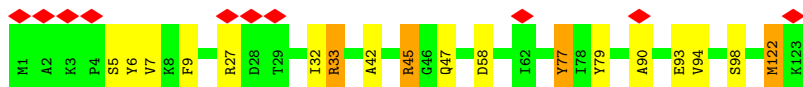
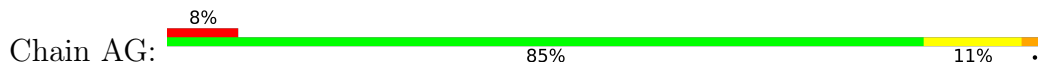
G1441	G1442	G1443	G1444	G1445	G1446	G1447	G1448	G1449	G1450	G1451	G1452	G1453	G1454	G1455	G1456	G1457	G1458	G1459	G1460	G1461	G1462	G1463	G1464	G1465	G1466	G1467	G1468	G1469	G1470	G1471	G1472	G1473	G1474	G1475	G1476	G1477	G1478	G1479	G1480	G1481	G1482	G1483	G1484	G1485	G1486	G1487	G1488	G1489	G1490	G1491	G1492	G1493	G1494	G1495					
G1381	G1382	G1383	G1384	G1385	G1386	G1387	G1388	G1389	G1390	G1391	G1392	G1393	G1394	G1395	G1396	G1397	G1398	G1399	G1400	G1401	G1402	G1403	G1404	G1405	G1406	G1407	G1408	G1409	G1410	G1411	G1412	G1413	G1414	G1415	G1416	G1417	G1418	G1419	G1420	G1421	G1422	G1423	G1424	G1425	G1426	G1427	G1428	G1429	G1430	G1431	G1432	G1433	G1434	G1435	G1436	G1437	G1438	G1439	G1440
U1261	U1262	U1263	U1264	U1265	U1266	U1267	U1268	U1269	U1270	U1271	U1272	U1273	U1274	U1275	U1276	U1277	U1278	U1279	U1280	U1281	U1282	U1283	U1284	U1285	U1286	U1287	U1288	U1289	U1290	U1291	U1292	U1293	U1294	U1295	U1296	U1297	U1298	U1299	U1300	U1301	U1302	U1303	U1304	U1305	U1306	U1307	U1308	U1309	U1310	U1311	U1312	U1313	U1314	U1315	U1316	U1317	U1318	U1319	U1320
G1201	G1202	G1203	G1204	G1205	G1206	G1207	G1208	G1209	G1210	G1211	G1212	G1213	G1214	G1215	G1216	G1217	G1218	G1219	G1220	G1221	G1222	G1223	G1224	G1225	G1226	G1227	G1228	G1229	G1230	G1231	G1232	G1233	G1234	G1235	G1236	G1237	G1238	G1239	G1240	G1241	G1242	G1243	G1244	G1245	G1246	G1247	G1248	G1249	G1250	G1251	G1252	G1253	G1254	G1255	G1256	G1257	G1258	G1259	G1260
G1141	G1142	G1143	G1144	G1145	G1146	G1147	G1148	G1149	G1150	G1151	G1152	G1153	G1154	G1155	G1156	G1157	G1158	G1159	G1160	G1161	G1162	G1163	G1164	G1165	G1166	G1167	G1168	G1169	G1170	G1171	G1172	G1173	G1174	G1175	G1176	G1177	G1178	G1179	G1180	G1181	G1182	G1183	G1184	G1185	G1186	G1187	G1188	G1189	G1190	G1191	G1192	G1193	G1194	G1195	G1196	G1197	G1198	G1199	G1200
C1081	C1082	C1083	C1084	C1085	C1086	C1087	C1088	C1089	C1090	C1091	C1092	C1093	C1094	C1095	C1096	C1097	C1098	C1099	C1100	C1101	C1102	C1103	C1104	C1105	C1106	C1107	C1108	C1109	C1110	C1111	C1112	C1113	C1114	C1115	C1116	C1117	C1118	C1119	C1120	C1121	C1122	C1123	C1124	C1125	C1126	C1127	C1128	C1129	C1130	C1131	C1132	C1133	C1134	C1135	C1136	C1137	C1138	C1139	C1140
G1021	G1022	G1023	G1024	G1025	G1026	G1027	G1028	G1029	G1030	G1031	G1032	G1033	G1034	G1035	G1036	G1037	G1038	G1039	G1040	G1041	G1042	G1043	G1044	G1045	G1046	G1047	G1048	G1049	G1050	G1051	G1052	G1053	G1054	G1055	G1056	G1057	G1058	G1059	G1060	G1061	G1062	G1063	G1064	G1065	G1066	G1067	G1068	G1069	G1070	G1071	G1072	G1073	G1074	G1075	G1076	G1077	G1078	G1079	G1080
U961	G962	G963	G964	G965	G966	G967	G968	G969	G970	G971	G972	G973	G974	G975	G976	G977	G978	G979	G980	G981	G982	G983	G984	G985	G986	G987	G988	G989	G990	G991	G992	G993	G994	G995	G996	G997	G998	G999	G1000	G1001	G1002	G1003	G1004	G1005	G1006	G1007	G1008	G1009	G1010	G1011	G1012	G1013	G1014	G1015	G1016	G1017	G1018	G1019	G1020
G841	U842	G843	G844	G845	G846	G847	G848	G849	G850	G851	G852	G853	G854	G855	G856	G857	G858	G859	G860	G861	G862	G863	G864	G865	G866	G867	G868	G869	G870	G871	G872	G873	G874	G875	G876	G877	G878	G879	G880	G881	G882	G883	G884	G885	G886	G887	G888	G889	G890	G891	G892	G893	G894	G895	G896	G897	G898	G899	G900
U781	A782	G783	G784	G785	G786	G787	G788	G789	G790	G791	G792	G793	G794	G795	G796	G797	G798	G799	G800	G801	G802	G803	U804	G805	G806	G807	G808	G809	G810	G811	G812	G813	G814	G815	G816	G817	G818	G819	G820	G821	G822	G823	G824	G825	G826	G827	G828	G829	G830	G831	G832	G833	G834	G835	G836	G837	G838	G839	G840
C841	U842	G843	G844	G845	G846	G847	G848	G849	G850	G851	G852	G853	G854	G855	G856	G857	G858	G859	G860	G861	G862	G863	U864	G865	G866	G867	G868	G869	G870	G871	G872	G873	G874	G875	G876	G877	G878	G879	G880	G881	G882	G883	G884	G885	G886	G887	G888	G889	G890	G891	G892	G893	G894	G895	G896	G897	G898	G899	G900
G901	U902	G903	G904	G905	G906	G907	G908	G909	G910	G911	G912	G913	G914	G915	G916	G917	G918	G919	G920	G921	G922	G923	G924	G925	G926	G927	G928	G929	G930	G931	G932	G933	G934	G935	G936	G937	G938	G939	G940	G941	G942	G943	G944	G945	G946	G947	G948	G949	G950	G951	G952	G953	G954	G955	G956	G957	G958	G959	G960
G661	G662	G663	G664	G665	G666	G667	G668	G669	G670	G671	G672	G673	G674	G675	G676	G677	G678	G679	G680	G681	G682	G683	G684	G685	G686	G687	G688	G689	G690	G691	G692	G693	G694	G695	G696	G697	G698	G699	G700	G701	G702	G703	G704	G705	G706	G707	G708	G709	G710	G711	G712	G713	G714	G715	G716	G717	G718	G719	G720
A721	G722	G723	G724	G725	G726	G727	G728	G729	G730	A731	G732	G733	G734	A735	G736	G737	G738	G739	G740	A741	G742	G743	G744	G745	G746	G747	G748	G749	G750	G751	G752	G753	G754	G755	G756	G757	G758	G759	G760	G761	G762	G763	G764	G765	G766	G767	G768	G769	G770	G771	G772	G773	G774	G775	G776	G777	G778	G779	G780
U781	A782	G783	G784	G785	G786	G787	G788	G789	G790	G791	G792	G793	G794	G795	G796	G797	G798	G799	G800	G801	G802	G803	U804	G805	G806	G807	G808	G809	G810	G811	G812	G813	G814	G815	G816	G817	G818	G819	G820	G821	G822	G823	G824	G825	G826	G827	G828	G829	G830	G831	G832	G833	G834	G835	G836	G837	G838	G839	G840
C841	U842	G843	G844	G845	G846	G847	G848	G849	G850	G851	G852	G853	G854	G855	G856	G857	G858	G859	G860	G861	G862	G863	U864	G865	G866	G867	G868	G869	G870	G871	G872	G873	G874	G875	G876	G877	G878	G879	G880	G881	G882	G883	G884	G885	G886	G887	G888	G889	G890	G891	G892	G893	G894	G895	G896	G897	G898	G899	G900

• Molecule 12: 30S ribosomal protein L7AE

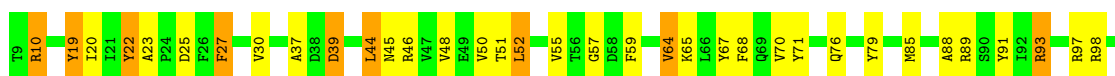




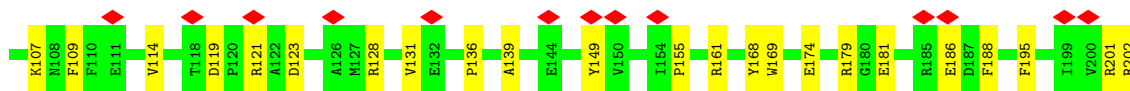
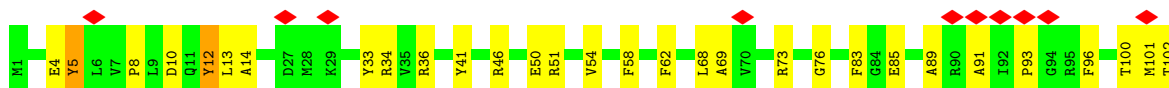
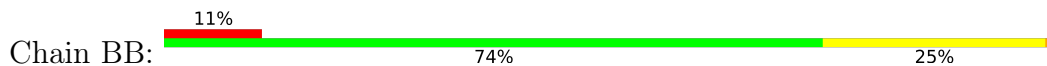
• Molecule 12: 30S ribosomal protein L7AE



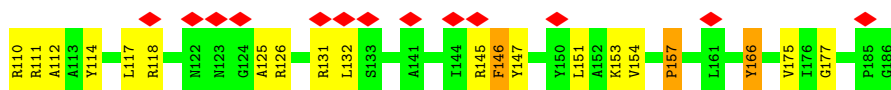
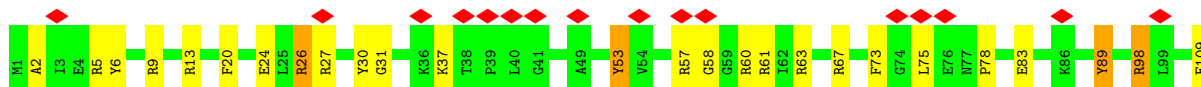
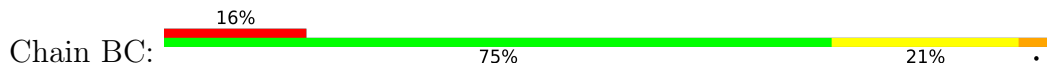
• Molecule 13: 30S ribosomal protein S3AE




• Molecule 14: 30S ribosomal protein S2P

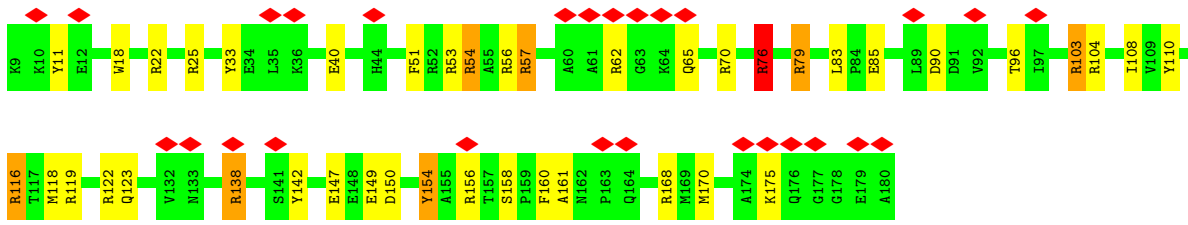


• Molecule 15: 30S ribosomal protein S3P



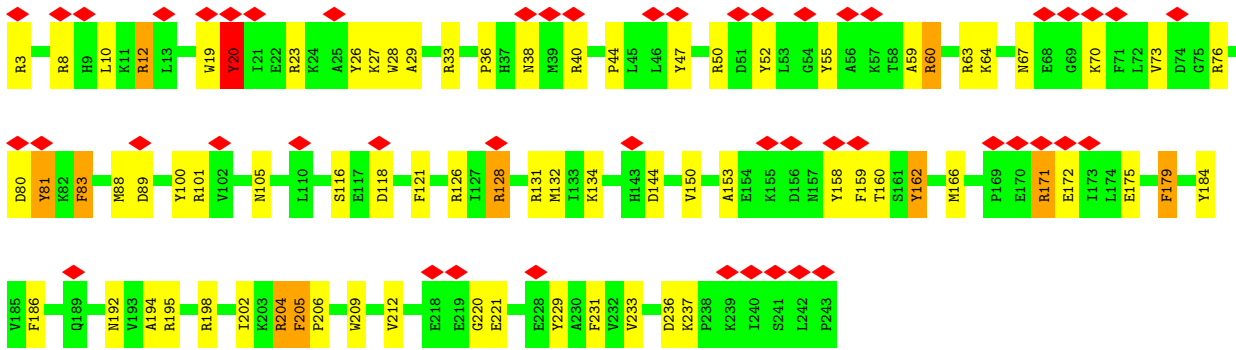
• Molecule 16: 30S ribosomal protein S4P

Chain BD: 




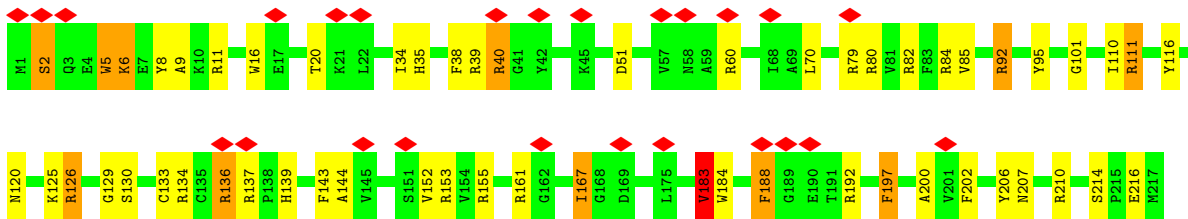
- Molecule 17: 30S ribosomal protein S4E

Chain BE: 




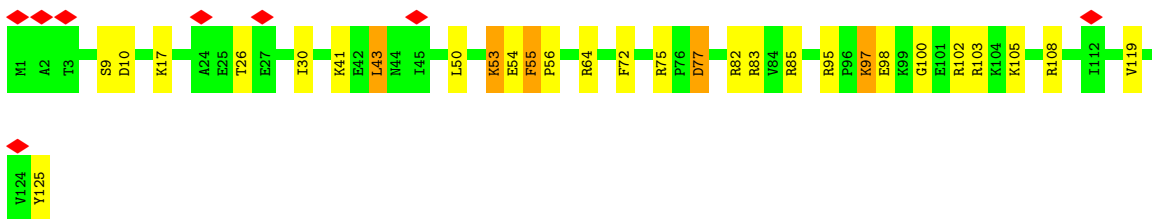
- Molecule 18: 30S ribosomal protein S5P

Chain BF: 



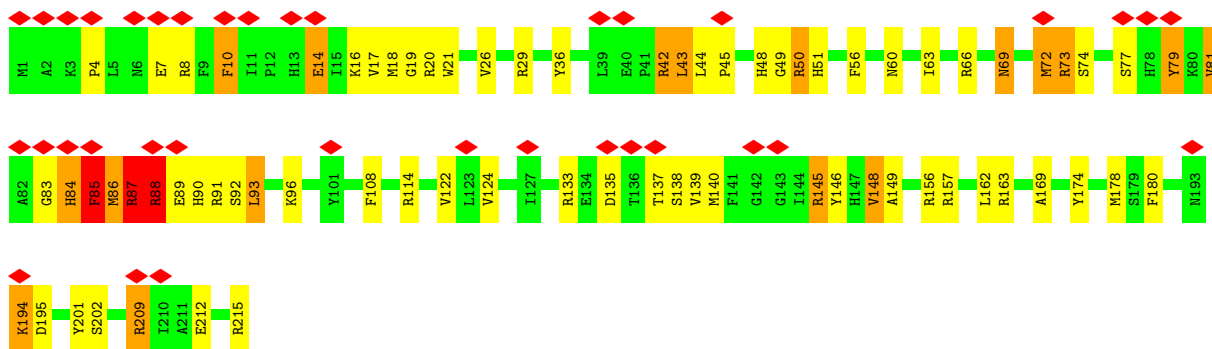
- Molecule 19: 30S ribosomal protein S6E

Chain BG: 

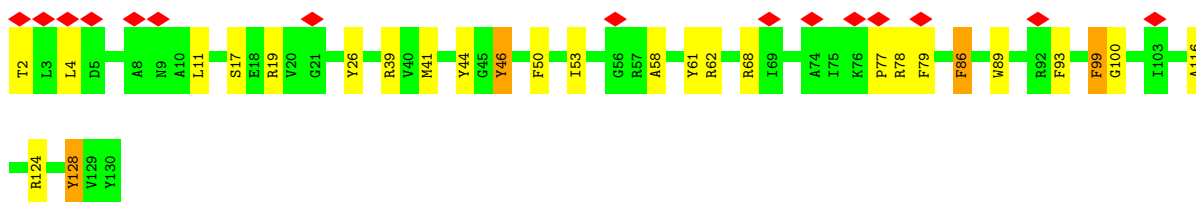
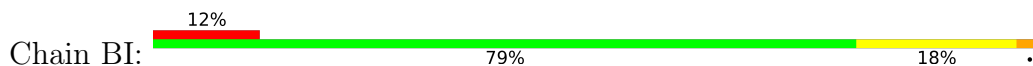


- Molecule 20: 30S ribosomal protein S7P

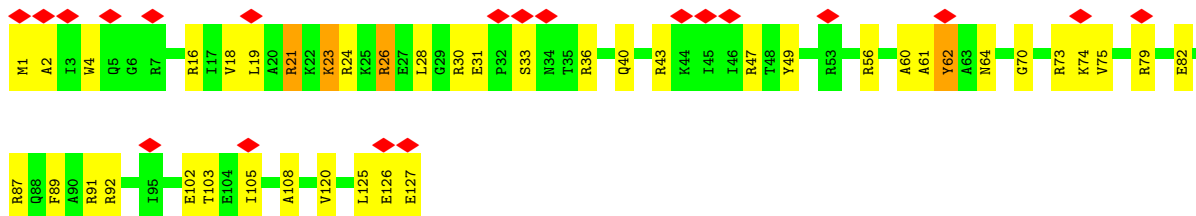
Chain BH: 



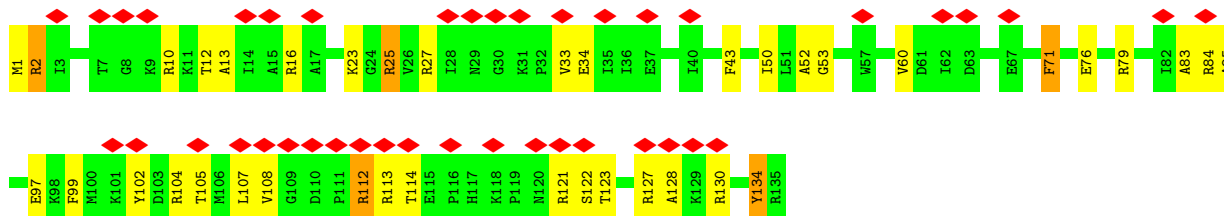
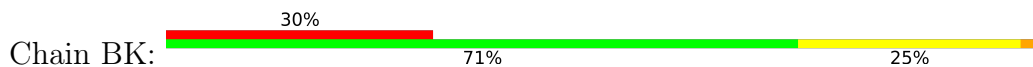
• Molecule 21: 30S ribosomal protein S8P



• Molecule 22: 30S ribosomal protein S8E

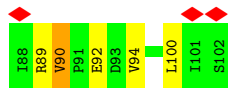
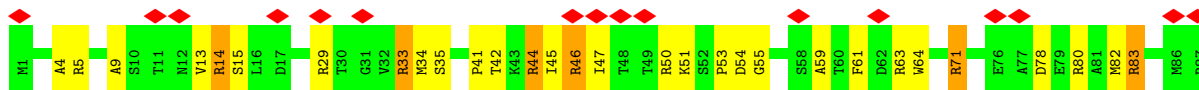


• Molecule 23: 30S ribosomal protein S9P

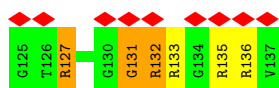
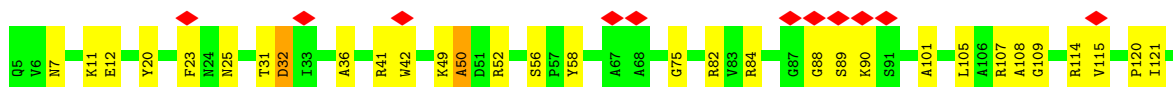
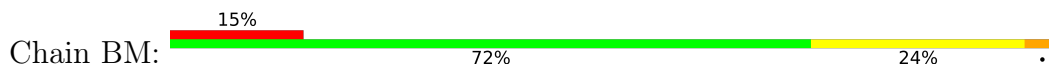


• Molecule 24: 30S ribosomal protein S10P

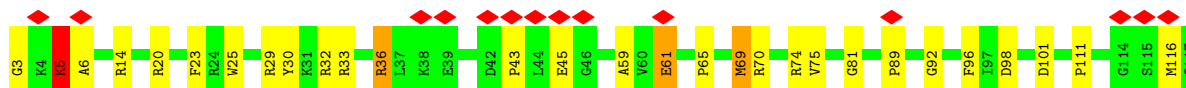
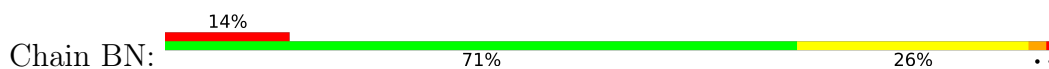




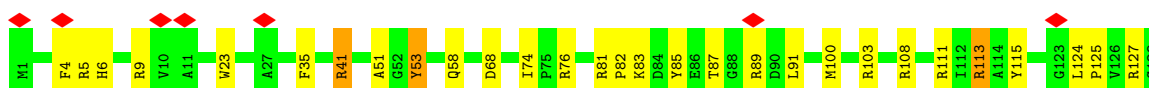
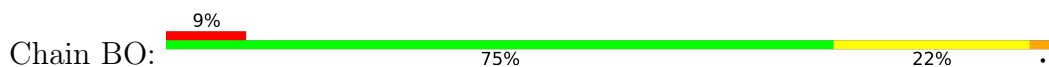
- Molecule 25: 30S ribosomal protein S11P



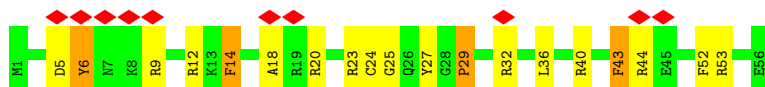
- Molecule 26: 30S ribosomal protein S12P



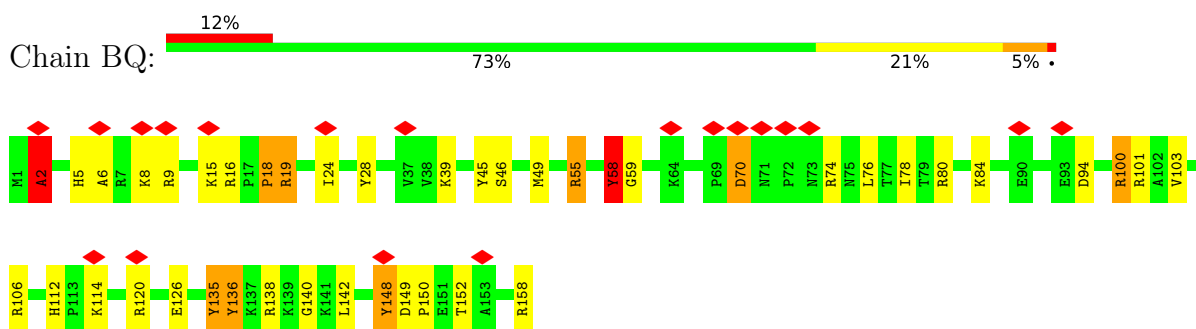
- Molecule 27: 30S ribosomal protein S13P



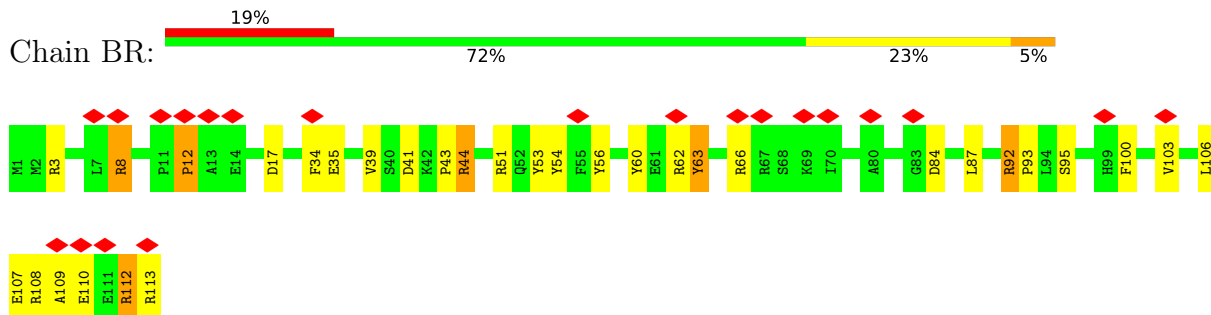
- Molecule 28: 30S ribosomal protein S14P



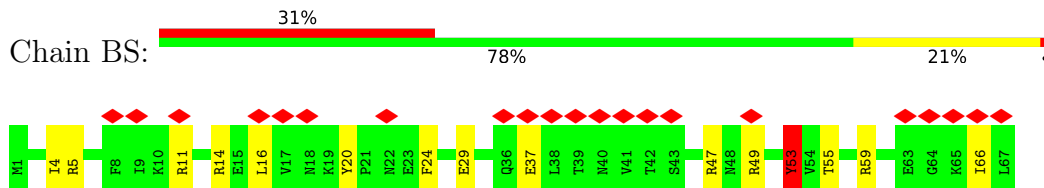
- Molecule 29: 30S ribosomal protein S15P/S13E



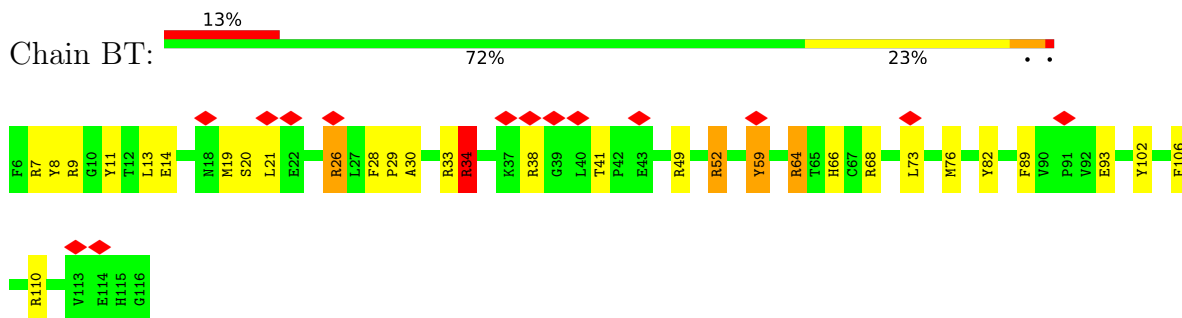
- Molecule 30: 30S ribosomal protein S17P



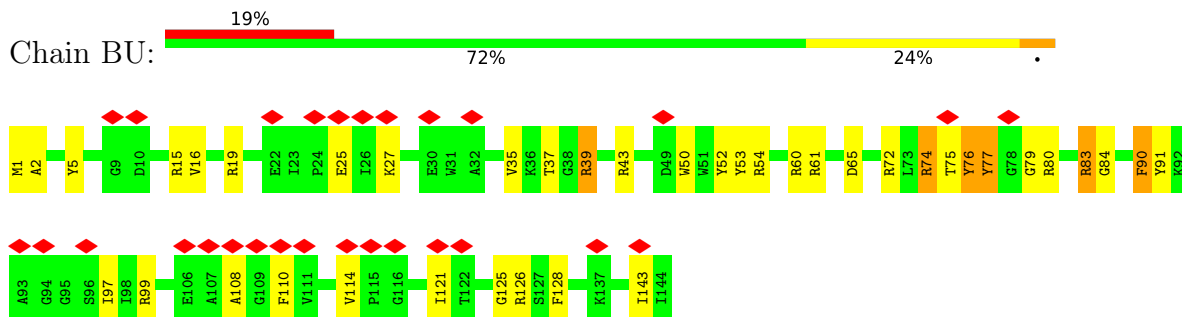
- Molecule 31: 30S ribosomal protein S17E



- Molecule 32: 30S ribosomal protein S19P

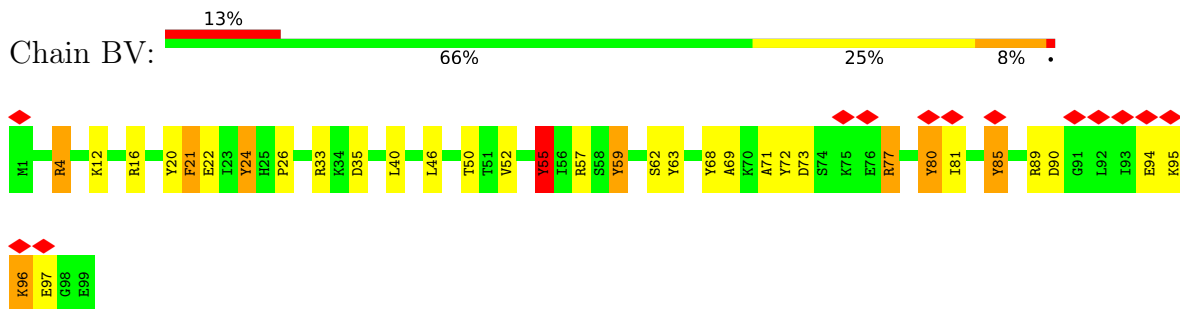


- Molecule 33: 30S ribosomal protein S19E

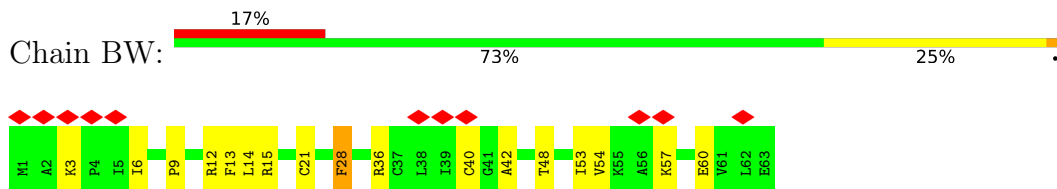




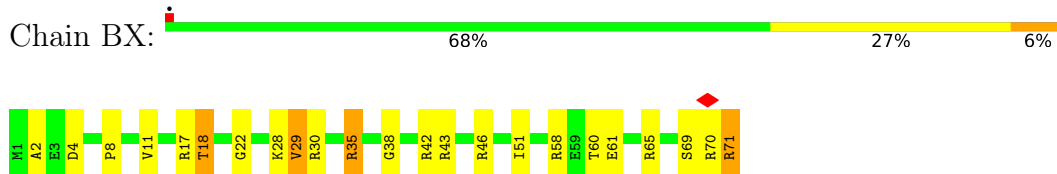
• Molecule 34: 30S ribosomal protein S24E



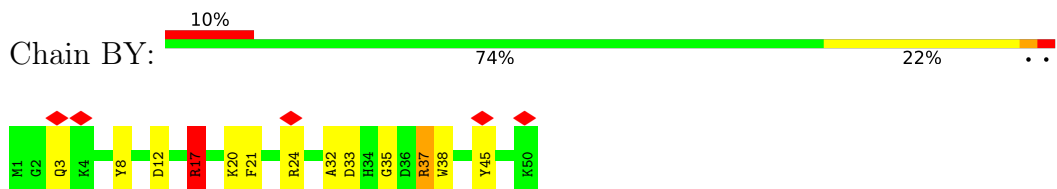
• Molecule 35: 30S ribosomal protein S27E



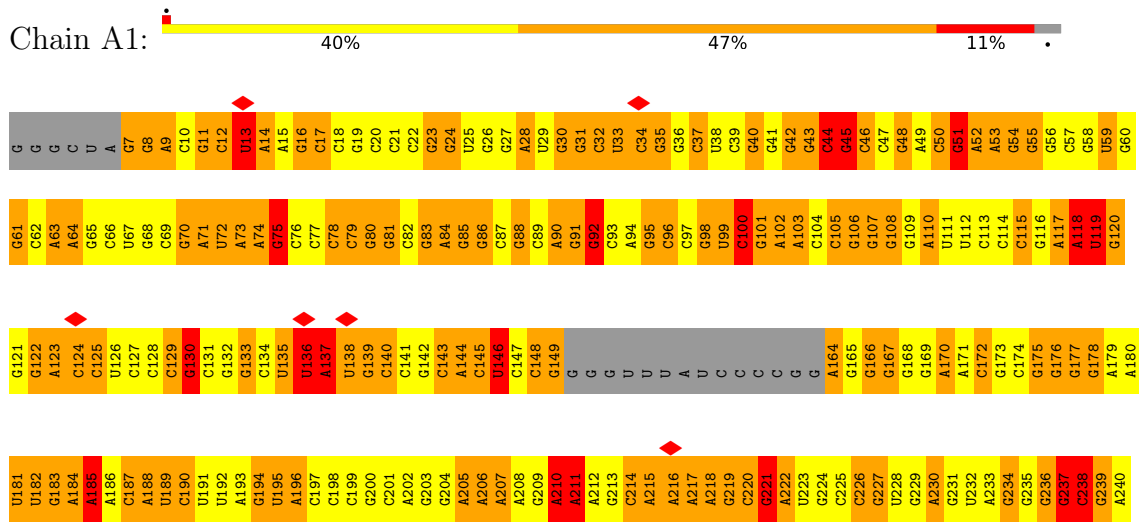
• Molecule 36: 30S ribosomal protein S28E



• Molecule 37: 30S ribosomal protein S27AE



• Molecule 38: 23S ribosomal RNA



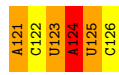
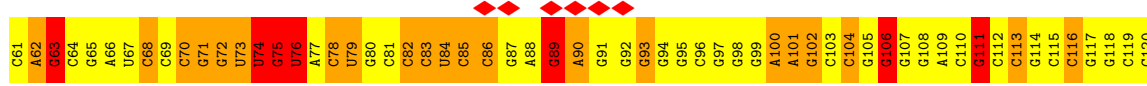
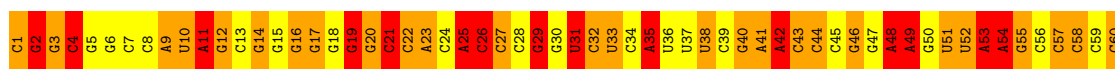
C1141	C1142	C1143	C1144	C1145	C1146	C1147	C1148	C1149	C1150	C1151	C1152	C1153	C1154	C1155	C1156	C1157	C1158	C1159	C1160	C1161	C1162	C1163	C1164	C1165	C1166	C1167	C1168	C1169	C1170	C1171	C1172	C1173	C1174	C1175	C1176	C1177	C1178	C1179	C1180	C1181	C1182	C1183	C1184	C1185	C1186	C1187	C1188	C1189	C1190	C1191	C1192	C1193	C1194	C1195	C1196	C1197	C1198	C1199	A1200																				
U1081	A1082	G1083	G1084	G1085	G1086	G1087	G1088	G1089	G1090	G1091	G1092	G1093	G1094	A1095	A1096	G1097	G1098	G1099	G1100	U1101	C1102	C1103	A1104	C1105	C1106	G1107	A1108	G1109	A1110	G1111	G1112	G1113	G1114	A1115	C1116	C1117	A1118	A1119	C1120	C1121	C1122	A1123	G1124	A1125	C1126	C1127	G1128	G1129	G1130	G1131	U1132	U1133	A1134	G1135	G1136	A1137	C1138	C1139	A1140																				
G1021	G1022	G1023	G1024	A1025	A1026	A1027	G1028	C1029	G1030	C1031	C1032	C1033	G1034	G1035	C1036	G1037	U1038	C1039	C1040	U1041	G1042	U1043	C1044	A1045	A1046	A1047	A1048	U1049	C1050	C1051	C1052	A1053	A1054	C1055	C1056	C1057	A1058	C1059	C1060	G1061	C1062	C1063	G1064	C1065	C1066	G1067	U1068	A1069	G1070	A1071	U1072	G1073	G1074	G1075	G1076	G1077	G1078	G1079	G1080																				
C901	C902	C903	C904	C905	C906	C907	U908	U909	A910	C911	G912	G913	U914	G915	A916	A917	U918	G919	G920	A921	C922	A923	A924	U925	C926	G927	A928	G929	G930	C931	C932	G933	G934	A935	G936	A937	U938	A939	G940	C941	U942	G943	G944	U945	U946	C947	C948	C949	G950	C951	G952	C953	A954	A955	C956	U956	C957	A958	U959	A960																			
U841	C842	C843	C844	U845	C846	A847	C848	C849	C850	C851	C852	A853	C854	C855	A856	U857	C858	G859	A860	C861	C862	C863	C864	C865	C866	C867	C868	C869	C870	C871	C872	C873	U874	C875	C876	C877	C878	C879	C880	C881	C882	C883	C884	C885	C886	C887	C888	C889	C890	C891	C892	C893	C894	C895	C896	U897	C898	A899	C900																				
G781	G782	C783	G784	C785	G786	G787	A788	A789	C790	U791	C792	C793	G794	U795	C796	G797	C798	C799	C800	G801	C802	C803	C804	C805	C806	C807	A808	C809	C810	C811	C812	C813	C814	U815	C816	C817	C818	U819	C820	U821	A822	C823	C824	C825	C826	C827	C828	C829	C830	C831	A832	C833	C834	C835	C836	C837	A838	C839	C840																				
A601	G602	G603	A604	A605	A606	G607	C608	G609	G610	C611	G612	C613	G614	A615	C616	G617	C618	G619	G620	G621	C622	C623	A624	A625	C626	G627	A628	C629	G630	G631	C632	A633	C634	C635	C636	G637	C638	A639	C640	G641	G642	G643	G644	U645	U646	G647	C648	A649	C650	G651	C652	C653	C654	C655	C656	U657	C658	U659	U660																				
A541	A542	G543	A544	G545	C546	C547	U548	G549	A550	A551	C552	C553	C554	G555	G556	G557	C558	C559	G560	C561	C562	A563	U564	A565	G566	G567	A568	C569	G570	G571	C572	C573	U574	C575	C576	C577	C578	C579	G580	G581	A582	A583	G584	G585	A586	A587	U588	G589	A590	C591	C592	C593	C594	C595	C596	C597	C598	G599	A600																				
G481	A482	C483	C484	G485	A486	U487	A488	G489	C490	G491	A492	C493	C494	U495	A496	G497	U498	A499	C500	C501	G502	C503	G504	A505	G506	G507	A508	A509	A510	A511	C512	C513	U514	C515	C516	C517	A518	A519	G520	C521	A522	C523	C524	C525	C526	G527	C528	A529	C530	A531	C532	C533	C534	C535	C536	G537	U538	C539	U400	C401	G402	G403	G404	G405	G406	A407	C408	A409	C410	U411	G412	A413	G414	U415	U416	A417	C418	A419	U420
C421	G422	G423	A424	G425	A426	G427	A428	U429	C430	U431	C432	C433	C434	U435	C436	G437	U438	A439	A440	C441	G442	C443	U444	A445	G446	G447	A448	G449	A450	C451	A452	U453	U454	C455	C456	C457	U458	A459	C460	C461	A462	A463	C464	C465	C466	U467	A468	A469	C470	U471	A472	C473	G474	U475	U476	U477	A478	C479	A480																				
G301	U302	A303	G304	G305	G306	C307	C308	C309	C310	C311	G312	U313	A314	U315	C316	A317	G318	U319	C320	C321	C322	U323	C324	G325	A326	G327	C328	C329	U330	C331	A332	C333	C334	C335	C336	G337	U338	A339	G340	U341	C342	C343	C344	C345	U346	U347	G348	C349	A350	C351	G352	C353	U354	G355	U356	G357	C358	U359	G360																				
C241	C242	G243	A244	G245	A246	A247	C248	G249	A250	C251	A252	G253	A254	G255	C256	G257	C258	C259	A260	A261	C262	U263	G264	A265	A266	C267	C268	C269	C270	G271	C272	C273	C274	C275	C276	A277	U278	C279	A280	G281	C282	U283	U284	C285	C286	G287	C288	C289	C290	A291	U292	G293	U294	G295	U296	C297	C298	U299	U300																				

G1981	G1982	G1983	G1984	G1985	G1986	G1987	G1988	G1989	G1990	G1991	G1992	G1993	G1994	G1995	G1996	G1997	G1998	G1999	G2000	U2001	A2002	C2003	A2004	C2005	C2006	C2007	G2008	G2009	G2010	U2011	G2012	A2013	A2014	G2015	C2016	U2017	A1958	G2019	G2020	G2021	U2022	A2023	A2024	A2025	C2026	G2027	G2028	C2029	G2030	G2031	G2032	C2033	G2034	U2035	A2036	A2037	C2038	U2039	A2040			
G1991	A1922	A1923	A1924	A1925	A1926	A1927	A1928	A1929	A1930	G1931	A1932	G1933	A1934	A1935	C1936	A1937	G1938	C1939	U1940	A1941	G1942	C1943	A1944	C1945	G1946	A1947	A1948	A1949	G1950	G1951	G1952	U1953	U1954	U1955	G1956	U1957	A1958	A1959	U1960	G1961	G1962	G1963	G1964	G1965	C1966	G1967	A1968	C1969	G1970	C1971	C1972	U1973	G1974	C1975	C1976	C1977	A1978	U1979	A1980			
C1801	G1861	G1862	U1803	G1864	U1805	G1866	C1867	G1868	G1869	G1870	G1871	G1872	G1873	G1874	U1875	G1876	C1877	U1878	U1879	A1880	A1881	C1882	C1883	C1884	G1885	C1886	A1887	G1888	A1889	U1890	G1891	G1892	C1893	A1894	U1895	G1896	U1897	A1898	A1899	U1900	A1901	G1902	G1903	G1904	G1905	G1906	G1907	C1908	C1909	A1910	G1911	U1912	C1913	G1914	C1915	G1916	U1917	A1918	A1919	A1920		
C1741	C1742	G1743	A1744	U1745	C1746	C1747	C1748	C1749	G1750	C1751	C1752	G1753	A1754	C1755	C1756	C1757	U1758	U1759	C1760	C1761	C1762	A1763	G1764	A1765	A1766	C1767	C1768	A1769	U1770	C1771	A1772	C1773	A1774	G1775	C1776	U1777	G1778	C1779	C1780	C1781	C1782	U1783	G1784	G1785	G1786	U1787	G1788	A1789	G1790	U1791	U1792	A1793	G1794	C1795	U1796	A1797	A1798	G1799	G1800			
G1681	C1682	G1683	C1684	G1685	C1686	C1687	C1688	G1689	U1690	U1691	U1692	A1693	G1694	G1695	G1696	G1697	G1698	U1699	U1700	C1701	C1702	A1643	G1644	U1645	G1646	C1647	U1648	G1649	U1650	C1710	C1711	U1652	U1653	G1654	G1655	C1656	G1657	A1658	G1659	U1660	G1661	C1662	G1663	G1664	G1665	A1666	G1667	C1668	U1669	A1670	A1671	U1672	C1673	G1674	C1675	G1676	A1677	A1678	U1679	G1680		
G1561	U1562	G1563	C1564	G1565	G1566	C1567	A1568	A1569	C1570	G1571	C1572	A1573	A1574	C1575	G1576	C1577	C1578	U1579	G1580	A1581	G1582	G1583	G1584	U1585	G1586	A1587	C1588	G1589	C1590	C1591	U1592	G1593	G1594	U1595	G1596	U1597	U1598	U1599	G1600	G1601	C1602	G1603	G1604	A1605	C1606	C1607	G1608	G1609	C1610	C1611	U1612	A1613	U1614	G1615	A1616	G1617	U1618	C1619	C1620			
G1501	C1502	C1503	C1504	G1505	U1506	A1507	A1508	C1509	U1510	U1511	G1512	G1513	C1514	U1515	C1516	G1517	G1518	U1519	G1520	A1521	A1522	C1523	A1524	G1525	G1526	G1527	A1528	A1529	A1530	C1531	U1532	G1533	G1534	U1535	C1536	U1537	U1538	U1539	A1540	U1541	U1542	C1543	C1544	C1545	G1546	U1547	A1548	C1549	C1550	C1551	C1552	G1553	G1554	G1555	U1556	G1557	U1558	A1559	G1560			
C1441	G1442	G1443	A1444	C1445	G1446	G1447	G1448	C1449	A1450	A1451	G1452	G1453	G1454	U1455	U1456	C1457	C1458	A1459	A1460	G1461	G1462	C1463	A1464	A1465	U1466	G1467	G1468	U1469	A1470	C1471	U1472	C1473	A1474	U1475	C1476	C1477	G1478	U1479	A1480	G1481	G1482	U1483	U1484	A1485	G1486	U1487	C1488	G1489	G1490	U1491	C1492	C1493	U1494	A1495	A1496	C1497	C1498	A1499	C1500			
G1381	C1382	G1383	C1384	C1385	G1386	C1387	U1388	A1389	U1390	U1391	G1392	C1393	G1394	G1395	U1396	U1397	C1398	A1399	U1400	G1401	C1402	C1403	A1404	G1405	G1406	A1407	G1408	U1409	A1410	C1411	C1412	A1413	G1414	C1415	C1416	U1417	A1418	G1419	U1420	C1421	G1422	G1423	U1424	U1425	G1426	U1427	A1428	G1429	A1430	U1431	C1432	C1433	U1434	A1435	G1436	U1437	C1438	A1439	C1440			
C1261	C1262	G1263	U1264	A1265	A1266	C1267	A1268	U1269	U1270	G1271	A1272	C1273	G1274	G1275	U1276	C1277	C1278	U1279	C1280	A1281	A1282	G1283	C1284	C1285	G1286	C1287	C1288	U1289	A1290	C1291	U1292	A1293	A1294	A1295	A1296	C1297	C1298	C1299	U1240	C1300	G1301	C1302	C1303	G1304	C1305	A1306	C1307	A1308	G1309	A1310	C	C	C	U1252	U1253	A	U	U	U	U	U	C
G1201	G1202	C1203	U1204	A1205	A1206	G1207	A1208	A1209	U1210	C1211	A1212	C1213	C1214	C1215	A1216	U1217	C1218	C1219	U1220	U1221	U1222	A1223	A1224	A1225	G1226	A1227	C1228	U1229	U1230	C1231	U1232	U1233	A1234	A1235	C1236	A1237	G1238	C1239	U1240	C1241	C1242	C1243	C1244	C1245	C1246	U1247	C1248	G1249	A1250	G1251	C	C	C	U1252	U1253	A	U	U	U	U	U	C

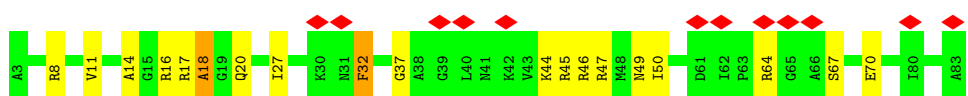
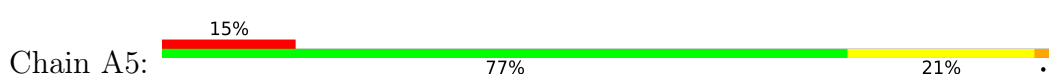
G2881	A2041	A2161	A2221	A2381	G2341	A2401	C2461	U2521	G2581	C2641	U2701	G2761	G2821	G2881
G2882	A2102	G2162	C2222	G2282	C2342	A2402	U2462	C2522	C2582	C2642	A2702	G2762	G2822	G2882
C2883	C2103	G2163	G2223	C2283	G2343	G2403	G2463	C2523	G2583	U2643	G2703	G2763	G2823	C2883
C2884	G2104	G2164	G2224	C2284	C2344	G2404	G2464	C2524	A2584	A2644	A2704	G2764	C2824	C2884
C2885	A2105	A2165	G2225	G2285	U2345	U2405	A2465	A2525	A2585	A2645	C2705	C2765	A2825	C2885
C2886	C2106	C2166	G2226	U2286	A2346	A2406	A2466	G2526	A2586	A2646	C2706	C2766	U2826	C2886
C2887	G2107	C2167	G2227	G2287	G2347	G2407	C2467	G2527	<b>G2587</b>	C2647	G2707	C2767	<b>C2827</b>	C2887
G2888	U2108	C2168	G2228	C2288	G2348	G2408	C2468	U2528	C2588	C2648	U2708	G2768	G2828	G2888
A2889	C2109	C2169	G2229	A2289	U2349	G2409	G2469	G2529	G2589	A2649	C2709	U2769	C2829	A2889
A2890	C2110	C2170	G2230	U2290	G2350	U2410	A2470	G2530	<b>C2590</b>	A2650	G2710	G2770	C2830	A2890
A2891	C2111	C2171	G2231	G2291	<b>G2351</b>	C2411	A2471	G2531	A2591	G2651	U2711	G2771	G2831	A2891
A2892	C2112	C2172	U2232	A2292	<b>G2352</b>	A2412	A2472	G2532	U2592	G2652	G2712	U2772	G2832	A2892
U2893	C2113	G2173	G2233	G2293	C2353	G2413	C2473	G2533	<b>A2593</b>	G2653	A2713	U2773	G2833	U2893
A2894	C2114	G2174	C2234	A2294	A2354	G2414	A2474	C2534	U2594	G2654	G2714	C2774	C2834	A2894
G2895	U2115	G2175	G2235	G2295	G2355	C2415	G2475	C2535	C2595	A2655	A2715	G2775	G2835	G2895
G2896	C2116	G2176	A2236	A2296	U2356	A2416	A2476	A2536	A2596	A2656	C2716	A2776	G2836	G2896
G2897	<b>U2117</b>	A2177	<b>A2237</b>	C2297	U2357	G2417	G2477	G2537	A2597	A2657	A2717	G2777	C2837	G2897
G2898	C2118	A2178	G2238	G2298	U2358	G2418	A2478	G2538	C2598	A2658	G2718	G2778	U2838	G2898
G2899	C2119	G2179	G2239	G2299	G2359	U2419	G2479	G2539	G2599	A2659	G2719	G2779	U2839	G2899
C2900	C2120	C2180	<b>G2240</b>	C2300	G2360	A2420	G2480	A2540	C2600	G2660	U2720	G2780	C2840	C2900
C2901	C2121	G2181	U2241	<b>G2301</b>	C2361	A2421	G2481	U2541	C2601	G2661	C2721	A2781	C2841	C2901
U2902	G2122	A2182	A2242	C2302	<b>U2362</b>	G2422	G2482	G2542	G2602	G2662	G2722	A2782	C2842	U2902
U2903	G2123	A2183	G2243	A2303	G2363	G2423	U2483	A2543	A2603	G2663	G2723	G2783	C2843	U2903
U	G2124	G2184	G2244	C2304	G2364	A2424	C2484	C2544	G2604	G2664	A2724	A2784	G2844	U
C	C2125	C2185	G2245	U2305	G2365	A2425	A2485	A2545	G2605	G2665	U2725	G2785	C2845	C
C	G2126	C2186	G2246	G2306	G2366	U2426	A2486	G2546	C2606	G2666	U2726	G2786	C2846	C
C	G2127	C2187	G2247	C2307	G2367	A2427	G2487	A2547	U2607	G2667	G2727	G2787	C2847	C
U	G2128	C2188	G2248	<b>C2308</b>	G2368	C2428	A2488	A2548	G2608	G2668	U2728	U2788	C2848	U
U	G2129	C2189	A2249	C2309	G2369	G2429	U2489	A2549	G2609	<b>U2669</b>	U2729	G2789	C2849	U
G	C2130	A2190	G2250	<b>G2310</b>	C2370	A2430	A2490	A2550	C2610	U2670	U2730	G2790	C2850	G
C	C2131	U2191	G2251	C2311	<b>A2371</b>	G2431	C2491	C2551	U2611	A2671	C2731	G2791	C2851	C
C	G2132	G2192	G2252	U2312	C2372	G2432	G2492	C2552	G2612	A2672	C2732	G2792	U2852	C
C	G2133	G2193	G2253	G2313	G2373	U2433	A2493	U2553	G2613	G2673	U2733	G2793	U2853	C
U	G2134	A2194	U2254	U2314	C2374	A2434	A2494	A2554	G2614	G2674	A2734	G2794	U2854	U
U	C2135	G2195	G2255	G2315	C2375	A2435	A2495	C2555	U2615	G2675	C2735	G2795	U2855	U
G	C2136	C2196	G2256	U2316	U2376	A2436	A2496	C2556	G2616	A2676	C2736	G2796	U2856	G
G	A2076	U2197	<b>G2257</b>	G2317	C2377	G2437	G2497	C2557	G2617	<b>G2677</b>	G2737	G2797	U2857	G
G	A2077	U2198	A2257	G2318	C2378	U2438	G2498	U2558	G2618	G2678	G2738	U2798	U2858	G
C	U2078	U2199	A2258	C2319	G2379	G2439	U2499	G2559	U2619	G2679	G2739	C2799	U2859	C
C	U2079	A2200	<b>G2259</b>	U2320	A2380	C2440	G2500	G2560	G2620	G2680	G2740	U2800	U2860	C
C	G2140	G2080	C2260	C2320	A2381	C2441	G2501	G2561	G2621	G2681	G2741	U2801	A2861	C
U	C2141	C2081	G2261	A2322	A2382	A2442	G2502	<b>G2562</b>	G2622	G2682	U2742	G2802	A2862	U
C	U2142	G2082	G2262	C2323	A2383	G2444	U2504	A2564	G2623	G2684	U2744	G2804	A2864	C
C	G2143	G2083	G2263	<b>C2324</b>	G2384	G2445	U2505	U2565	G2624	G2685	U2745	U2805	C2865	C
C	G2145	C2085	C2265	C2325	G2385	G2446	A2506	A2566	G2625	G2686	G2746	U2806	C2866	C
G	C2146	C2086	C2266	C2326	U2386	A2447	G2507	G2567	G2626	G2687	C2747	U2807	A2867	G
A	C2147	C2087	U2267	C2327	U2388	A2448	G2508	A2568	G2627	G2688	C2748	U2808	U2868	A
C	U2148	G2088	C2268	A2328	C2389	A2449	U2509	G2569	G2628	G2689	C2749	U2809	U2869	C
C	G2149	C2089	G2269	C2329	G2390	<b>U2450</b>	A2510	A2570	G2630	G2690	G2750	U2810	U2870	C
G	G2150	G2090	<b>G2270</b>	A2330	G2391	<b>G2451</b>	G2511	G2571	C2631	G2691	C2751	U2811	A2871	G
G	C2152	G2092	G2272	G2332	A2392	C2453	G2513	U2573	G2633	G2693	C2753	U2813	A2873	G
C	G2153	A2093	U2273	G2333	G2393	C2454	G2514	G2574	U2634	G2694	C2754	U2814	C2874	C
C	G2154	<b>G2154</b>	C2274	G2334	G2394	U2455	G2515	G2575	U2635	G2695	C2755	U2815	C2875	C
A	C2155	U2095	G2275	G2335	G2395	U2456	G2516	U2576	G2636	G2696	C2756	U2816	C2876	A
U	U2096	G2096	<b>G2276</b>	G2336	G2396	C2457	U2517	G2577	U2637	G2697	G2757	U2817	A2877	U
U	G2099	G2099	G2277	G2337	C2397	C2458	U2518	G2578	U2638	G2698	G2758	U2818	A2878	U
G	G2099	G2099	U2278	A2338	C2398	U2459	G2519	G2579	G2639	G2699	C2759	U2819	A2879	G
C	U2159	G2099	G2279	G2339	C2399	U2460	G2520	G2580	G2640	G2700	A2760	G2820	C2880	C



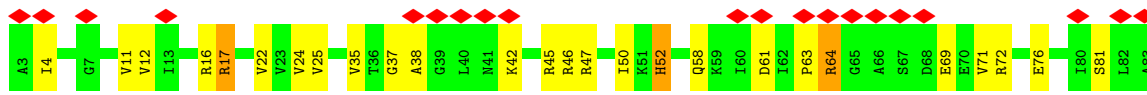
• Molecule 39: 5S ribosomal RNA



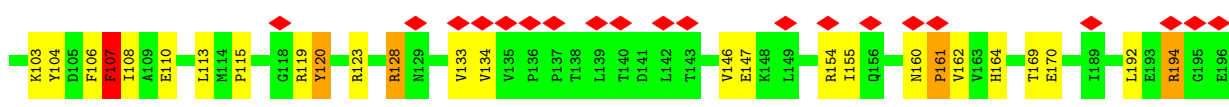
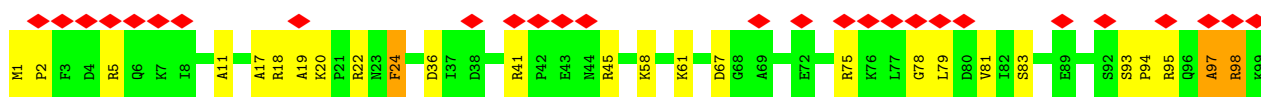
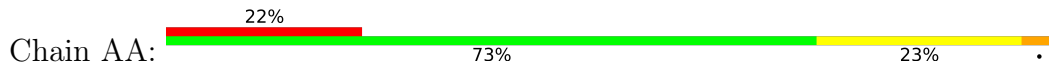
• Molecule 40: 50S ribosomal protein L14E



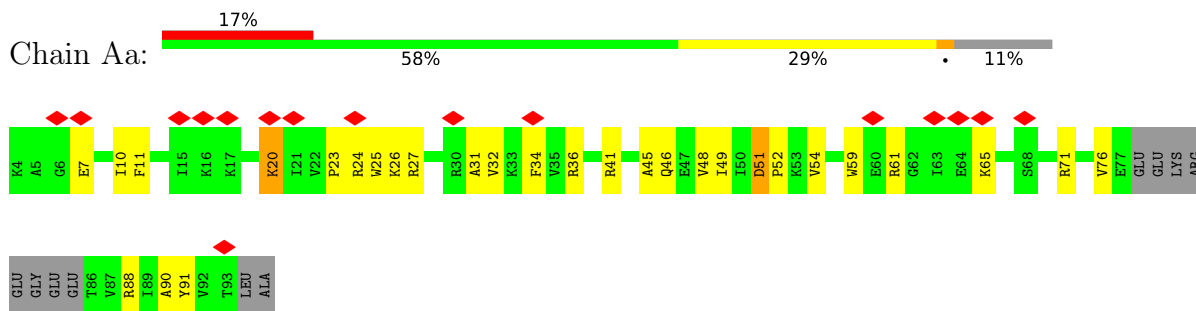
• Molecule 40: 50S ribosomal protein L14E



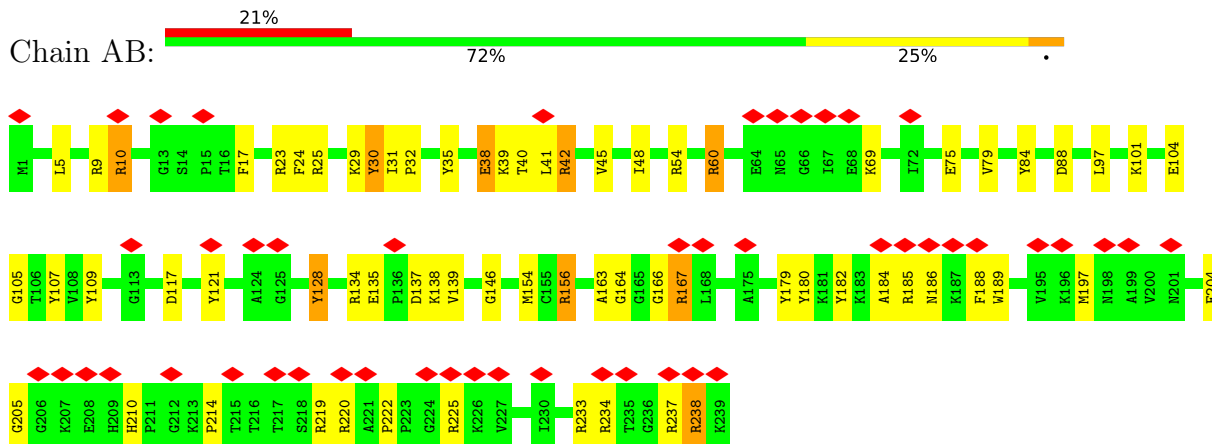
• Molecule 41: 50S ribosomal protein L1P



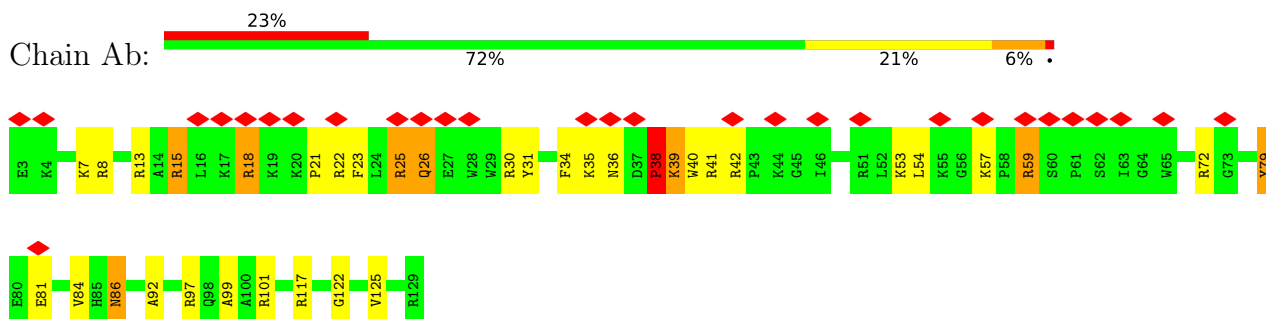
• Molecule 42: 50S ribosomal protein L31E



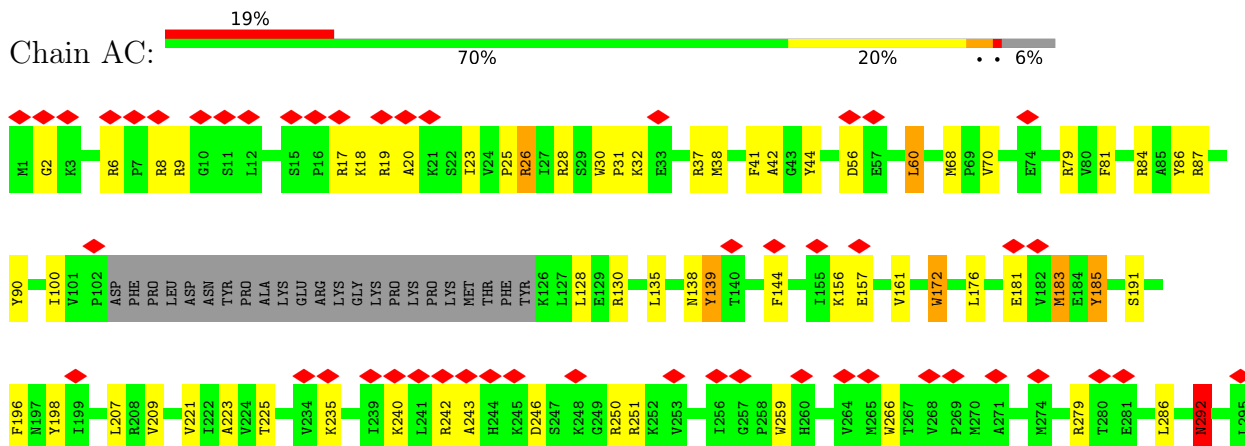
• Molecule 43: 50S ribosomal protein L2

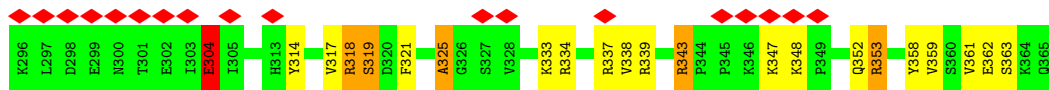


• Molecule 44: 50S ribosomal protein L32E

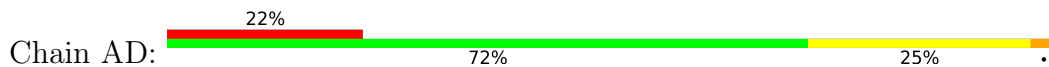


• Molecule 45: 50S ribosomal protein L3P

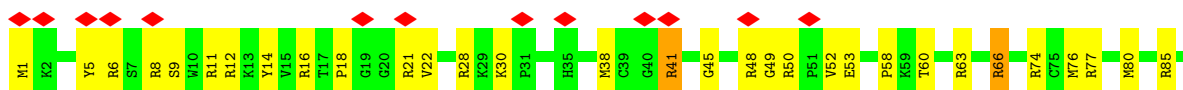




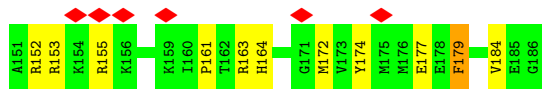
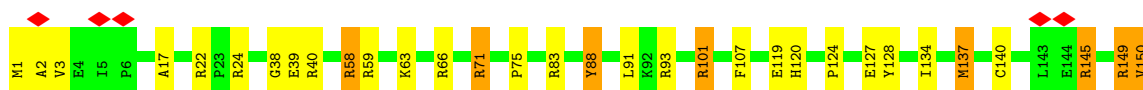
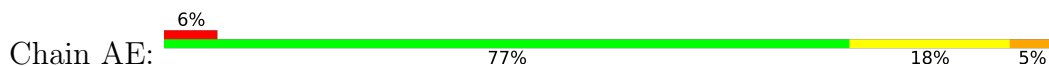
• Molecule 46: 50S ribosomal protein L4P



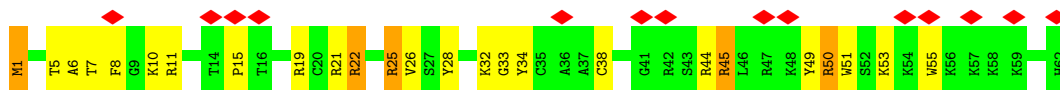
• Molecule 47: 50S ribosomal protein L34E



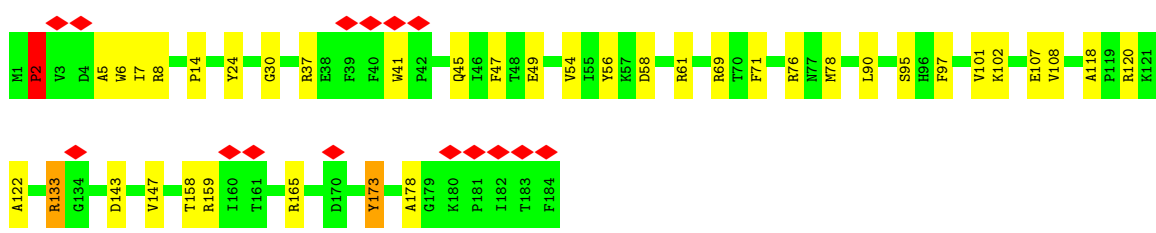
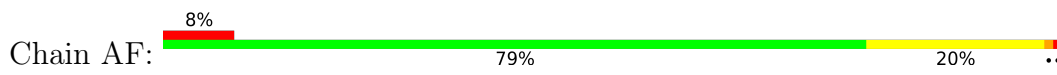
• Molecule 48: 50S ribosomal protein L5P



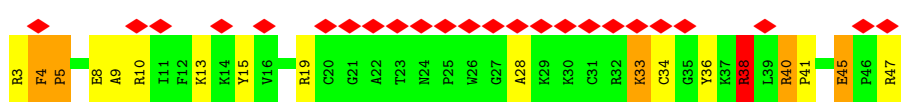
• Molecule 49: 50S ribosomal protein L37E



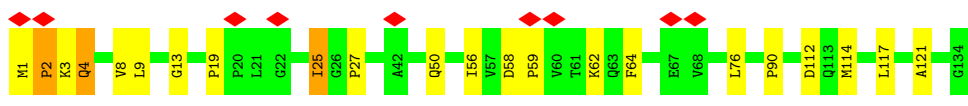
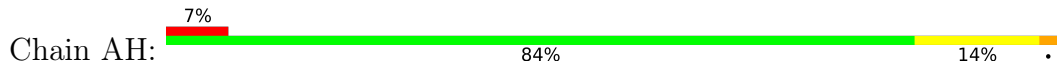
• Molecule 50: 50S ribosomal protein L6P



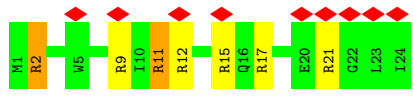
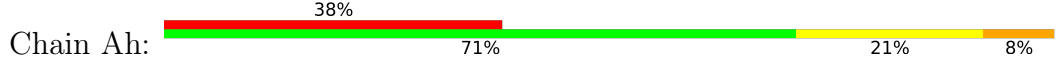
• Molecule 51: 50S ribosomal protein L40E



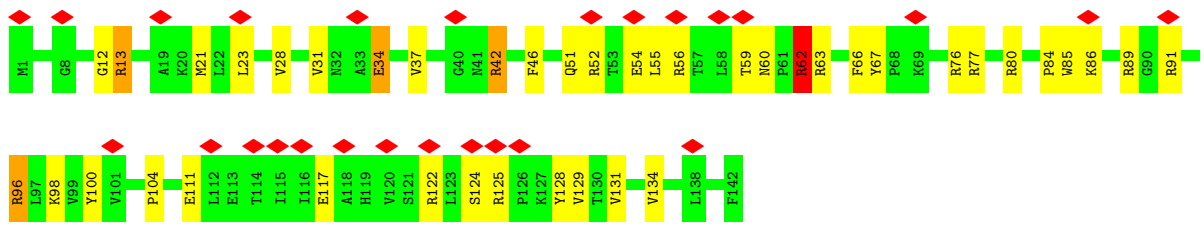
• Molecule 52: 50S ribosomal protein L11P



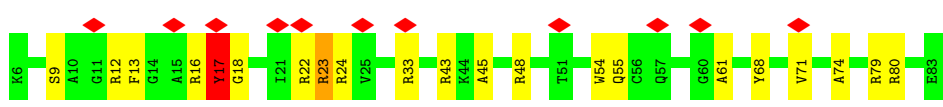
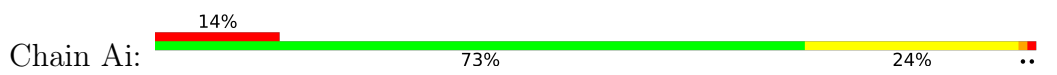
• Molecule 53: 50S ribosomal protein L41E



• Molecule 54: 50S ribosomal protein L13P

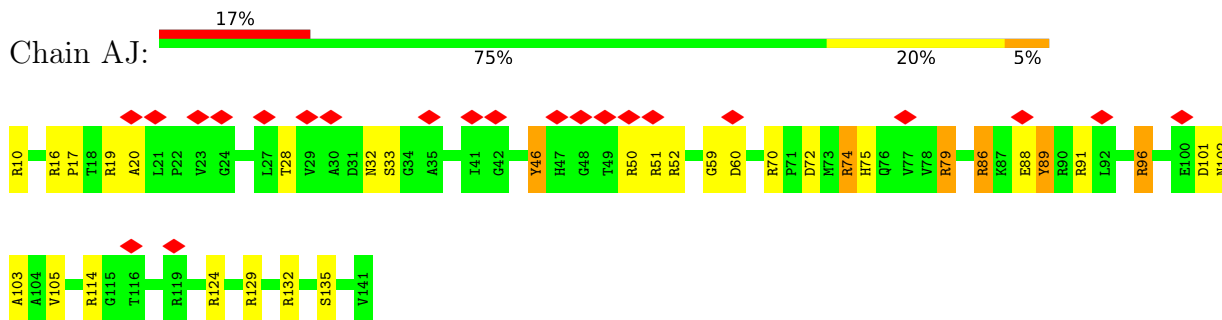


• Molecule 55: 50S ribosomal protein L37AE

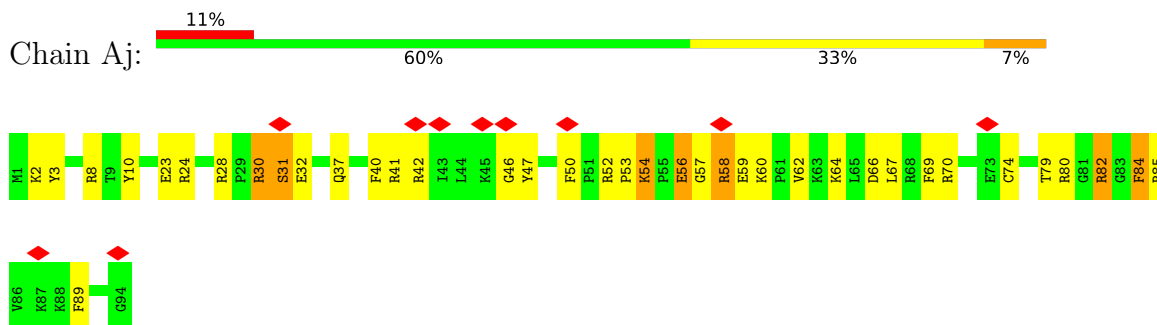




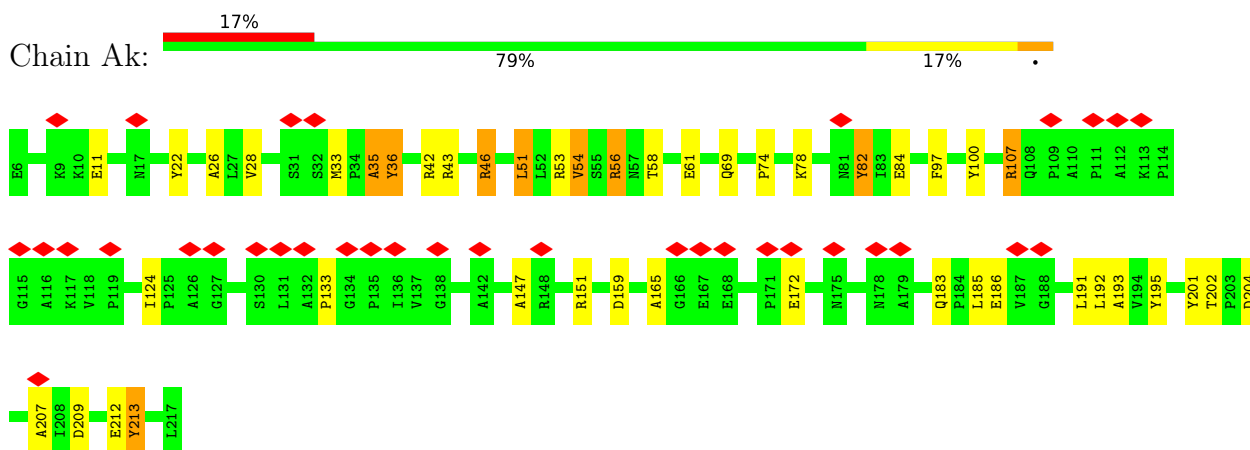
• Molecule 56: 50S ribosomal protein L14P



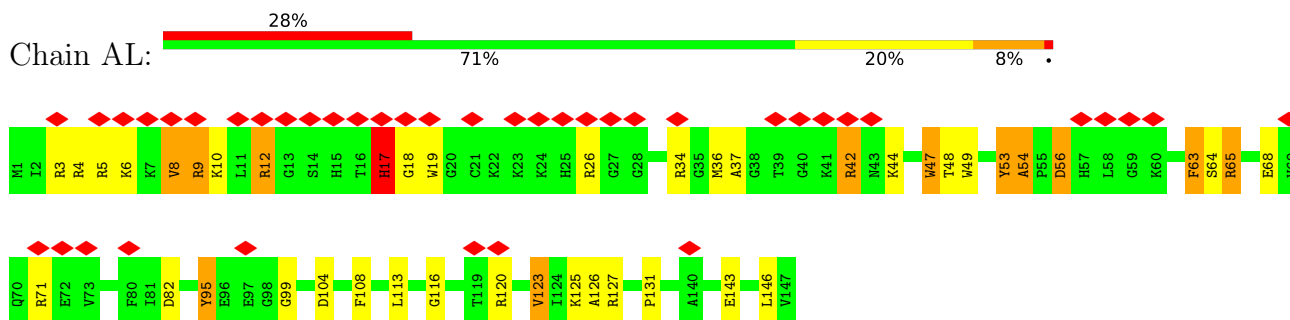
• Molecule 57: 50S ribosomal protein L44E



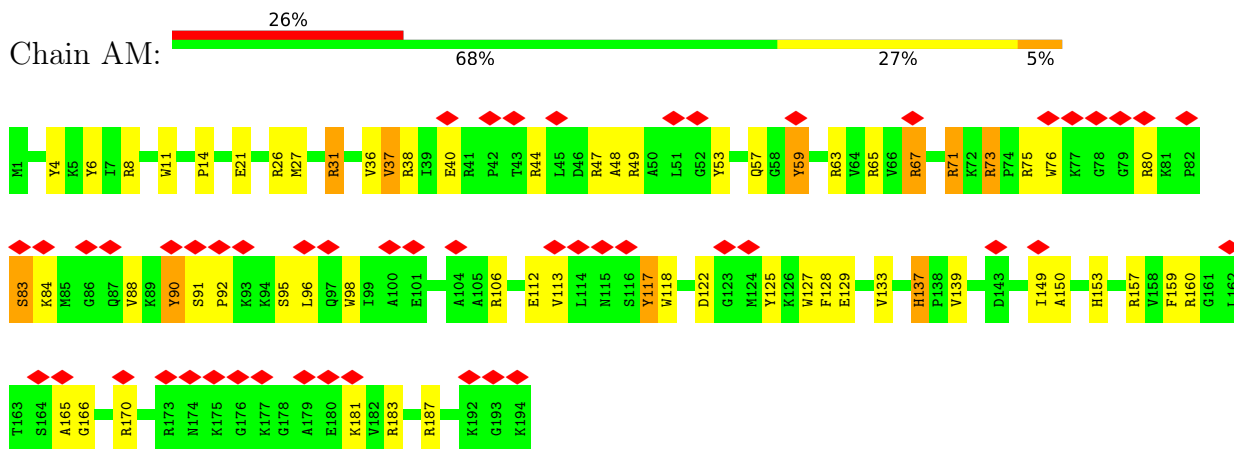
• Molecule 58: 50S ribosomal protein P0/L10E



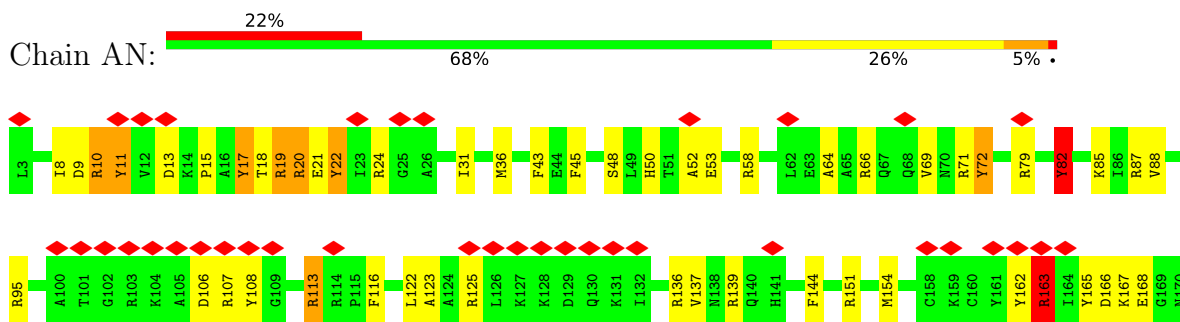
• Molecule 59: 50S ribosomal protein L15P



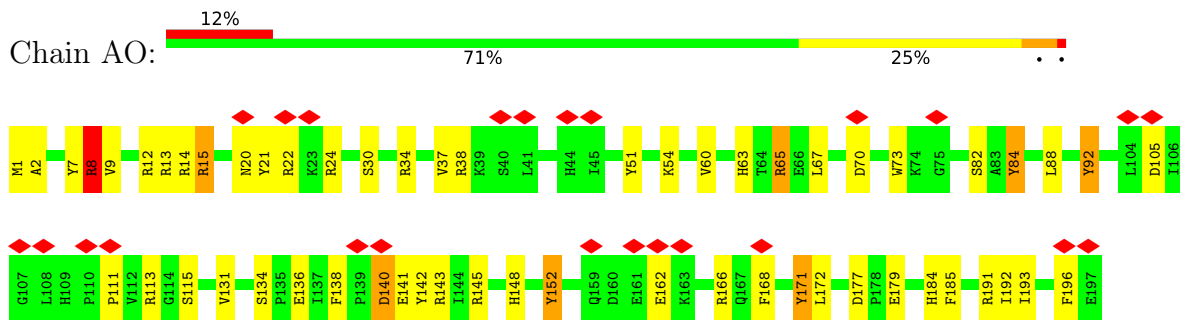
• Molecule 60: 50S ribosomal protein L15E



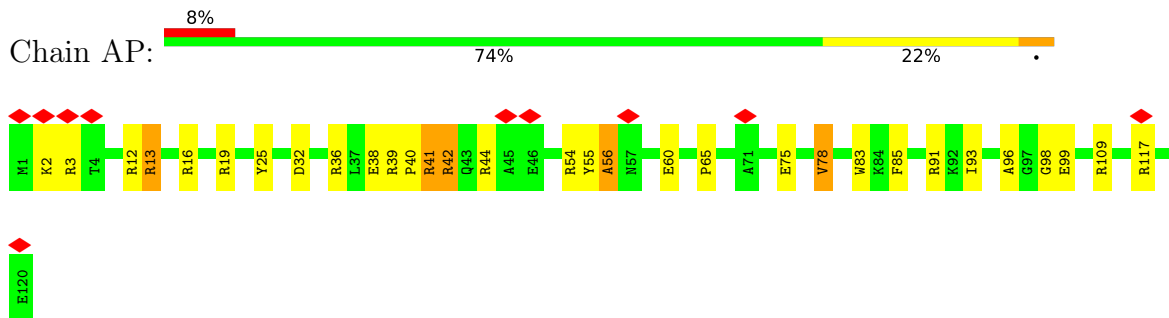
• Molecule 61: 50S ribosomal protein L10E/L16



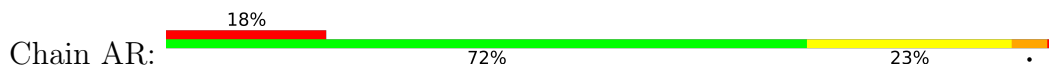
• Molecule 62: 50S ribosomal protein L18P

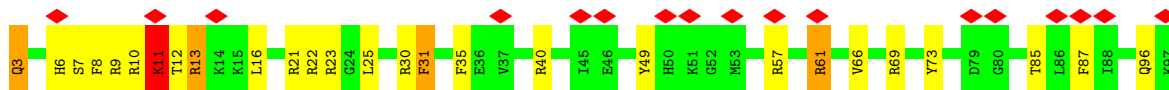


• Molecule 63: 50S ribosomal protein L18E



• Molecule 64: 50S ribosomal protein L21E

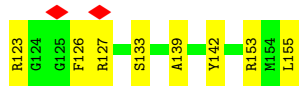
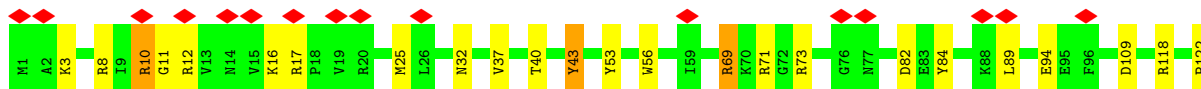
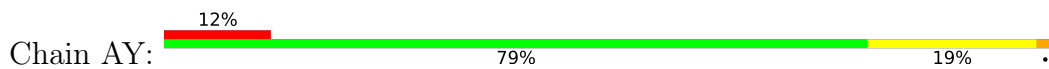




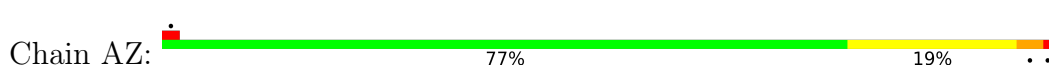
• Molecule 65: 50S ribosomal protein L24E



• Molecule 66: 50S ribosomal protein L30P



• Molecule 67: 50S ribosomal protein L30E



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	37000	Depositor
Resolution determination method	FSC 0.5 CUT-OFF	Depositor
CTF correction method	per micrograph	Depositor
Microscope	FEI TECNAI F20	Depositor
Voltage (kV)	200	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	20	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	51000	Depositor
Image detector	KODAK SO-163 FILM	Depositor
Maximum map value	3.556	Depositor
Minimum map value	-0.752	Depositor
Average map value	0.060	Depositor
Map value standard deviation	0.270	Depositor
Recommended contour level	0.93	Depositor
Map size ( $\text{\AA}$ )	444.99, 444.99, 442.26	wwPDB
Map dimensions	163, 163, 162	wwPDB
Map angles ( $^\circ$ )	90.0, 90.0, 90.0	wwPDB
Pixel spacing ( $\text{\AA}$ )	2.73, 2.73, 2.73	Depositor

## 5 Model quality i

### 5.1 Standard geometry i

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	A7	1.64	2/534 (0.4%)	1.97	14/719 (1.9%)
2	A8	1.75	1/263 (0.4%)	1.81	4/354 (1.1%)
3	Af	1.83	4/453 (0.9%)	2.10	15/603 (2.5%)
4	AQ	1.80	16/1272 (1.3%)	2.05	35/1676 (2.1%)
5	AS	1.80	17/1226 (1.4%)	2.14	41/1649 (2.5%)
6	AT	1.69	6/689 (0.9%)	2.00	19/924 (2.1%)
7	AU	1.81	15/1024 (1.5%)	2.04	30/1365 (2.2%)
8	AW	1.76	5/547 (0.9%)	1.95	12/725 (1.7%)
9	AX	1.71	31/3383 (0.9%)	1.98	79/4593 (1.7%)
10	B1	3.41	257/1840 (14.0%)	3.87	460/2869 (16.0%)
11	B2	3.43	4996/35963 (13.9%)	3.79	8330/56134 (14.8%)
12	AG	1.71	4/951 (0.4%)	1.82	14/1281 (1.1%)
12	B3	1.62	3/951 (0.3%)	1.78	13/1281 (1.0%)
13	BA	1.74	21/1585 (1.3%)	2.02	45/2124 (2.1%)
14	BB	1.72	15/1654 (0.9%)	1.96	43/2233 (1.9%)
15	BC	1.82	18/1481 (1.2%)	2.03	41/1985 (2.1%)
16	BD	1.77	14/1457 (1.0%)	2.13	51/1953 (2.6%)
17	BE	1.76	25/2025 (1.2%)	2.01	58/2732 (2.1%)
18	BF	1.81	29/1746 (1.7%)	2.04	51/2350 (2.2%)
19	BG	1.72	9/999 (0.9%)	1.94	22/1337 (1.6%)
20	BH	1.79	22/1773 (1.2%)	2.00	62/2381 (2.6%)
21	BI	1.77	13/1049 (1.2%)	2.04	27/1408 (1.9%)
22	BJ	1.83	14/1013 (1.4%)	2.02	22/1349 (1.6%)
23	BK	1.76	10/1088 (0.9%)	1.96	31/1455 (2.1%)
24	BL	1.76	10/830 (1.2%)	2.00	26/1113 (2.3%)
25	BM	1.83	16/1022 (1.6%)	1.90	24/1375 (1.7%)
26	BN	1.74	8/1157 (0.7%)	2.06	37/1536 (2.4%)
27	BO	1.78	13/1208 (1.1%)	2.02	32/1619 (2.0%)
28	BP	1.94	12/471 (2.5%)	2.31	20/620 (3.2%)
29	BQ	1.75	14/1338 (1.0%)	1.95	34/1797 (1.9%)
30	BR	1.75	12/956 (1.3%)	2.06	24/1287 (1.9%)
31	BS	1.70	4/562 (0.7%)	1.95	10/744 (1.3%)
32	BT	1.78	11/943 (1.2%)	2.23	35/1257 (2.8%)
33	BU	1.80	13/1204 (1.1%)	2.01	30/1621 (1.9%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
34	BV	1.80	13/839 (1.5%)	2.13	29/1122 (2.6%)
35	BW	1.68	2/485 (0.4%)	1.93	11/651 (1.7%)
36	BX	1.84	7/570 (1.2%)	1.93	9/760 (1.2%)
37	BY	1.66	4/421 (1.0%)	2.22	16/558 (2.9%)
38	A1	3.42	9848/71524 (13.8%)	3.76	16432/111652 (14.7%)
39	A3	3.37	408/3007 (13.6%)	3.87	667/4689 (14.2%)
40	A5	1.85	11/618 (1.8%)	1.97	14/829 (1.7%)
40	AK	1.64	4/618 (0.6%)	1.97	16/829 (1.9%)
41	AA	1.71	17/1702 (1.0%)	2.12	52/2293 (2.3%)
42	Aa	1.72	11/690 (1.6%)	2.12	23/926 (2.5%)
43	AB	1.80	20/1883 (1.1%)	1.99	66/2540 (2.6%)
44	Ab	1.81	13/1100 (1.2%)	1.99	30/1466 (2.0%)
45	AC	1.73	29/2774 (1.0%)	1.98	77/3727 (2.1%)
46	AD	1.74	29/2068 (1.4%)	2.04	58/2787 (2.1%)
47	Ad	1.84	13/758 (1.7%)	2.12	28/1007 (2.8%)
48	AE	1.75	14/1513 (0.9%)	1.98	30/2026 (1.5%)
49	Ae	1.87	6/517 (1.2%)	2.04	15/681 (2.2%)
50	AF	1.71	18/1507 (1.2%)	1.89	24/2033 (1.2%)
51	Ag	1.89	5/381 (1.3%)	2.19	15/504 (3.0%)
52	AH	1.59	2/1002 (0.2%)	1.82	15/1351 (1.1%)
53	Ah	1.81	3/233 (1.3%)	2.32	10/301 (3.3%)
54	AI	1.81	11/1168 (0.9%)	1.94	31/1561 (2.0%)
55	Ai	1.86	10/599 (1.7%)	1.97	14/798 (1.8%)
56	AJ	1.86	13/1027 (1.3%)	1.92	17/1385 (1.2%)
57	Aj	1.85	12/806 (1.5%)	2.18	30/1065 (2.8%)
58	Ak	1.74	16/1660 (1.0%)	1.92	34/2253 (1.5%)
59	AL	1.82	14/1175 (1.2%)	2.03	34/1563 (2.2%)
60	AM	1.85	27/1634 (1.7%)	2.11	53/2179 (2.4%)
61	AN	1.85	24/1410 (1.7%)	2.05	43/1890 (2.3%)
62	AO	1.73	17/1636 (1.0%)	2.11	47/2196 (2.1%)
63	AP	1.82	12/980 (1.2%)	2.03	26/1313 (2.0%)
64	AR	1.74	10/808 (1.2%)	1.97	23/1080 (2.1%)
65	AV	1.91	9/570 (1.6%)	2.18	23/758 (3.0%)
66	AY	1.69	8/1262 (0.6%)	1.98	33/1687 (2.0%)
67	AZ	1.68	2/764 (0.3%)	1.94	21/1028 (2.0%)
All	All	2.89	16322/184366 (8.9%)	3.26	27857/271937 (10.2%)

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
2	A8	0	1
3	Af	0	6
4	AQ	0	5
5	AS	0	5
6	AT	0	2
7	AU	0	4
9	AX	0	9
10	B1	0	35
11	B2	0	725
12	AG	0	2
13	BA	0	11
14	BB	0	2
15	BC	0	8
16	BD	0	7
17	BE	0	9
18	BF	0	3
19	BG	1	4
20	BH	4	13
21	BI	0	3
22	BJ	0	6
23	BK	0	7
24	BL	0	8
25	BM	0	2
26	BN	0	4
27	BO	0	5
28	BP	0	1
29	BQ	0	7
30	BR	0	3
31	BS	0	2
32	BT	0	5
33	BU	0	4
34	BV	0	12
35	BW	0	1
36	BX	0	3
37	BY	0	3
38	A1	2	1412
39	A3	0	55
40	A5	0	2
40	AK	0	2
41	AA	0	4
42	Aa	0	2
43	AB	0	8
44	Ab	0	9

*Continued on next page...*

Continued from previous page...

Mol	Chain	#Chirality outliers	#Planarity outliers
45	AC	0	7
46	AD	0	9
47	Ad	0	1
48	AE	0	6
49	Ae	1	9
50	AF	0	3
51	Ag	1	5
52	AH	1	2
53	Ah	0	2
54	AI	0	7
55	Ai	0	2
56	AJ	0	4
57	Aj	0	7
58	Ak	0	4
59	AL	2	10
60	AM	0	4
61	AN	0	7
62	AO	0	10
63	AP	0	4
64	AR	0	1
65	AV	0	5
66	AY	0	2
67	AZ	0	1
All	All	12	2533

The worst 5 of 16322 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
11	B2	770	A	N7-C5	-18.72	1.28	1.39
11	B2	470	G	N9-C8	18.32	1.50	1.37
38	A1	2257	A	N7-C5	-18.29	1.28	1.39
38	A1	910	G	N7-C5	-17.89	1.28	1.39
38	A1	2164	G	N7-C5	-17.73	1.28	1.39

The worst 5 of 27857 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
11	B2	1445	A	N1-C6-N6	27.58	135.15	118.60
38	A1	277	A	N1-C6-N6	27.04	134.82	118.60
38	A1	2347	G	N1-C6-O6	26.94	136.06	119.90
38	A1	1281	A	N1-C6-N6	26.62	134.57	118.60
38	A1	2540	A	N1-C6-N6	26.19	134.31	118.60



5 of 12 chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
19	BG	53	LYS	CA
20	BH	85	PHE	CA
20	BH	86	MET	CA
20	BH	87	ARG	CA
20	BH	96	LYS	CA

5 of 2533 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	A8	49	TYR	Sidechain
3	Af	2	ALA	Peptide
3	Af	33	ARG	Peptide
3	Af	34	ARG	Sidechain
3	Af	37	THR	Peptide

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

Due to software issues we are unable to calculate clashes - this section is therefore empty.

## 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	A7	63/67 (94%)	43 (68%)	16 (25%)	4 (6%)	1	17
2	A8	30/52 (58%)	22 (73%)	7 (23%)	1 (3%)	4	26
3	Af	49/51 (96%)	40 (82%)	6 (12%)	3 (6%)	1	17
4	AQ	148/150 (99%)	139 (94%)	5 (3%)	4 (3%)	5	31
5	AS	148/150 (99%)	135 (91%)	10 (7%)	3 (2%)	7	38
6	AT	82/84 (98%)	75 (92%)	4 (5%)	3 (4%)	3	24
7	AU	119/121 (98%)	113 (95%)	5 (4%)	1 (1%)	19	60

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
8	AW	64/72 (89%)	64 (100%)	0	0	100	100
9	AX	430/436 (99%)	322 (75%)	77 (18%)	31 (7%)	1	14
12	AG	121/123 (98%)	114 (94%)	4 (3%)	3 (2%)	5	32
12	B3	121/123 (98%)	100 (83%)	14 (12%)	7 (6%)	1	18
13	BA	188/190 (99%)	164 (87%)	12 (6%)	12 (6%)	1	16
14	BB	200/202 (99%)	182 (91%)	12 (6%)	6 (3%)	4	28
15	BC	184/186 (99%)	171 (93%)	9 (5%)	4 (2%)	6	35
16	BD	170/172 (99%)	148 (87%)	20 (12%)	2 (1%)	13	50
17	BE	239/241 (99%)	207 (87%)	20 (8%)	12 (5%)	2	20
18	BF	215/217 (99%)	188 (87%)	16 (7%)	11 (5%)	2	19
19	BG	123/125 (98%)	103 (84%)	13 (11%)	7 (6%)	1	18
20	BH	213/215 (99%)	186 (87%)	14 (7%)	13 (6%)	1	17
21	BI	127/129 (98%)	118 (93%)	8 (6%)	1 (1%)	19	60
22	BJ	125/127 (98%)	107 (86%)	15 (12%)	3 (2%)	6	33
23	BK	133/135 (98%)	116 (87%)	10 (8%)	7 (5%)	2	19
24	BL	100/102 (98%)	90 (90%)	7 (7%)	3 (3%)	4	28
25	BM	131/133 (98%)	112 (86%)	9 (7%)	10 (8%)	1	13
26	BN	143/145 (99%)	128 (90%)	7 (5%)	8 (6%)	2	19
27	BO	146/148 (99%)	122 (84%)	16 (11%)	8 (6%)	2	19
28	BP	54/56 (96%)	44 (82%)	8 (15%)	2 (4%)	3	24
29	BQ	156/158 (99%)	137 (88%)	9 (6%)	10 (6%)	1	16
30	BR	111/113 (98%)	105 (95%)	5 (4%)	1 (1%)	17	57
31	BS	65/67 (97%)	60 (92%)	5 (8%)	0	100	100
32	BT	109/111 (98%)	102 (94%)	5 (5%)	2 (2%)	8	40
33	BU	142/144 (99%)	123 (87%)	11 (8%)	8 (6%)	2	19
34	BV	97/99 (98%)	88 (91%)	5 (5%)	4 (4%)	3	23
35	BW	61/63 (97%)	52 (85%)	6 (10%)	3 (5%)	2	20
36	BX	69/71 (97%)	62 (90%)	6 (9%)	1 (1%)	11	46
37	BY	48/50 (96%)	41 (85%)	5 (10%)	2 (4%)	3	22
40	A5	79/81 (98%)	67 (85%)	9 (11%)	3 (4%)	3	24
40	AK	79/81 (98%)	70 (89%)	4 (5%)	5 (6%)	1	17

*Continued on next page...*

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
41	AA	214/216 (99%)	186 (87%)	19 (9%)	9 (4%)	3	22
42	Aa	78/92 (85%)	69 (88%)	9 (12%)	0	100	100
43	AB	237/239 (99%)	209 (88%)	23 (10%)	5 (2%)	7	36
44	Ab	125/127 (98%)	108 (86%)	11 (9%)	6 (5%)	2	21
45	AC	338/365 (93%)	303 (90%)	21 (6%)	14 (4%)	3	23
46	AD	253/255 (99%)	220 (87%)	23 (9%)	10 (4%)	3	23
47	Ad	87/89 (98%)	78 (90%)	6 (7%)	3 (3%)	3	26
48	AE	184/186 (99%)	161 (88%)	15 (8%)	8 (4%)	2	22
49	Ae	60/62 (97%)	43 (72%)	13 (22%)	4 (7%)	1	15
50	AF	182/184 (99%)	165 (91%)	14 (8%)	3 (2%)	9	44
51	Ag	43/45 (96%)	30 (70%)	8 (19%)	5 (12%)	0	6
52	AH	132/134 (98%)	114 (86%)	11 (8%)	7 (5%)	2	19
53	Ah	22/24 (92%)	21 (96%)	1 (4%)	0	100	100
54	AI	140/142 (99%)	121 (86%)	13 (9%)	6 (4%)	2	22
55	Ai	76/78 (97%)	69 (91%)	4 (5%)	3 (4%)	3	23
56	AJ	130/132 (98%)	121 (93%)	6 (5%)	3 (2%)	6	34
57	Aj	92/94 (98%)	69 (75%)	18 (20%)	5 (5%)	2	19
58	Ak	210/212 (99%)	192 (91%)	11 (5%)	7 (3%)	4	26
59	AL	145/147 (99%)	129 (89%)	11 (8%)	5 (3%)	3	26
60	AM	192/194 (99%)	175 (91%)	11 (6%)	6 (3%)	4	27
61	AN	166/168 (99%)	141 (85%)	19 (11%)	6 (4%)	3	25
62	AO	195/197 (99%)	166 (85%)	20 (10%)	9 (5%)	2	21
63	AP	118/120 (98%)	107 (91%)	5 (4%)	6 (5%)	2	19
64	AR	93/95 (98%)	85 (91%)	3 (3%)	5 (5%)	2	19
65	AV	64/66 (97%)	61 (95%)	3 (5%)	0	100	100
66	AY	153/155 (99%)	137 (90%)	12 (8%)	4 (3%)	5	31
67	AZ	97/99 (98%)	84 (87%)	9 (9%)	4 (4%)	3	23
All	All	8708/8907 (98%)	7624 (88%)	733 (8%)	351 (4%)	5	23

5 of 351 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A7	30	LYS

Continued on next page...

*Continued from previous page...*

Mol	Chain	Res	Type
4	AQ	134	ASN
9	AX	239	ARG
9	AX	277	TYR
9	AX	346	ALA

### 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	A7	57/59 (97%)	55 (96%)	2 (4%)	36	59
2	A8	28/44 (64%)	28 (100%)	0	100	100
3	Af	47/47 (100%)	46 (98%)	1 (2%)	53	72
4	AQ	130/130 (100%)	125 (96%)	5 (4%)	33	57
5	AS	126/126 (100%)	119 (94%)	7 (6%)	21	46
6	AT	75/75 (100%)	73 (97%)	2 (3%)	44	65
7	AU	110/110 (100%)	105 (96%)	5 (4%)	27	52
8	AW	61/66 (92%)	60 (98%)	1 (2%)	62	79
9	AX	351/355 (99%)	341 (97%)	10 (3%)	43	65
12	AG	99/99 (100%)	95 (96%)	4 (4%)	31	55
12	B3	99/99 (100%)	94 (95%)	5 (5%)	24	48
13	BA	166/166 (100%)	152 (92%)	14 (8%)	11	33
14	BB	173/173 (100%)	168 (97%)	5 (3%)	42	64
15	BC	145/145 (100%)	141 (97%)	4 (3%)	43	65
16	BD	153/153 (100%)	148 (97%)	5 (3%)	38	61
17	BE	212/212 (100%)	201 (95%)	11 (5%)	23	48
18	BF	181/181 (100%)	173 (96%)	8 (4%)	28	53
19	BG	108/108 (100%)	108 (100%)	0	100	100
20	BH	184/184 (100%)	165 (90%)	19 (10%)	7	25
21	BI	107/107 (100%)	105 (98%)	2 (2%)	57	75

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
22	BJ	103/103 (100%)	95 (92%)	8 (8%)	12	36
23	BK	111/111 (100%)	108 (97%)	3 (3%)	44	65
24	BL	91/91 (100%)	87 (96%)	4 (4%)	28	53
25	BM	100/100 (100%)	96 (96%)	4 (4%)	31	55
26	BN	119/119 (100%)	114 (96%)	5 (4%)	30	54
27	BO	122/122 (100%)	120 (98%)	2 (2%)	62	79
28	BP	46/46 (100%)	43 (94%)	3 (6%)	17	42
29	BQ	143/143 (100%)	135 (94%)	8 (6%)	21	46
30	BR	102/102 (100%)	92 (90%)	10 (10%)	8	26
31	BS	61/61 (100%)	58 (95%)	3 (5%)	25	50
32	BT	99/99 (100%)	95 (96%)	4 (4%)	31	55
33	BU	121/121 (100%)	118 (98%)	3 (2%)	47	68
34	BV	89/89 (100%)	87 (98%)	2 (2%)	52	71
35	BW	54/54 (100%)	51 (94%)	3 (6%)	21	46
36	BX	60/60 (100%)	53 (88%)	7 (12%)	5	21
37	BY	41/41 (100%)	40 (98%)	1 (2%)	49	69
40	A5	64/64 (100%)	62 (97%)	2 (3%)	40	62
40	AK	64/64 (100%)	59 (92%)	5 (8%)	12	36
41	AA	182/182 (100%)	173 (95%)	9 (5%)	25	50
42	Aa	73/81 (90%)	68 (93%)	5 (7%)	16	41
43	AB	189/189 (100%)	183 (97%)	6 (3%)	39	61
44	Ab	114/114 (100%)	108 (95%)	6 (5%)	22	47
45	AC	291/312 (93%)	278 (96%)	13 (4%)	27	52
46	AD	213/213 (100%)	207 (97%)	6 (3%)	43	65
47	Ad	81/81 (100%)	81 (100%)	0	100	100
48	AE	158/158 (100%)	153 (97%)	5 (3%)	39	61
49	Ae	51/51 (100%)	49 (96%)	2 (4%)	32	56
50	AF	156/156 (100%)	150 (96%)	6 (4%)	33	57
51	Ag	37/37 (100%)	36 (97%)	1 (3%)	44	65
52	AH	110/110 (100%)	108 (98%)	2 (2%)	59	77
53	Ah	23/23 (100%)	23 (100%)	0	100	100

*Continued on next page...*

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
54	AI	122/122 (100%)	118 (97%)	4 (3%)	38	61
55	Ai	57/57 (100%)	55 (96%)	2 (4%)	36	59
56	AJ	104/104 (100%)	98 (94%)	6 (6%)	20	45
57	Aj	83/83 (100%)	80 (96%)	3 (4%)	35	59
58	Ak	179/179 (100%)	173 (97%)	6 (3%)	37	60
59	AL	117/117 (100%)	112 (96%)	5 (4%)	29	53
60	AM	162/162 (100%)	155 (96%)	7 (4%)	29	53
61	AN	140/140 (100%)	134 (96%)	6 (4%)	29	53
62	AO	166/166 (100%)	159 (96%)	7 (4%)	30	54
63	AP	101/101 (100%)	99 (98%)	2 (2%)	55	74
64	AR	85/85 (100%)	79 (93%)	6 (7%)	14	39
65	AV	56/56 (100%)	56 (100%)	0	100	100
66	AY	133/133 (100%)	130 (98%)	3 (2%)	50	70
67	AZ	80/80 (100%)	73 (91%)	7 (9%)	10	31
All	All	7465/7521 (99%)	7153 (96%)	312 (4%)	33	54

5 of 312 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
50	AF	7	ILE
61	AN	137	VAL
12	AG	93	GLU
40	AK	24	VAL
64	AR	66	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 66 such sidechains are listed below:

Mol	Chain	Res	Type
62	AO	43	HIS
62	AO	76	HIS
66	AY	120	HIS
25	BM	29	HIS
24	BL	69	HIS

### 5.3.3 RNA

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
10	B1	76/77 (98%)	20 (26%)	4 (5%)
11	B2	1494/1495 (99%)	264 (17%)	103 (6%)
38	A1	2964/3049 (97%)	600 (20%)	158 (5%)
39	A3	125/126 (99%)	36 (28%)	11 (8%)
All	All	4659/4747 (98%)	920 (19%)	276 (5%)

5 of 920 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
10	B1	8	U
10	B1	9	A
10	B1	10	G
10	B1	18	U
10	B1	19	G

5 of 276 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
38	A1	2324	C
38	A1	2401	A
38	A1	2957	G
11	B2	1399	G
11	B2	1322	C

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

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

#### 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

#### 5.6 Ligand geometry [i](#)

There are no ligands in this entry.

#### 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues

There are no chain breaks in this entry.



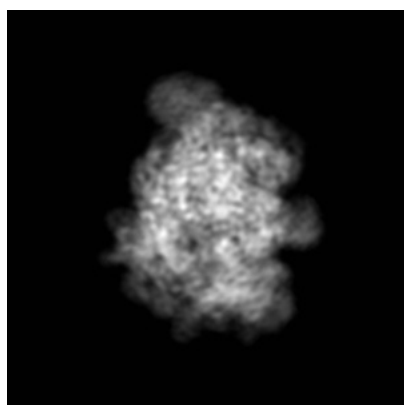
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-5691. These allow visual inspection of the internal detail of the map and identification of artifacts.

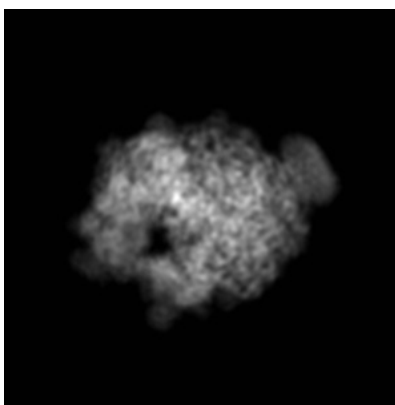
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

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

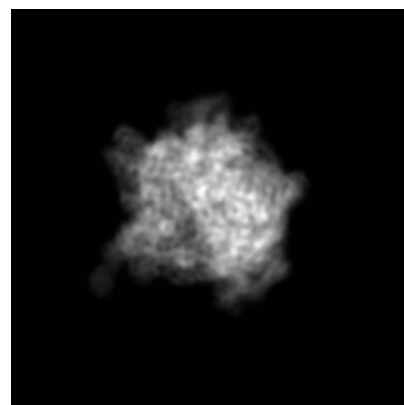
#### 6.1.1 Primary map



X



Y

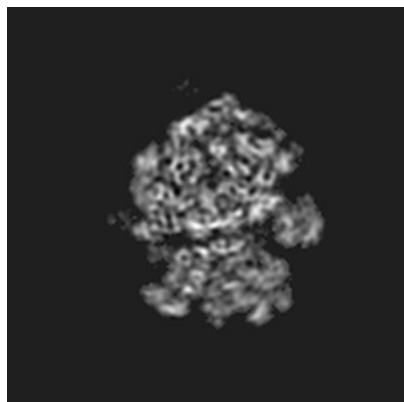


Z

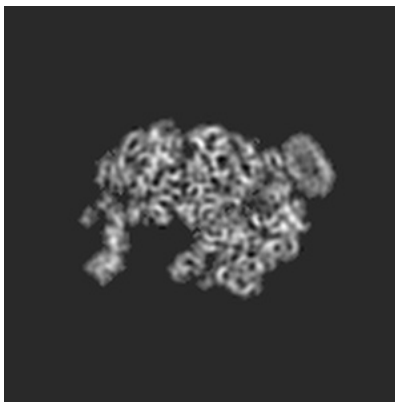
The images above show the map projected in three orthogonal directions.

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

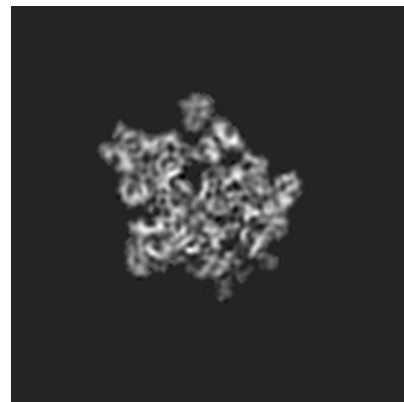
#### 6.2.1 Primary map



X Index: 81



Y Index: 81

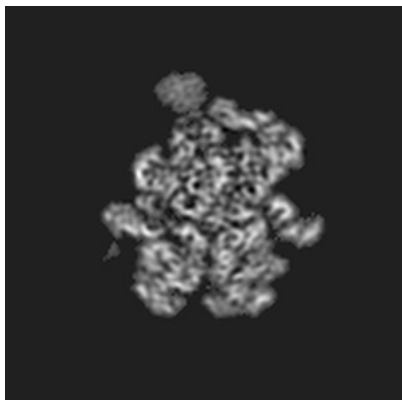


Z Index: 81

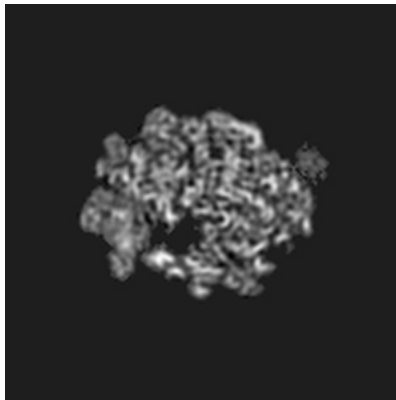
The images above show central slices of the map in three orthogonal directions.

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

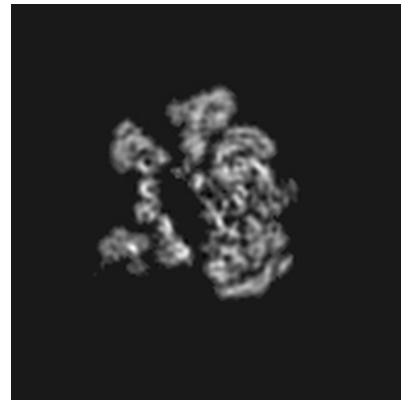
### 6.3.1 Primary map



X Index: 85



Y Index: 87

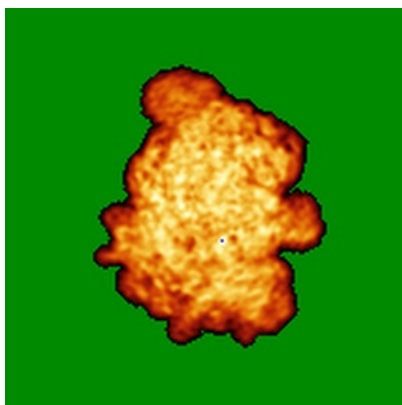


Z Index: 70

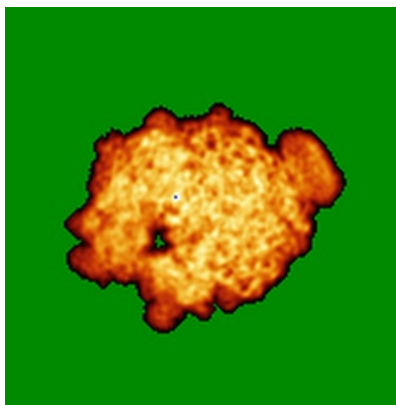
The images above show the largest variance slices of the map in three orthogonal directions.

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

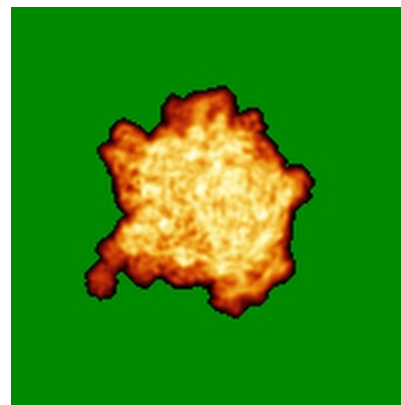
### 6.4.1 Primary map



X



Y

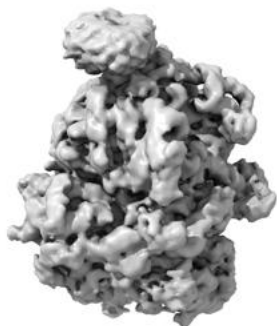


Z

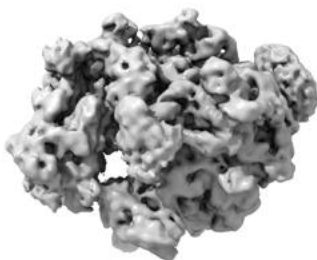
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

## 6.5 Orthogonal surface views [i](#)

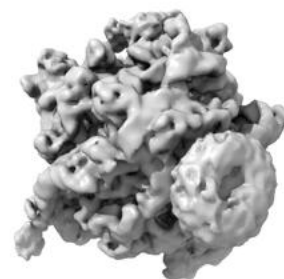
### 6.5.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.93. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

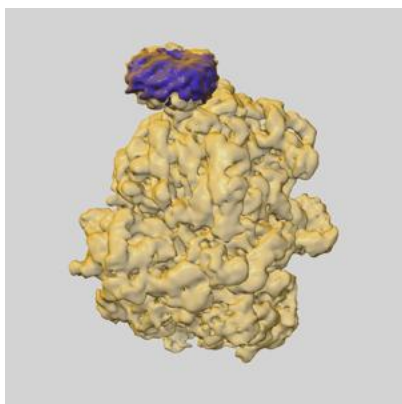
## 6.6 Mask visualisation [i](#)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

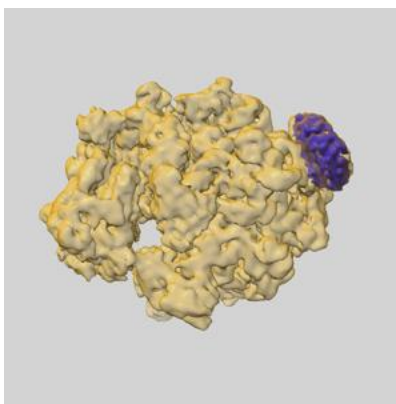
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

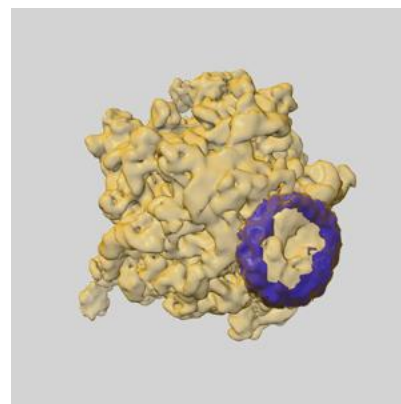
### 6.6.1 emd\_5691\_msk\_4.map [i](#)



X

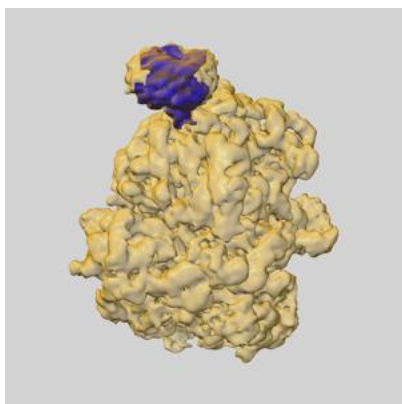


Y

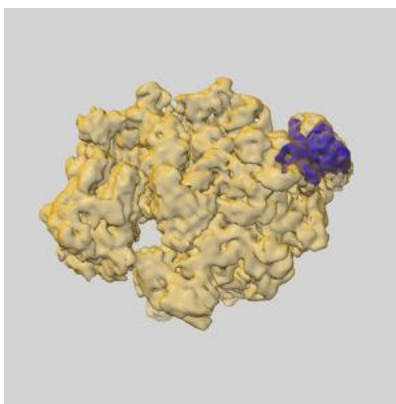


Z

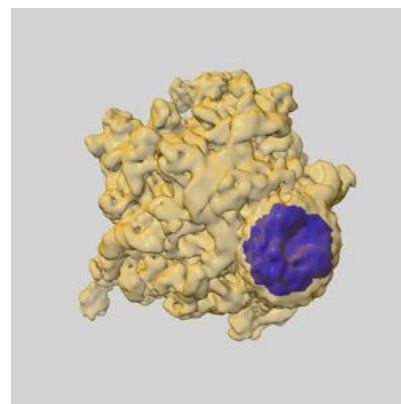
### 6.6.2 emd\_5691\_msk\_3.map [i](#)



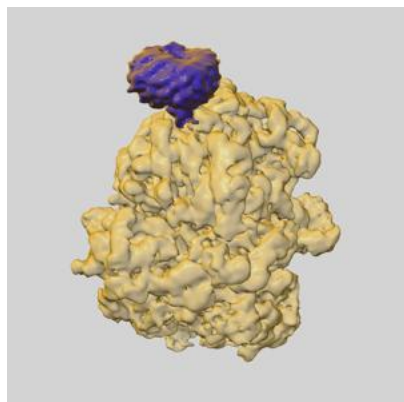
X



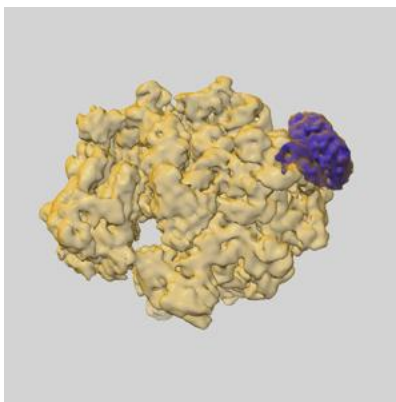
Y



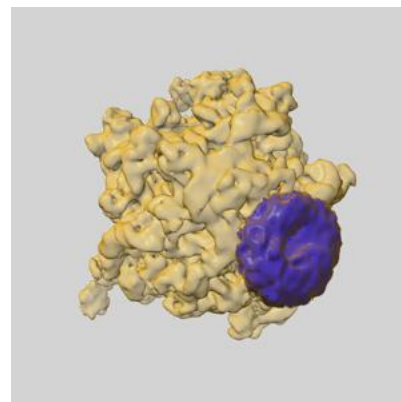
Z

6.6.3 `emd_5691_msk_2.map` [i](#)

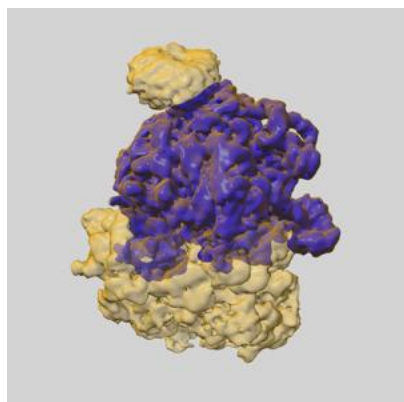
X



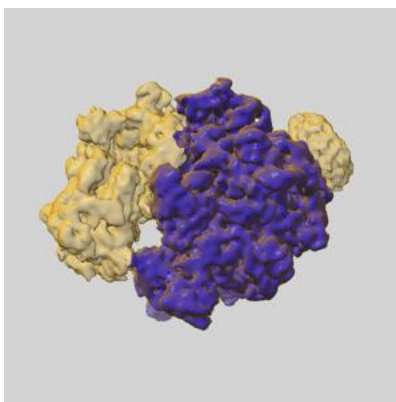
Y



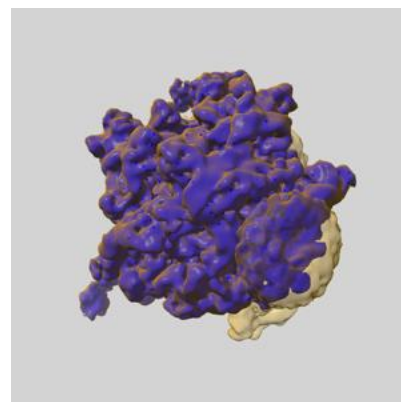
Z

6.6.4 `emd_5691_msk_1.map` [i](#)

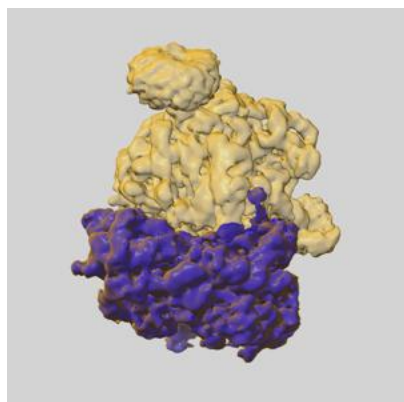
X



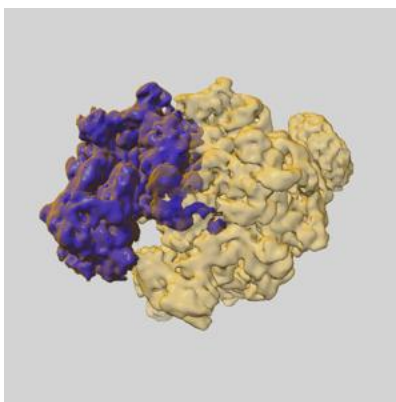
Y



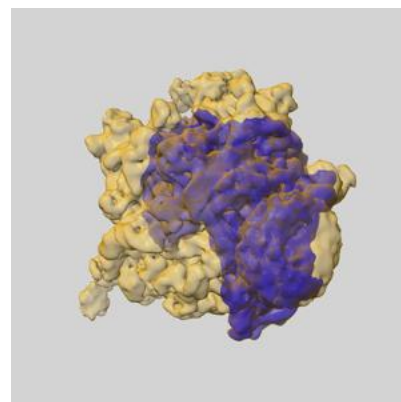
Z

6.6.5 `emd_5691_msk_5.map` [i](#)

X



Y

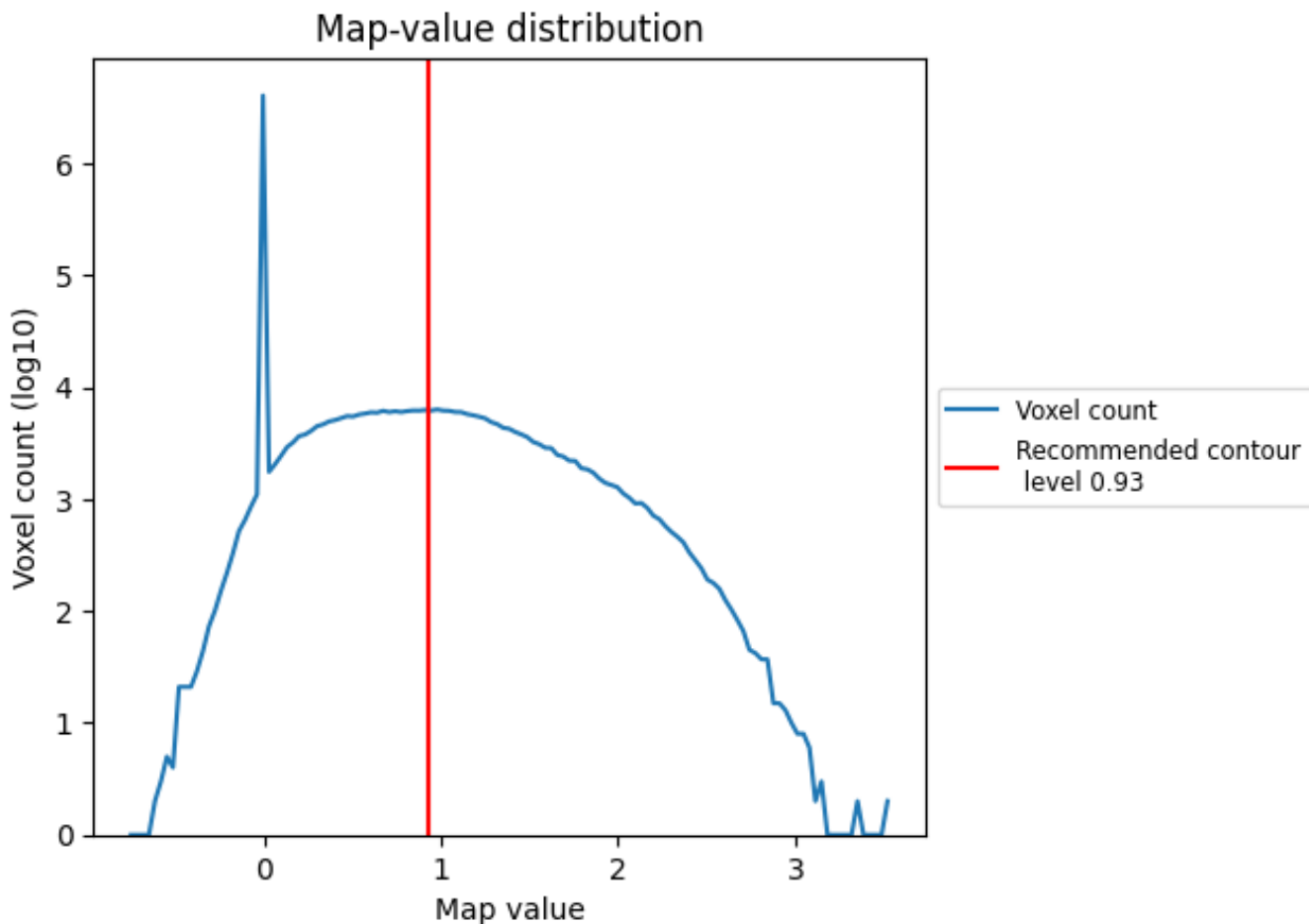


Z

## 7 Map analysis [i](#)

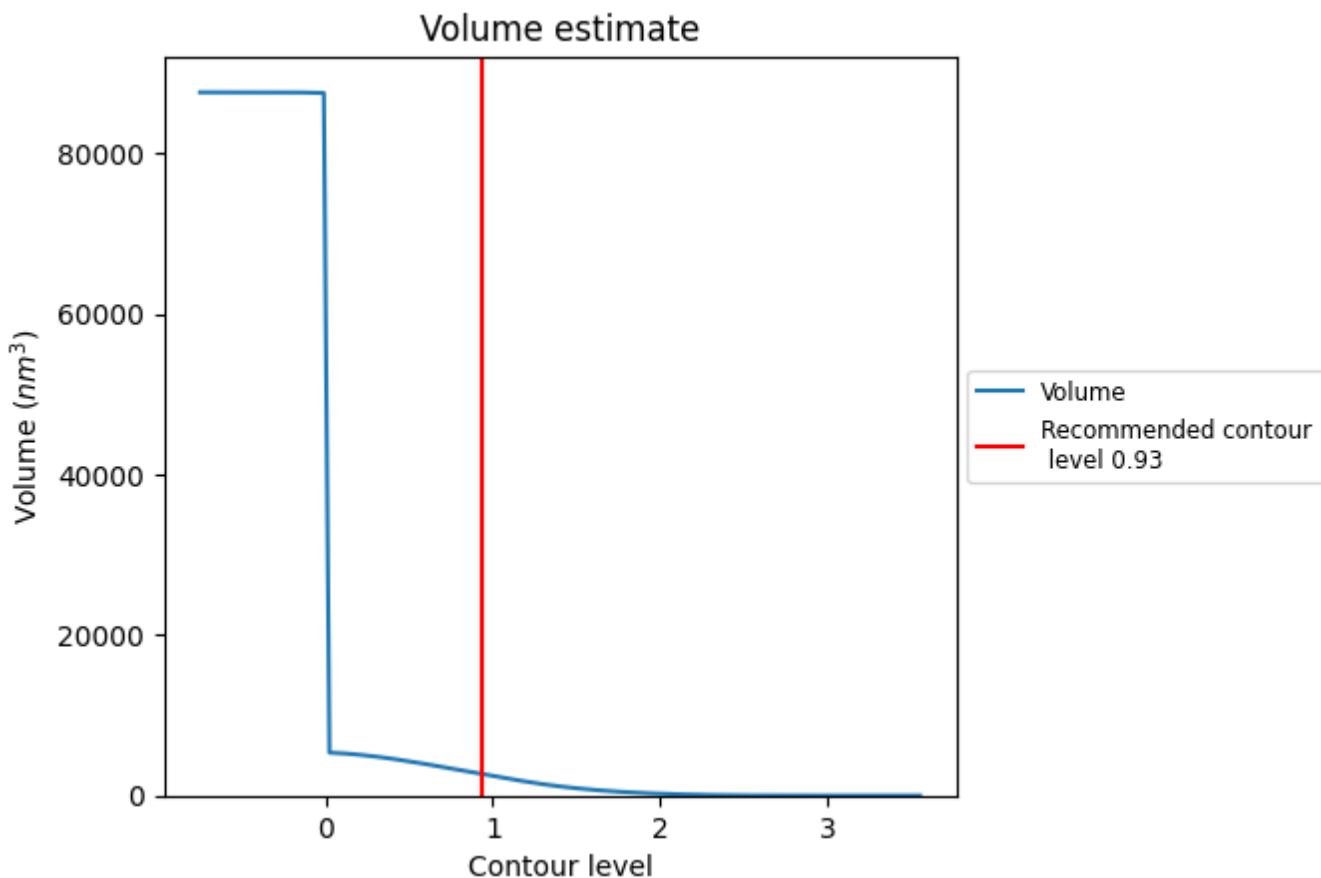
This section contains the results of statistical analysis of the map.

### 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 2715  $\text{nm}^3$ ; this corresponds to an approximate mass of 2453 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](#)

This section was not generated. The rotationally averaged power spectrum is only generated for cubic maps.

## 8 Fourier-Shell correlation

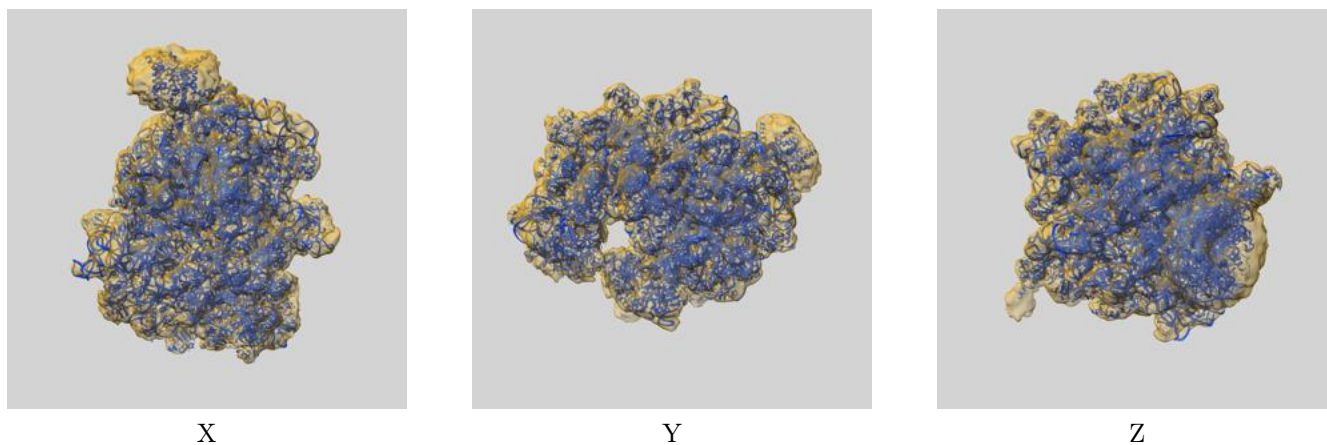
This section was not generated. No FSC curve or half-maps provided.



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

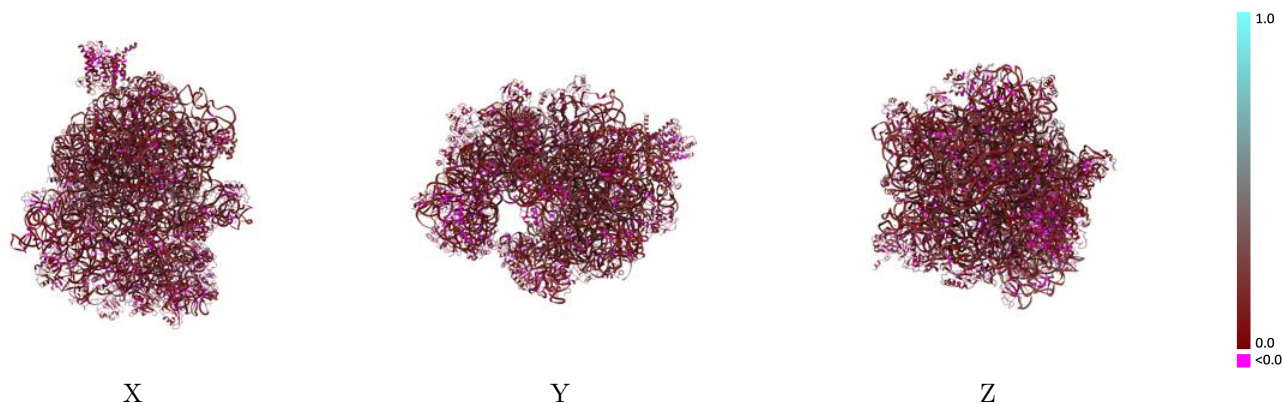
This section contains information regarding the fit between EMDB map EMD-5691 and PDB model 4V4N. Per-residue inclusion information can be found in section 3 on page 16.

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



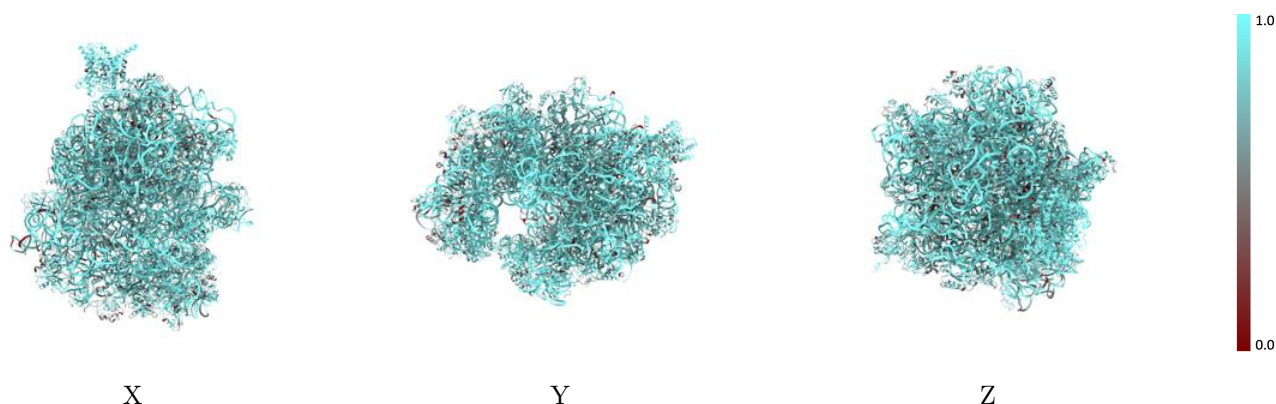
The images above show the 3D surface view of the map at the recommended contour level 0.93 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



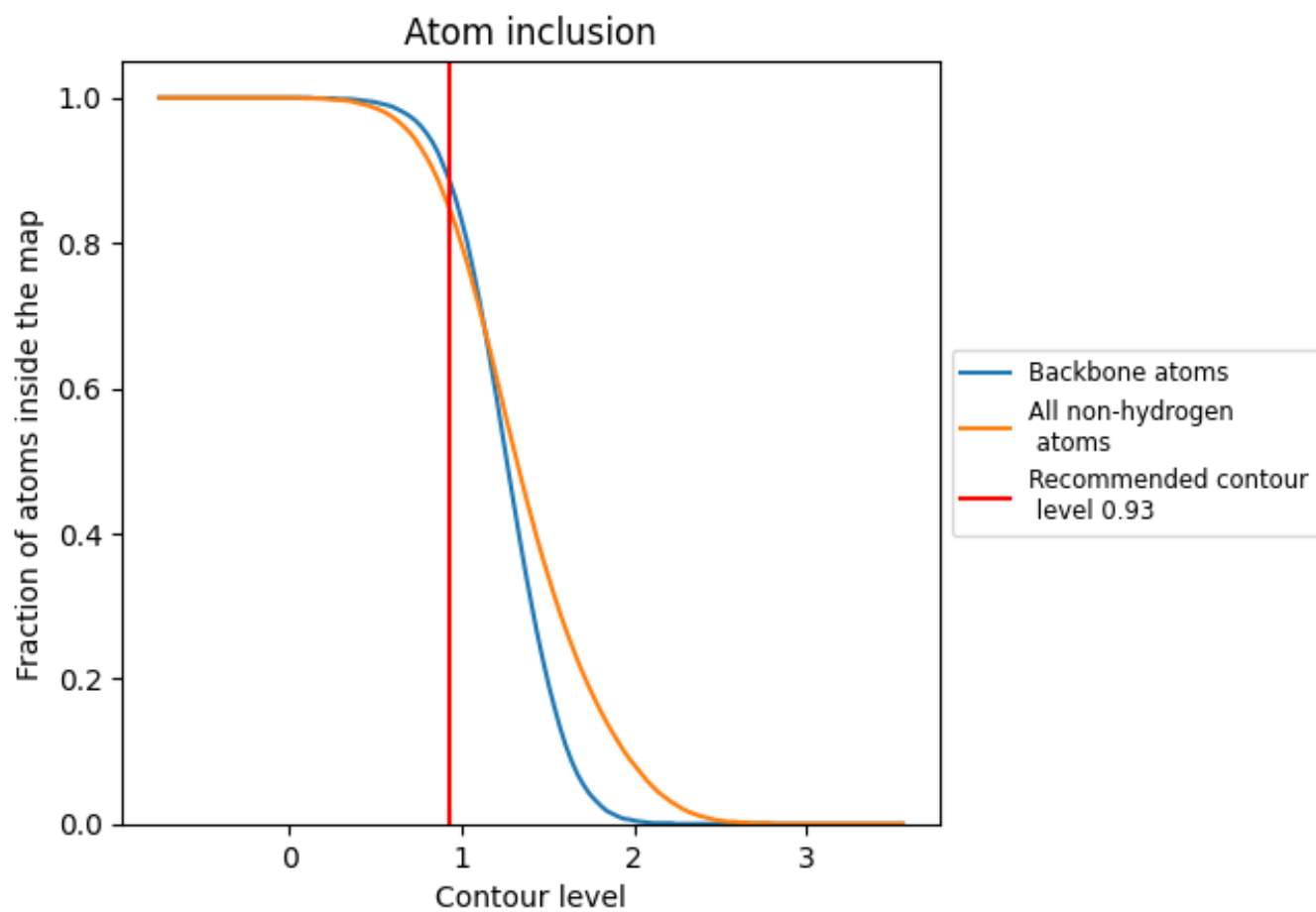
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.93).







































































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 88% of all backbone atoms, 85% 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 (0.93) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8470	 0.1240
A1	 0.9300	 0.1530
A3	 0.8970	 0.1350
A5	 0.7410	 0.1180
A7	 0.8860	 0.1390
A8	 0.9090	 0.0680
AA	 0.7120	 0.0850
AB	 0.6590	 0.0870
AC	 0.6820	 0.0840
AD	 0.6510	 0.0890
AE	 0.8360	 0.1010
AF	 0.7700	 0.1100
AG	 0.8010	 0.1310
AH	 0.8720	 0.0650
AI	 0.6350	 0.1030
AJ	 0.6970	 0.0860
AK	 0.6620	 0.1130
AL	 0.6150	 0.0750
AM	 0.6090	 0.0770
AN	 0.6760	 0.0960
AO	 0.7420	 0.1000
AP	 0.7630	 0.1130
AQ	 0.6740	 0.0980
AR	 0.6640	 0.0850
AS	 0.7080	 0.0980
AT	 0.6840	 0.1060
AU	 0.7180	 0.1020
AV	 0.7430	 0.0970
AW	 0.7590	 0.1270
AX	 0.8680	 0.1020
AY	 0.6910	 0.1130
AZ	 0.8210	 0.1280
Aa	 0.6630	 0.0790
Ab	 0.6230	 0.0900
Ad	 0.6940	 0.0790



*Continued on next page...*

Continued from previous page...

Chain	Atom inclusion	Q-score
Ae	 0.6110	 0.0430
Af	 0.2890	 0.0250
Ag	 0.4060	 0.0270
Ah	 0.5420	 0.0520
Ai	 0.6860	 0.1150
Aj	 0.7910	 0.0890
Ak	 0.7710	 0.1020
B1	 0.8520	 0.1170
B2	 0.9350	 0.1380
B3	 0.5800	 0.0800
BA	 0.8750	 0.1130
BB	 0.7500	 0.1120
BC	 0.7360	 0.1080
BD	 0.7170	 0.0920
BE	 0.6980	 0.0590
BF	 0.7390	 0.1020
BG	 0.8000	 0.0880
BH	 0.7540	 0.0780
BI	 0.7270	 0.0990
BJ	 0.7290	 0.0740
BK	 0.6320	 0.0360
BL	 0.7110	 0.0710
BM	 0.7710	 0.0910
BN	 0.6860	 0.0930
BO	 0.8360	 0.0850
BP	 0.7530	 0.0550
BQ	 0.7480	 0.0960
BR	 0.7180	 0.0820
BS	 0.5900	 0.0680
BT	 0.8170	 0.0770
BU	 0.7540	 0.0640
BV	 0.7530	 0.0900
BW	 0.7170	 0.0850
BX	 0.8830	 0.0910
BY	 0.7990	 0.0630