



wwPDB EM Validation Summary Report ⓘ

Nov 20, 2022 – 05:50 PM EST

PDB ID : 4V6T
EMDB ID : EMD-5386
Title : Structure of the bacterial ribosome complexed by tmRNA-SmpB and EF-G during translocation and MLD-loading
Authors : Ramrath, D.J.F.; Yamamoto, H.; Rother, K.; Wittek, D.; Pech, M.; Mielke, T.; Loerke, J.; Scheerer, P.; Ivanov, P.; Teraoka, Y.; Shpanchenko, O.; Nierhaus, K.H.; Spahn, C.M.T.
Deposited on : 2012-01-27
Resolution : 8.30 Å(reported)

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We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

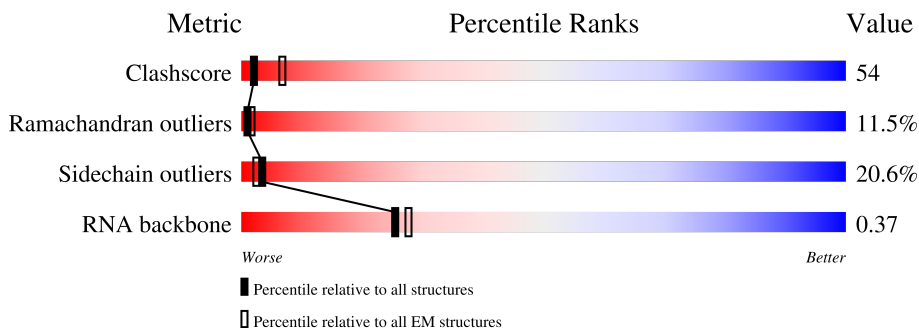
EMDB validation analysis : 0.0.1.dev43
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.9
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al.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

1 Overall quality at a glance

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

The reported resolution of this entry is 8.30 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



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

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	AA	1539	
2	AB	218	
3	AC	206	
4	AD	205	
5	AE	150	
6	AF	100	
7	AG	151	

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Mol	Chain	Length	Quality of chain
8	AH	129	
9	AI	127	
10	AJ	98	
11	AK	117	
12	AL	123	
13	AM	114	
14	AN	100	
15	AO	88	
16	AP	82	
17	AQ	80	
18	AR	55	
19	AS	79	
20	AT	85	
21	AU	51	
22	AV	363	
23	AW	123	
24	AX	77	
25	AY	691	
26	BA	2903	
27	BC	271	
28	BD	209	
29	BE	201	
30	BF	177	
31	BG	176	
32	BH	149	

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Mol	Chain	Length	Quality of chain
33	BI	141	57% 16% 53% 26% 5%
34	BJ	142	11% 56% 33% 10%
35	BK	122	48% 43% 39% 16%
36	BL	143	16% 34% 46% 17%
37	BM	136	21% 43% 40% 16%
38	BN	120	13% 38% 49% 12%
39	BO	116	12% 31% 50% 16%
40	BP	114	25% 29% 58% 11%
41	BQ	117	47% 44% 8%
42	BR	103	14% 45% 37% 17%
43	BS	110	11% 56% 34% 9%
44	BT	93	11% 34% 52% 13%
45	BU	102	16% 36% 44% 18%
46	BV	94	6% 46% 44% 11%
47	BW	76	16% 54% 38% 8%
48	BX	77	10% 40% 49% 10%
49	BY	63	8% 24% 46% 27%
50	BZ	58	7% 45% 50% 5%
51	B0	56	30% 48% 38% 14%
52	B1	50	24% 30% 54% 14%
53	B2	46	15% 46% 46% 7%
54	B3	64	19% 45% 52%
55	B4	38	24% 32% 58% 8%
56	BB	119	18% 51% 28%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit crite-

ria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
22	PSU	AV	347	-	-	X	-

2 Entry composition [i](#)

There are 56 unique types of molecules in this entry. The entry contains 157519 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a RNA chain called 16S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	AA	1538	32995	14716	6050	10691	1538	0	0

- Molecule 2 is a protein called 30S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	AB	218	1705	1081	305	312	7	0	0

- Molecule 3 is a protein called 30S ribosomal protein S3.

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

- Molecule 4 is a protein called 30S ribosomal protein S4.

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

- Molecule 5 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	AE	150	1106	687	211	202	6	0	0

- Molecule 6 is a protein called 30S ribosomal protein S6.

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

- Molecule 7 is a protein called 30S ribosomal protein S7.

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

- Molecule 8 is a protein called 30S ribosomal protein S8.

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

- Molecule 9 is a protein called 30S ribosomal protein S9.

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

- Molecule 10 is a protein called 30S ribosomal protein S10.

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

- Molecule 11 is a protein called 30S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	AK	117	877	540	174	160	3	0	0

- Molecule 12 is a protein called 30S ribosomal protein S12.

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

- Molecule 13 is a protein called 30S ribosomal protein S13.

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

- Molecule 14 is a protein called 30S ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	AN	96	Total	C	N	O	S	0	0
			774	483	160	128	3		

- Molecule 15 is a protein called 30S ribosomal protein S15.

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

- Molecule 16 is a protein called 30S ribosomal protein S16.

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

- Molecule 17 is a protein called 30S ribosomal protein S17.

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

- Molecule 18 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms				AltConf	Trace
18	AR	55	Total	C	N	O	0	0
			456	288	86	82		

- Molecule 19 is a protein called 30S ribosomal protein S19.

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

- Molecule 20 is a protein called 30S ribosomal protein S20.

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

- Molecule 21 is a protein called 30S ribosomal protein S21.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	AU	51	Total	C	N	O	S	0	0
			426	265	86	74	1		

- Molecule 22 is a RNA chain called full length transfer messenger RNA (tmRNA).

Mol	Chain	Residues	Atoms					AltConf	Trace
22	AV	334	Total	C	N	O	P	0	0
			7135	3185	1286	2330	334		

- Molecule 23 is a protein called SsrA-binding protein.

Mol	Chain	Residues	Atoms				AltConf	Trace
23	AW	122	Total	C	N	O	0	0
			993	637	181	175		

- Molecule 24 is a RNA chain called formyl-methionine specific initiator transfer RNA.

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

- Molecule 25 is a protein called elongation factor G.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	AY	667	Total	C	N	O	S	0	1
			5215	3316	893	988	18		

- Molecule 26 is a RNA chain called 23S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	BA	2903	Total	C	N	O	P	0	0
			62319	27801	11467	20149	2902		

- Molecule 27 is a protein called 50S ribosomal protein L2.

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

- Molecule 28 is a protein called 50S ribosomal protein L3.

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

- Molecule 29 is a protein called 50S ribosomal protein L4.

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

- Molecule 30 is a protein called 50S ribosomal protein L5.

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

- Molecule 31 is a protein called 50S ribosomal protein L6.

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

- Molecule 32 is a protein called 50S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
32	BH	149	1110	699	197	213	1	0	0

- Molecule 33 is a protein called 50S ribosomal protein L11.

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

- Molecule 34 is a protein called 50S ribosomal protein L13.

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

- Molecule 35 is a protein called 50S ribosomal protein L14.

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

- Molecule 36 is a protein called 50S ribosomal protein L15.

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

- Molecule 37 is a protein called 50S ribosomal protein L16.

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

- Molecule 38 is a protein called 50S ribosomal protein L17.

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

- Molecule 39 is a protein called 50S ribosomal protein L18.

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

- Molecule 40 is a protein called 50S ribosomal protein L19.

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

- Molecule 41 is a protein called 50S ribosomal protein L20.

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

- Molecule 42 is a protein called 50S ribosomal protein L21.

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

- Molecule 43 is a protein called 50S ribosomal protein L22.

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

- Molecule 44 is a protein called 50S ribosomal protein L23.

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

- Molecule 45 is a protein called 50S ribosomal protein L24.

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

- Molecule 46 is a protein called 50S ribosomal protein L25.

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

- Molecule 47 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	BW	76	Total	C	N	O	S	0	0
			575	356	117	101	1		

- Molecule 48 is a protein called 50S ribosomal protein L28.

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

- Molecule 49 is a protein called 50S ribosomal protein L29.

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

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

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

- Molecule 51 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	B0	56	Total	C	N	O	S	0	0
			444	269	94	80	1		

- Molecule 52 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms				AltConf	Trace
52	B1	50	Total	C	N	O	0	0
			410	263	75	72		

- Molecule 53 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	B2	46	Total	C	N	O	S	0	0
			377	228	90	57	2		

- Molecule 54 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	B3	64	Total	C	N	O	S	0	0
			504	323	105	74	2		

- Molecule 55 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	B4	38	Total	C	N	O	S	0	0
			302	185	65	48	4		

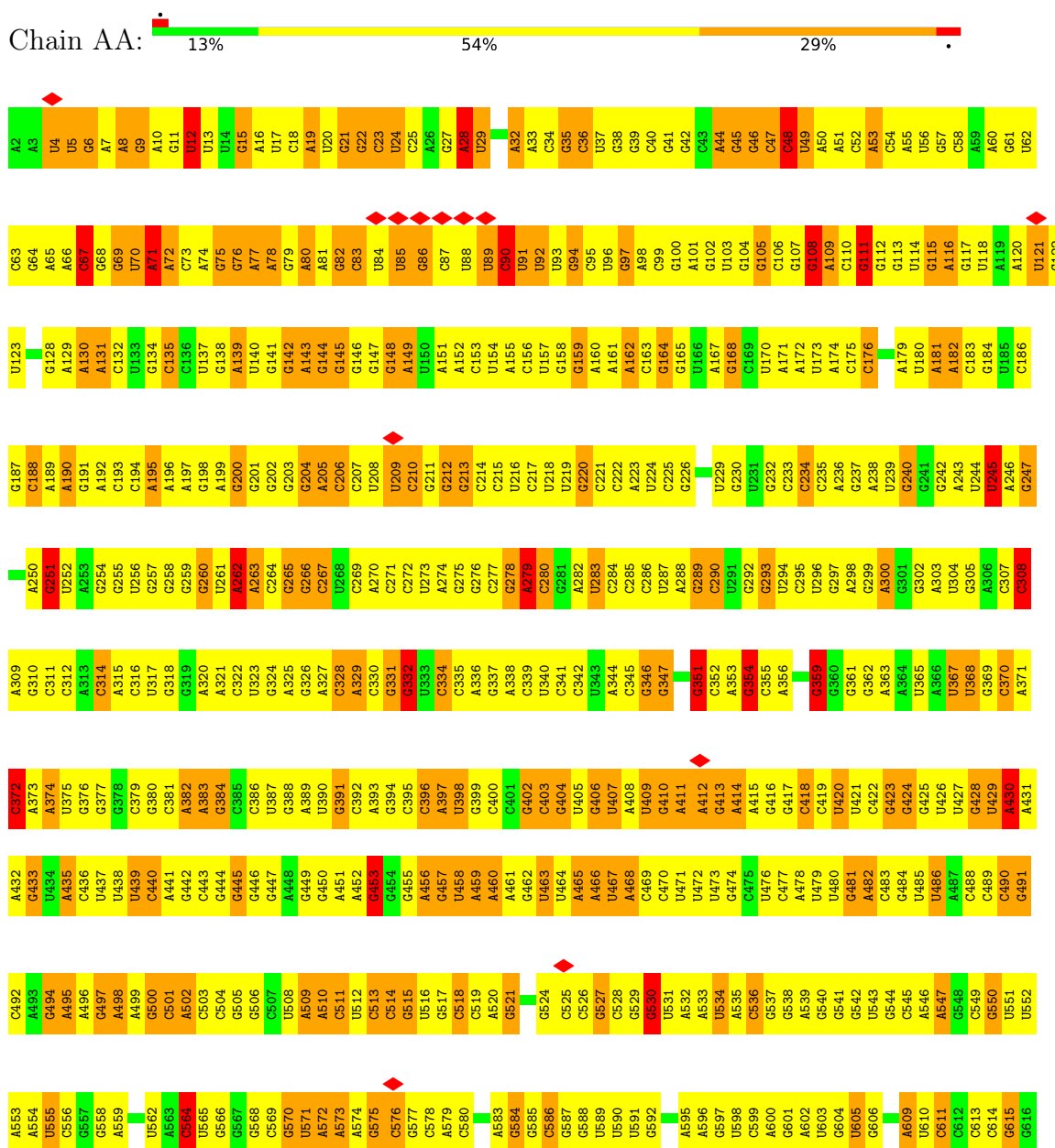
- Molecule 56 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
56	BB	119	2548	1135	466	829	118	0	0

3 Residue-property plots

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

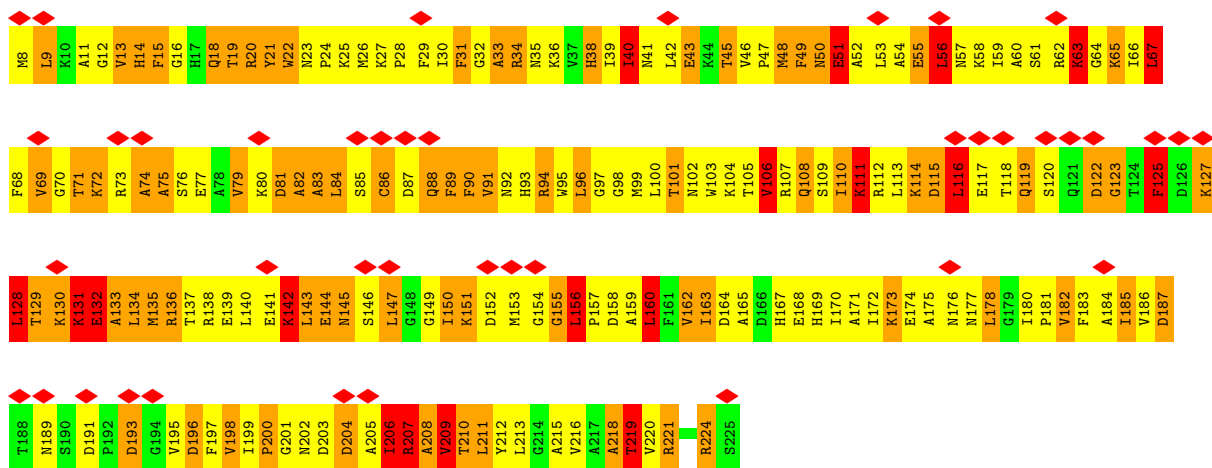
• Molecule 1: 16S ribosomal RNA



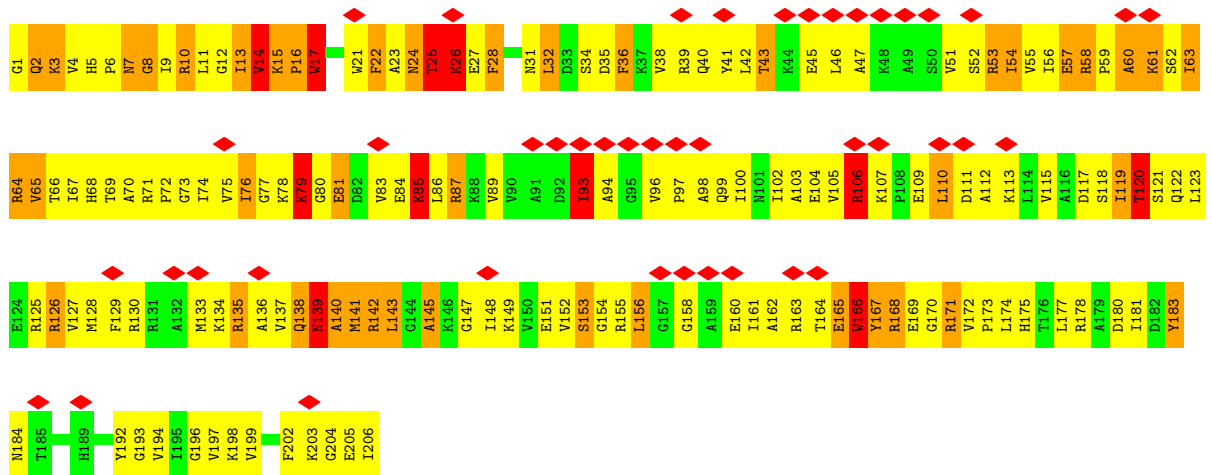
G1439	G1440	A1441	G1442	C1443	G1444	G1445	G1446	G1447	G1448	G1449	G1450	G1451	G1452	G1453	G1454	G1455	A1456	G1457	G1458	G1461	C1462	G1463	A1464	A1465	G1469	G1470	G1471	G1472	G1473	G1474	A1475	G1476	G1477	G1478	G1479	A1480	G1481	G1482	G1483	G1484	G1485	G1486	G1487	G1488	G1489	G1490	G1491	A1492	A1493	G1494	G1495	A1496	G1497	G1498	A1499	A1500	C1501			
G1373	A1374	G1375	G1376	A1377	G1378	G1379	G1380	G1381	G1385	G1386	G1387	G1388	G1389	G1390	G1391	G1392	G1393	A1394	C1395	A1396	G1397	A1398	C1399	C1400	G1401	G1402	G1403	G1404	G1405	A1408	G1409	G1410	G1411	G1412	A1413	G1414	G1415	G1416	G1417	G1418	G1422	G1423	G1424	G1425	G1426	G1427	A1428	A1429	A1430	A1431	A1432	A1433	A1434	G1435	A1436					
A1311	G1312	G1313	G1314	G1315	G1316	G1317	A1318	A1319	G1320	G1321	C1322	G1323	A1324	G1325	G1326	G1327	G1328	A1329	C1395	G1331	A1332	A1333	G1334	G1335	G1336	G1337	G1338	G1339	G1340	G1341	G1342	G1343	A1346	G1347	G1348	A1349	A1350	G1351	G1352	G1353	G1354	G1355	G1356	G1357	A1358	C1359	A1360	A1363	G1364	G1365	A1366	G1367	A1368	G1369	A1370	G1371	G1372			
G1244	C1245	A1246	G1247	A1248	G1249	G1253	A1254	A1255	G1256	A1257	G1258	G1259	G1260	G1266	G1267	G1268	A1269	G1270	A1271	G1272	A1275	G1276	G1277	G1278	G1279	A1280	A1281	G1282	G1283	G1284	A1285	A1286	A1287	A1288	A1289	G1290	G1291	G1292	G1293	G1294	G1295	G1296	G1297	G1298	A1299	G1300	G1301	C1302	G1303	G1304	A1236	C1237	G1305	A1306	G1307	A1308	G1309	G1310		
U1183	G1184	G1185	G1186	A1187	G1188	U1189	A1190	A1191	G1192	G1193	U1194	C1195	G1196	G1197	U1198	U1199	C1200	U1201	U1202	C1203	A1204	U1205	G1206	G1207	C1210	U1211	U1212	U1213	U1214	G1215	A1216	C1217	U1218	U1219	G1220	U1221	C1222	C1223	U1224	A1225	A1227	C1228	A1229	C1230	G1231	U1232	G1233	C1234	U1235	G1236	C1237	A1238	A1239	U1240	G1241	G1242	C1243	G1244		
U1056	G1057	G1058	G1059	U1060	G1061	U1062	C1063	G1064	U1065	C1066	A1067	G1068	C1069	U1070	G1071	U1072	U1073	G1074	U1075	U1076	G1077	U1078	G1079	A1080	A1081	U1082	U1083	U1084	U1085	U1086	A1092	A1093	U1095	U1096	C1097	C1098	G1099	C1100	A1101	A1102	C1103	G1104	A1105	G1106	C1107	G1108	A1109	C1110	C1111	C1112	C1113	C1114	U1115	U1118	C1119	C1120	G1182			
G993	G994	C995	A996	G997	C998	C999	A1000	C1001	G1002	G1003	A1004	A1005	G1006	U1007	U1008	A1012	G1013	G951	G952	G953	G954	G955	U956	U957	A958	A959	U960	U961	C962	G963	A964	U965	G966	A969	C970	G971	G972	G973	A974	G975	A976	A977	A978	C979	C980	U981	U982	A983	C984	C985	U986	G987	G988	U989	C990	U991	U992			
G868	C869	U870	U871	A872	A873	G874	U875	C876	A877	G878	C879	C880	G881	C882	C883	U884	G885	A889	G890	U891	A892	C893	G894	G895	C896	G897	U900	U901	U902	U903	U904	U905	A906	A909	C910	C912	A913	A914	A915	U916	G917	A918	A919	U920	U921	G922	A923	C924	U925	A926	G927	G928	G929	C930	C931					
C805	C806	C807	C808	C809	C810	C811	C812	U813	G814	A815	A816	C817	C818	A819	U820	U821	U822	A825	C826	U827	U828	A829	G830	A831	G832	G833	U834	U835	G836	C839	C840	U841	U842	U843	G844	A845	G846	C847	C848	G849	U850	G851	G852	C853	U854	U855	C856	C857	G858	C859	A860	C861	G862	U863	A864	A865	G866	G867		
C744	G745	A746	A747	G748	A749	C750	U751	G752	A753	C754	G755	C756	U757	U758	U759	A760	G763	C764	G765	A766	A767	A768	G769	C770	C771	U772	G773	G774	G775	G776	U777	G778	A779	U780	A781	A782	C783	A784	C785	C786	G787	U788	U789	A790	G791	A792	U793	A794	C795	C796	C797	U798	G799	A800	A802	C803	U804			
U678	C679	C680	G683	G684	A621	G685	U686	U687	G688	C689	G690	G691	U692	G693	U694	A695	A696	U697	U701	A702	G703	A704	G705	A706	U707	U708	G709	G710	G711	A712	G713	G714	A715	A716	U717	A718	C719	C720	G721	G722	U723	G724	G725	G726	G727	A728	A729	G730	C731	C732	G733	G734	C735	C736	C737	C738	C739	U740		
G617	C618	U619	C620	A621	G622	C623	C624	U625	G626	G627	G628	A629	A630	C631	U632	G633	C634	A635	U636	C637	U638	G639	A640	U641	A642	C643	U644	C708	G645	G646	C647	A648	A649	G650	C651	U652	U653	G654	A655	C656	U657	C658	U659	C660	G661	U662	A663	G664	A665	G666	G667	U668	G669	G670	A673	G674	A675	A676	C677	U677



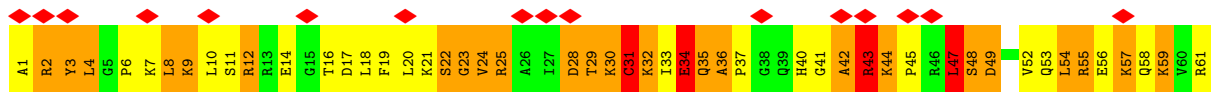
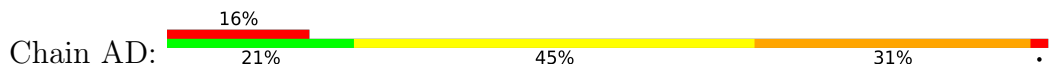
• Molecule 2: 30S ribosomal protein S2

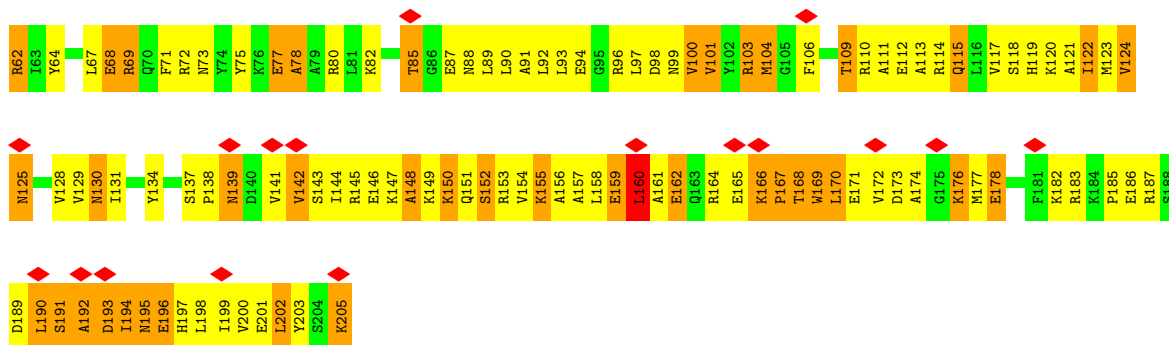


• Molecule 3: 30S ribosomal protein S3

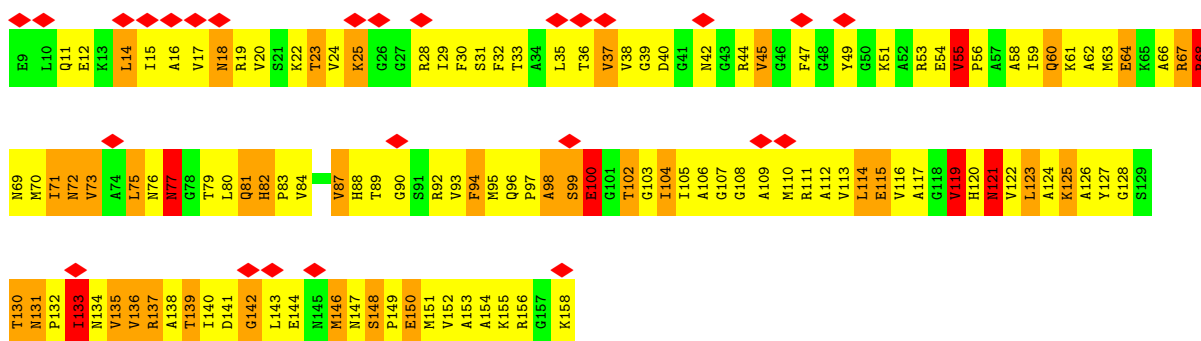
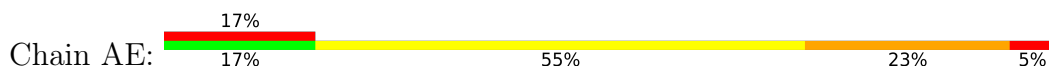


• Molecule 4: 30S ribosomal protein S4

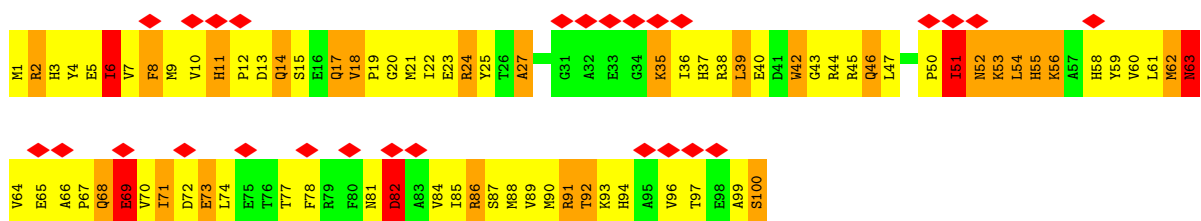
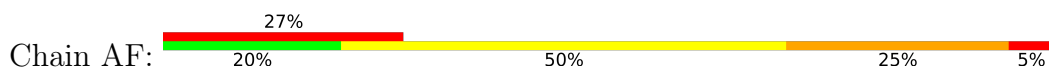




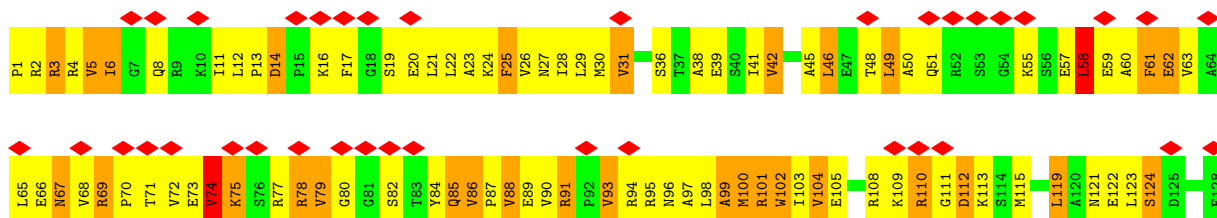
• Molecule 5: 30S ribosomal protein S5



• Molecule 6: 30S ribosomal protein S6

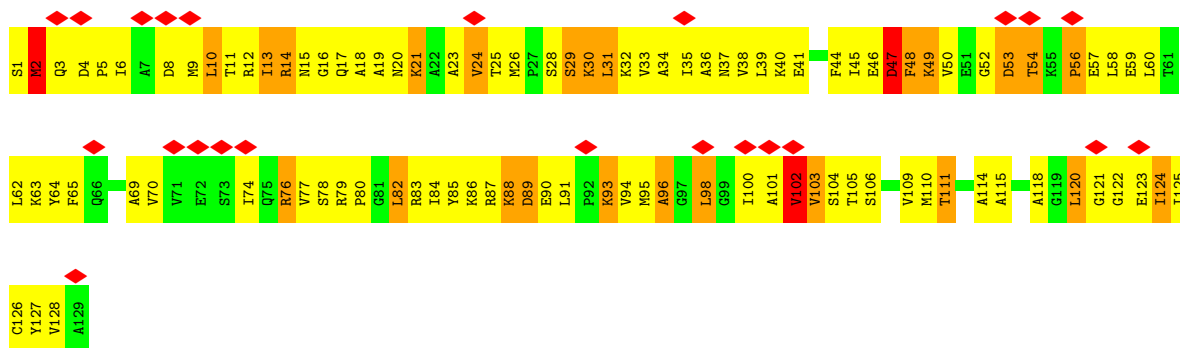
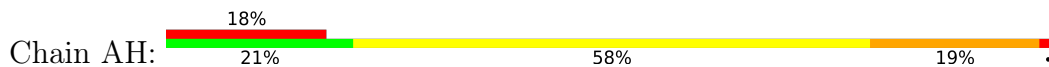


• Molecule 7: 30S ribosomal protein S7

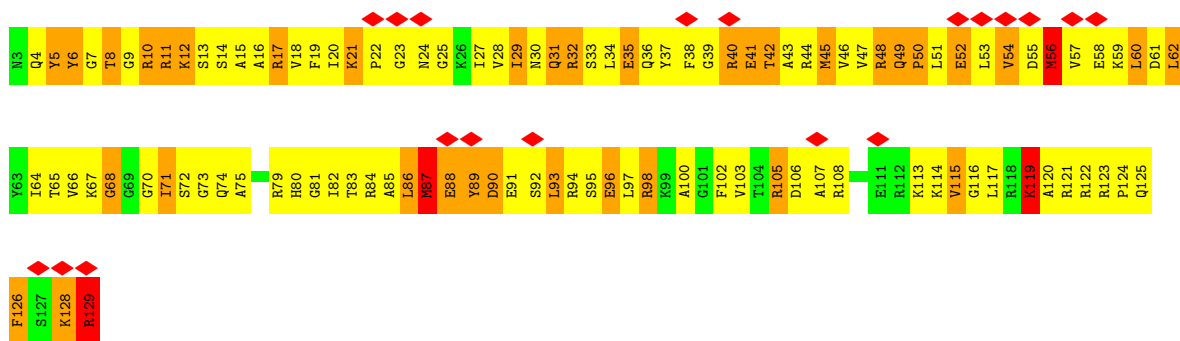
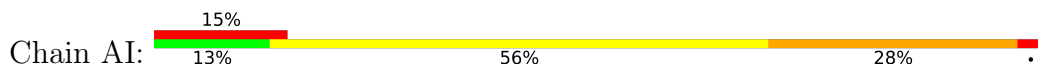




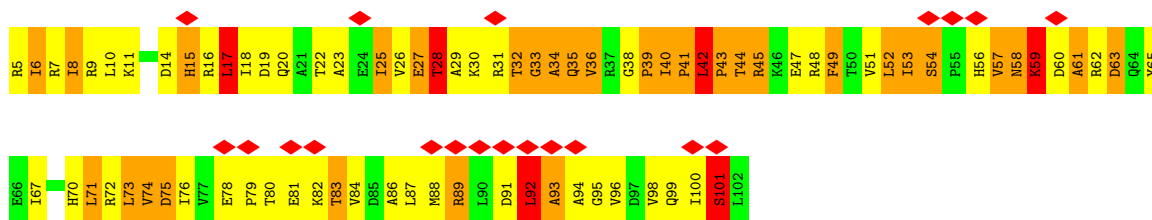
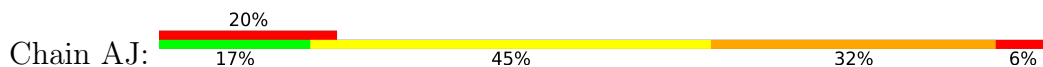
• Molecule 8: 30S ribosomal protein S8



• Molecule 9: 30S ribosomal protein S9

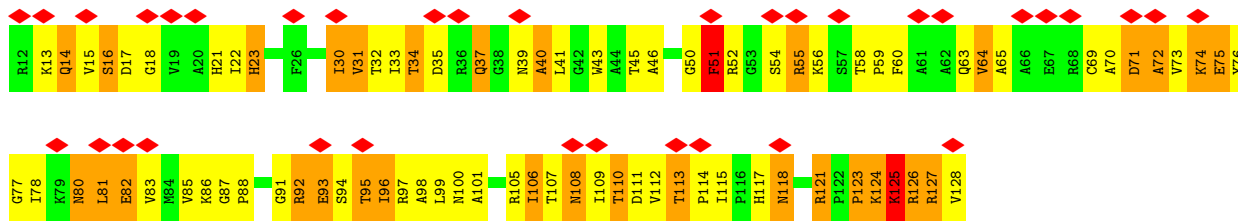


• Molecule 10: 30S ribosomal protein S10

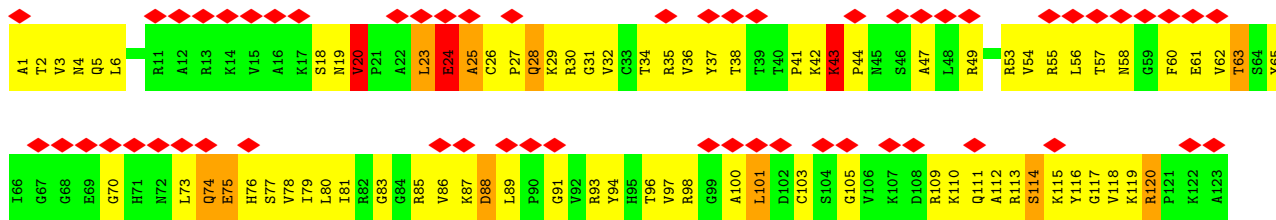


• Molecule 11: 30S ribosomal protein S11

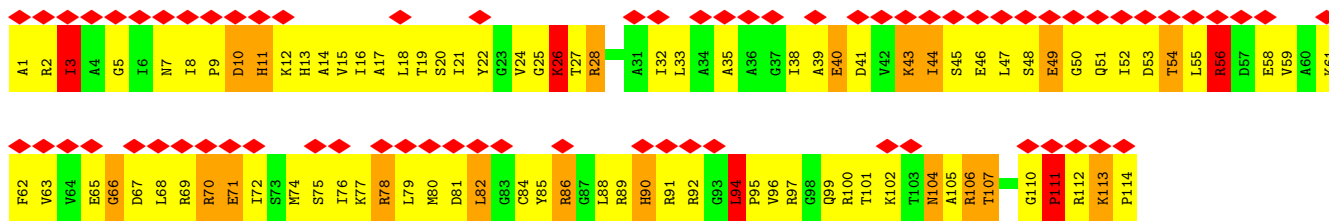




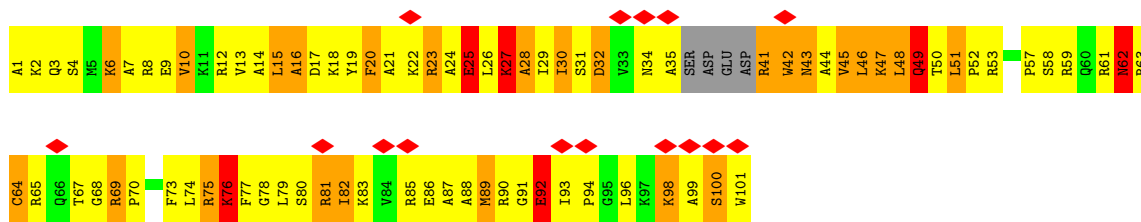
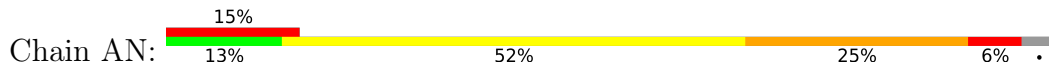
• Molecule 12: 30S ribosomal protein S12



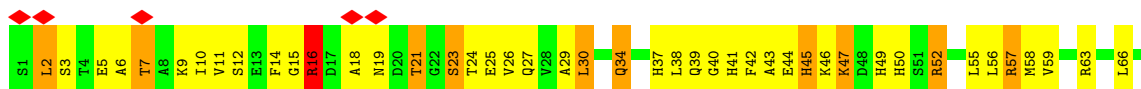
• Molecule 13: 30S ribosomal protein S13



• Molecule 14: 30S ribosomal protein S14

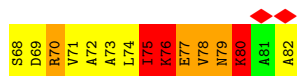
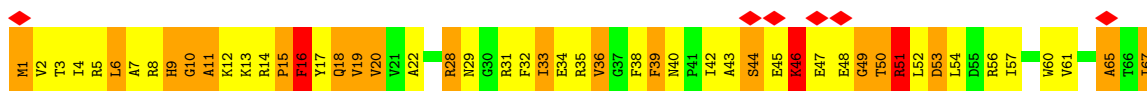
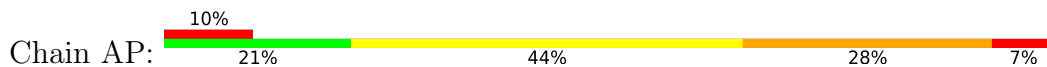


• Molecule 15: 30S ribosomal protein S15

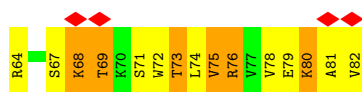
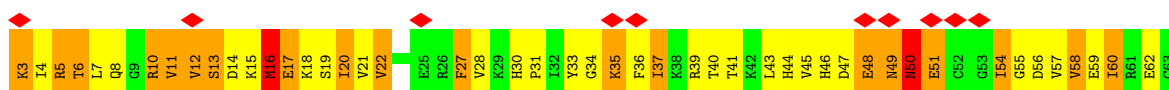
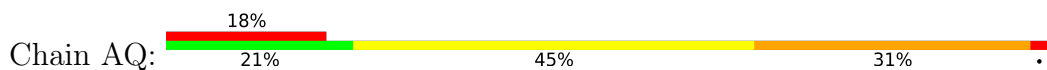




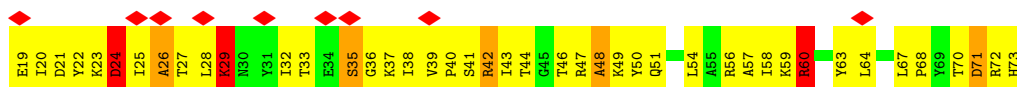
- Molecule 16: 30S ribosomal protein S16



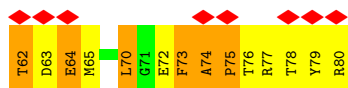
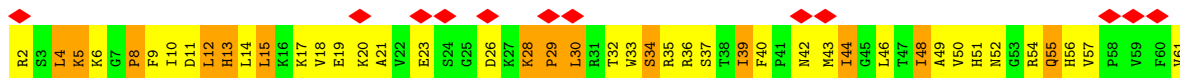
- Molecule 17: 30S ribosomal protein S17



- Molecule 18: 30S ribosomal protein S18

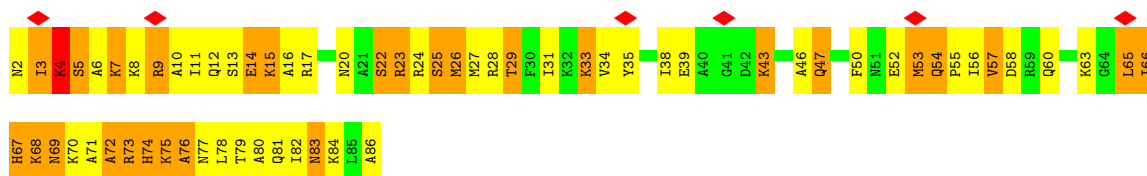


- Molecule 19: 30S ribosomal protein S19

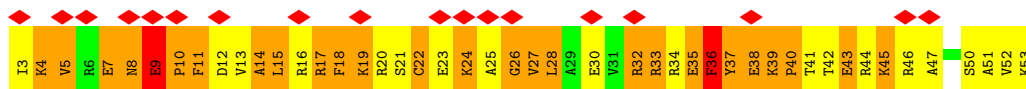


- Molecule 20: 30S ribosomal protein S20

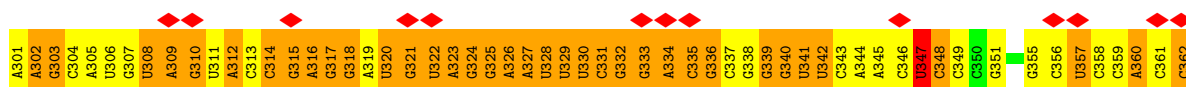
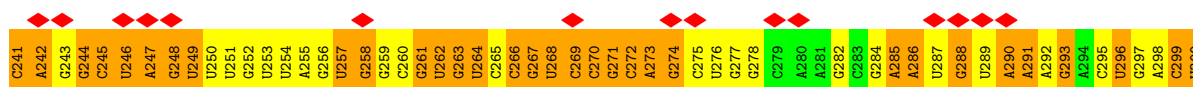
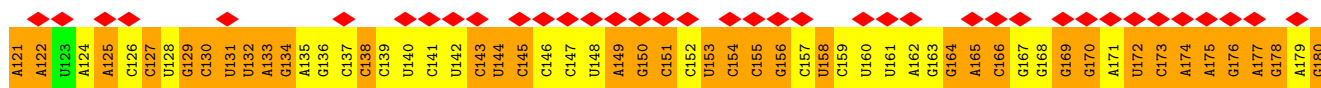
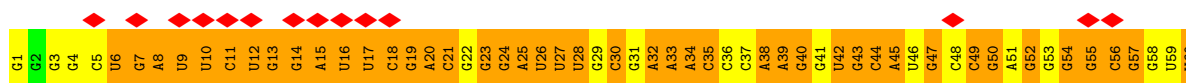




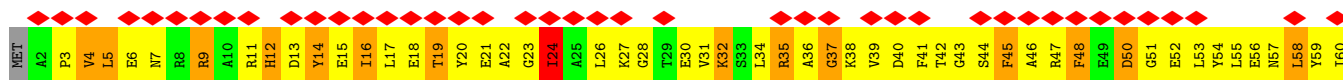
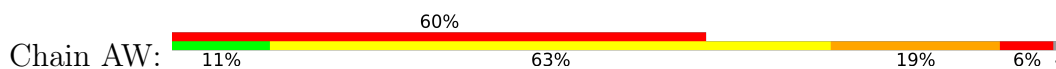
• Molecule 21: 30S ribosomal protein S21

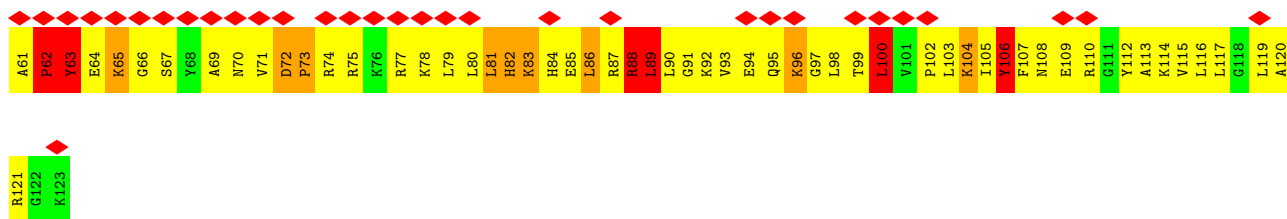


• Molecule 22: full length transfer messenger RNA (tmRNA)

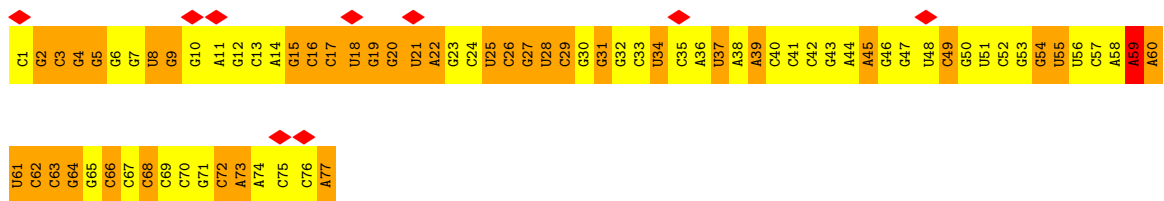


• Molecule 23: SsrA-binding protein

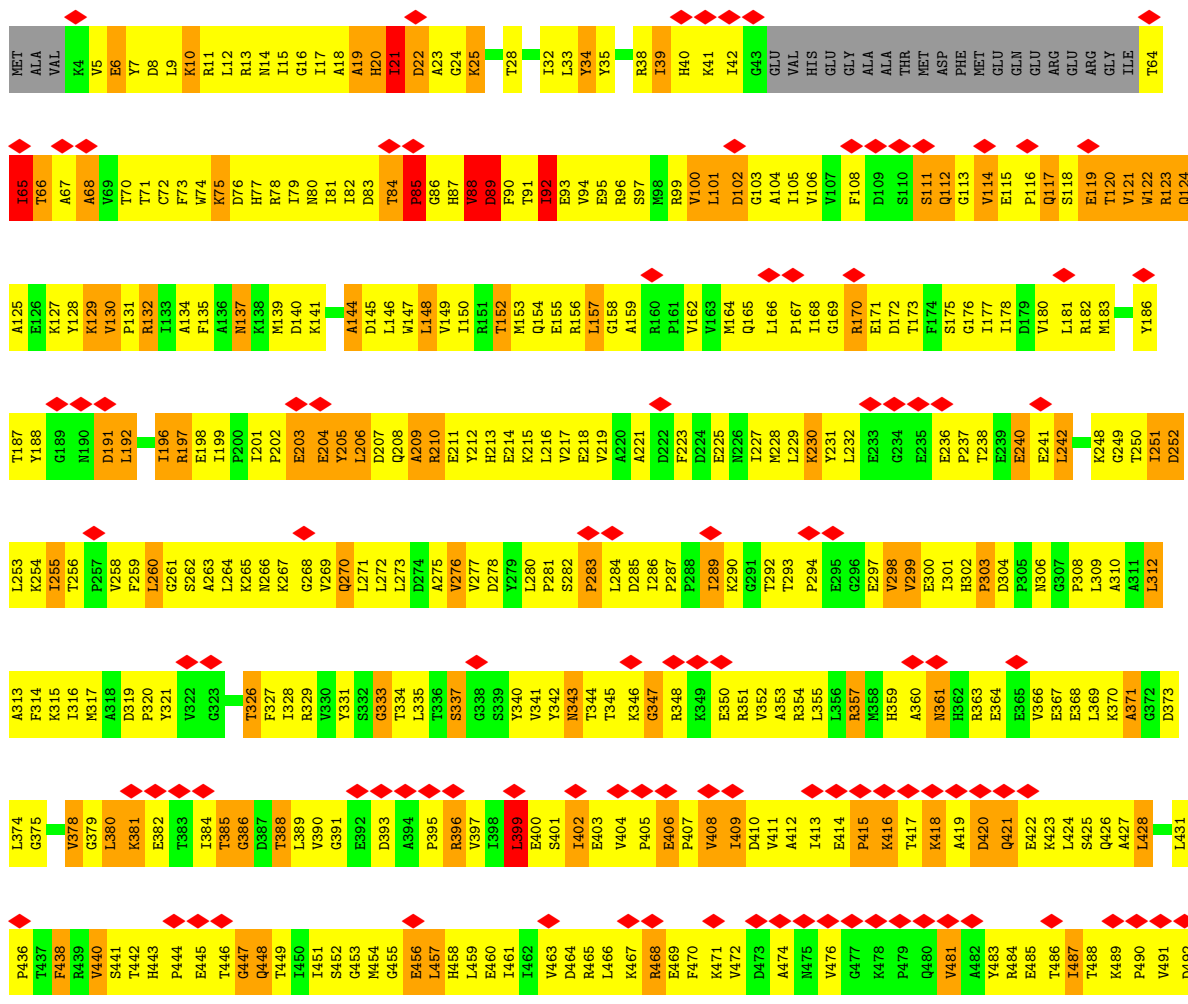


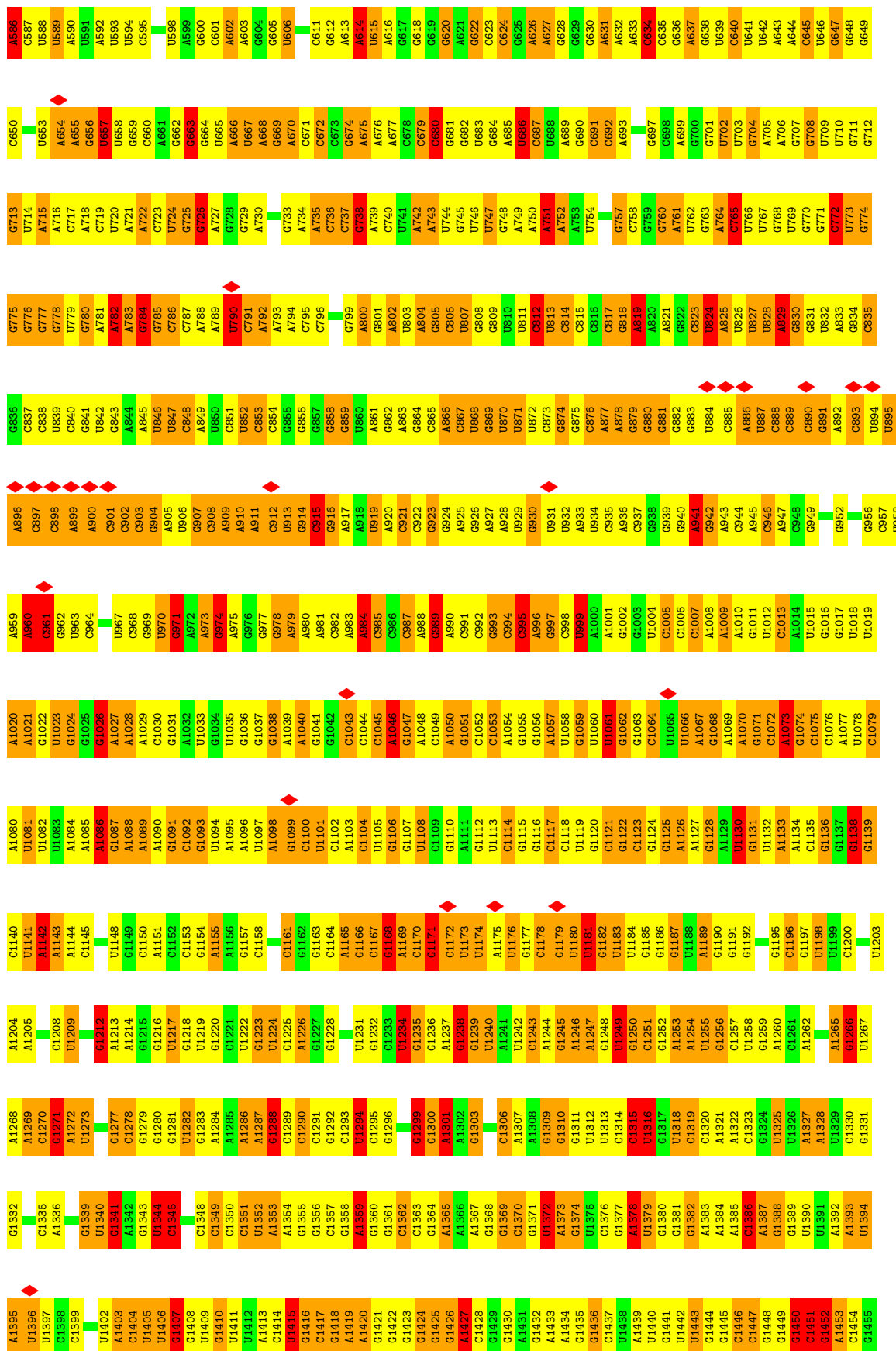


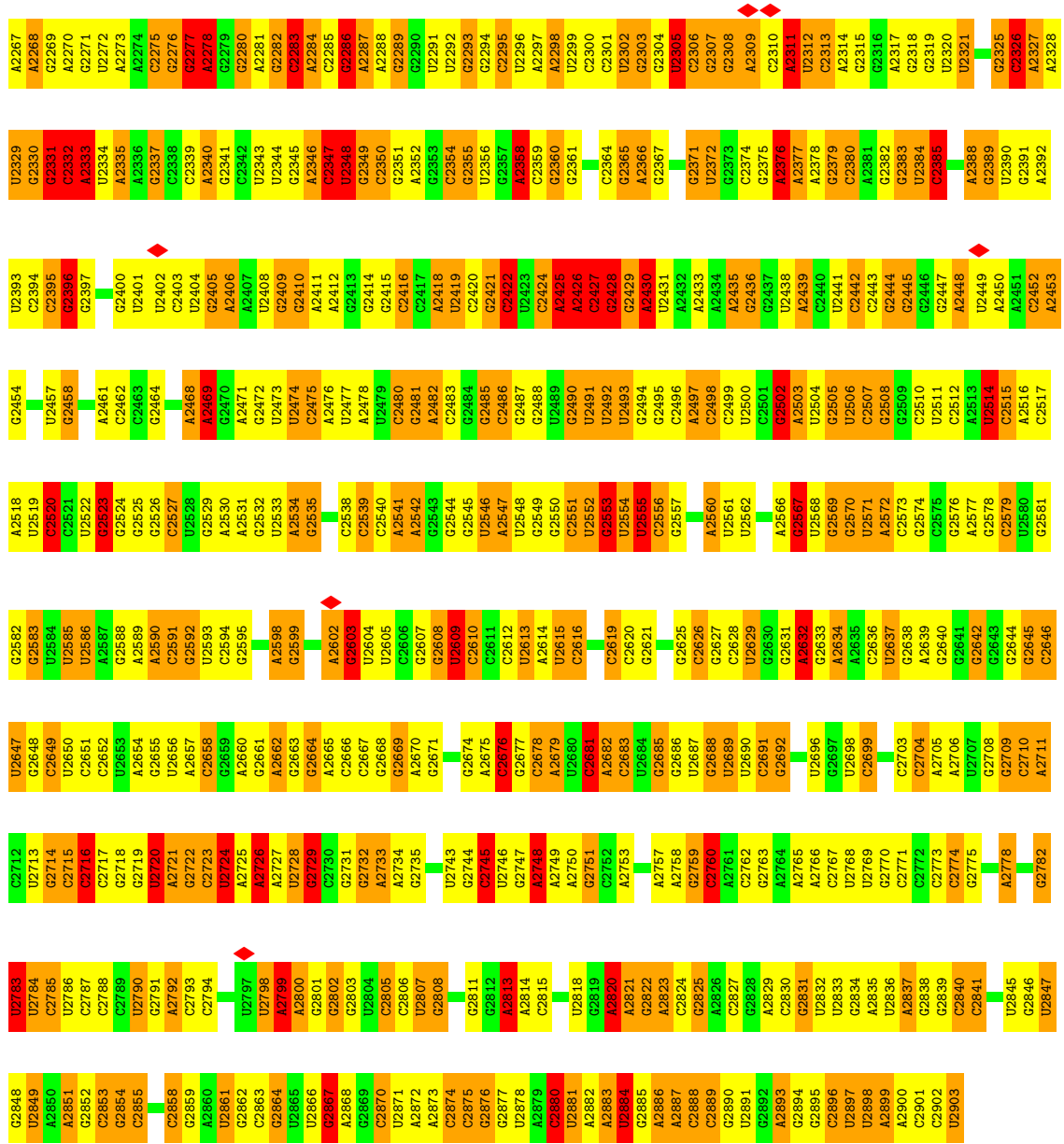
• Molecule 24: formyl-methionine specific initiator transfer RNA



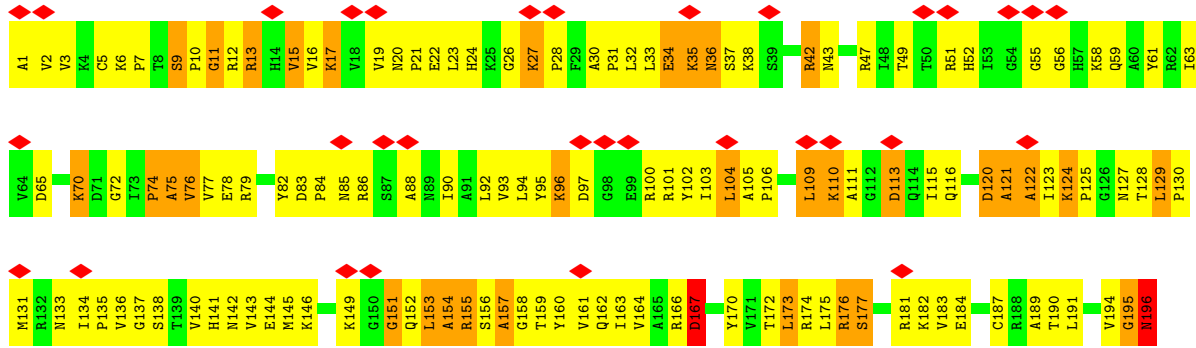
• Molecule 25: elongation factor G

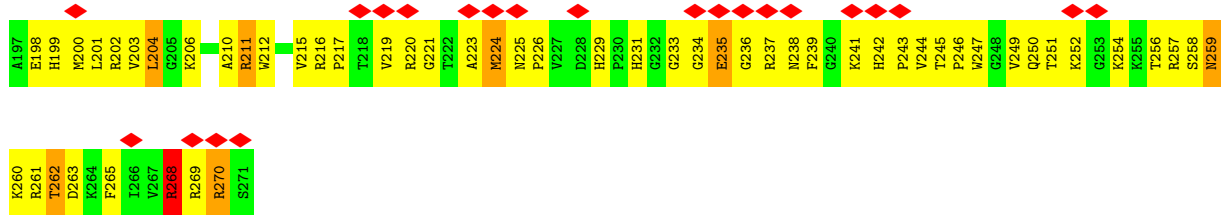




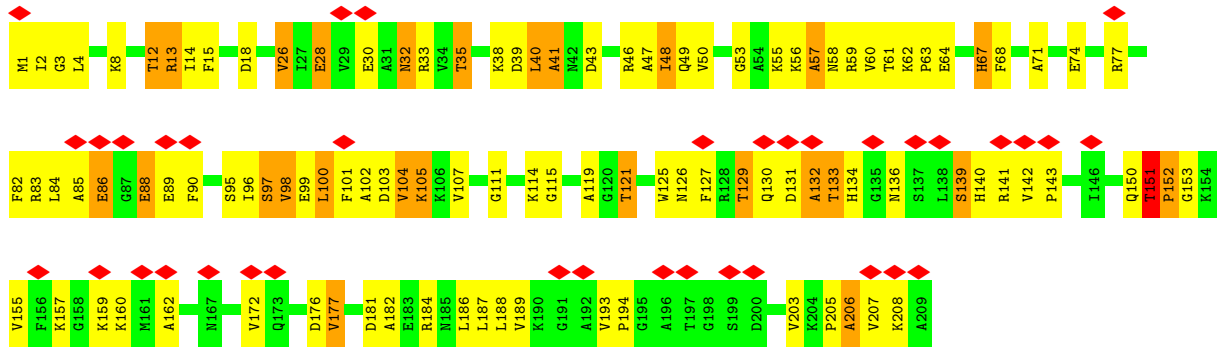


● Molecule 27: 50S ribosomal protein L2

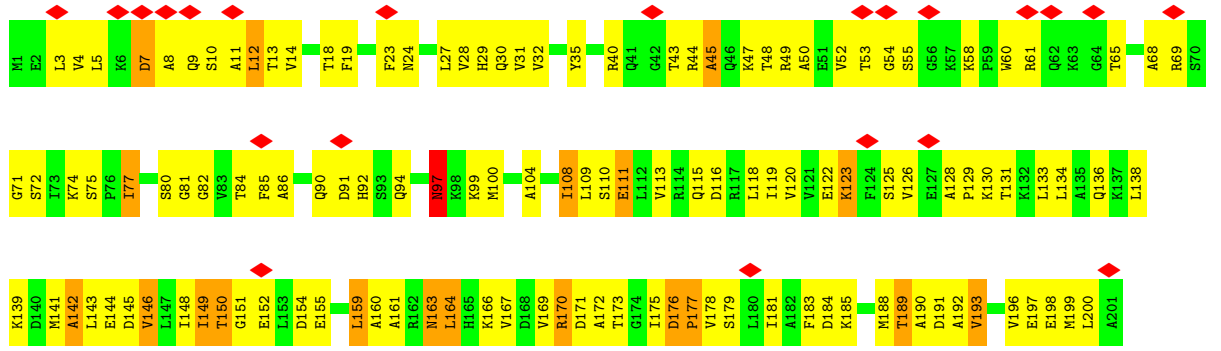




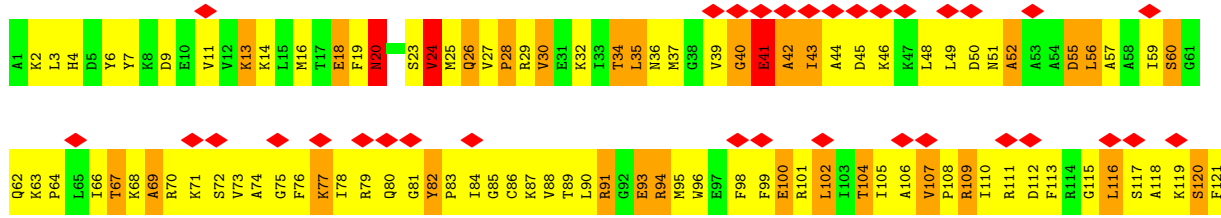
• Molecule 28: 50S ribosomal protein L3



• Molecule 29: 50S ribosomal protein L4

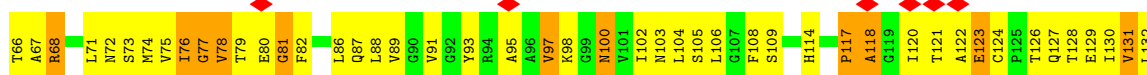
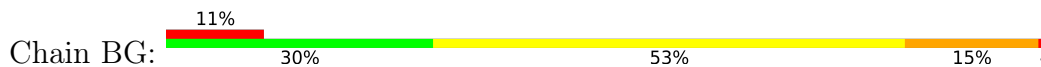


• Molecule 30: 50S ribosomal protein L5

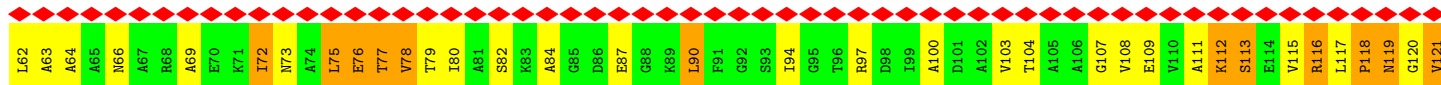
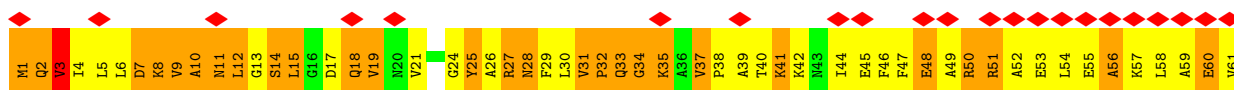
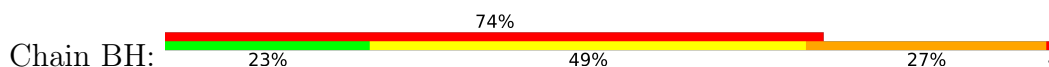




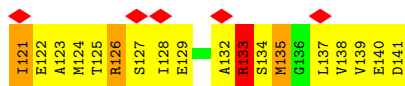
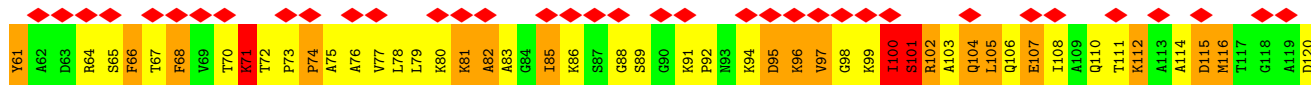
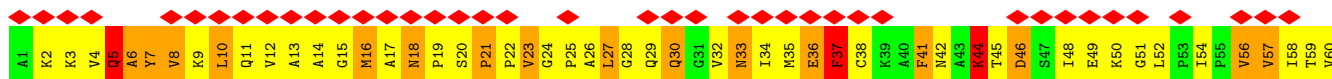
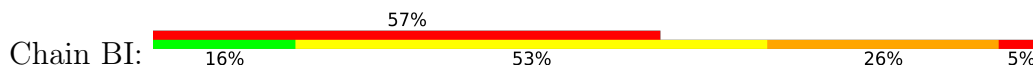
• Molecule 31: 50S ribosomal protein L6



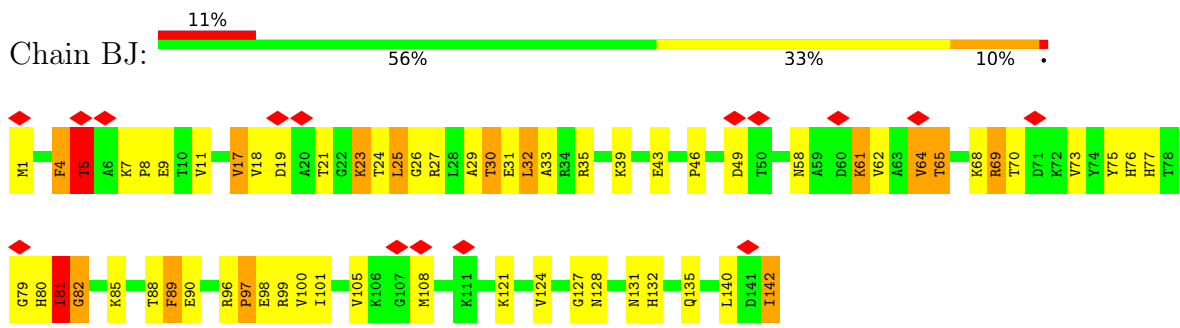
• Molecule 32: 50S ribosomal protein L9



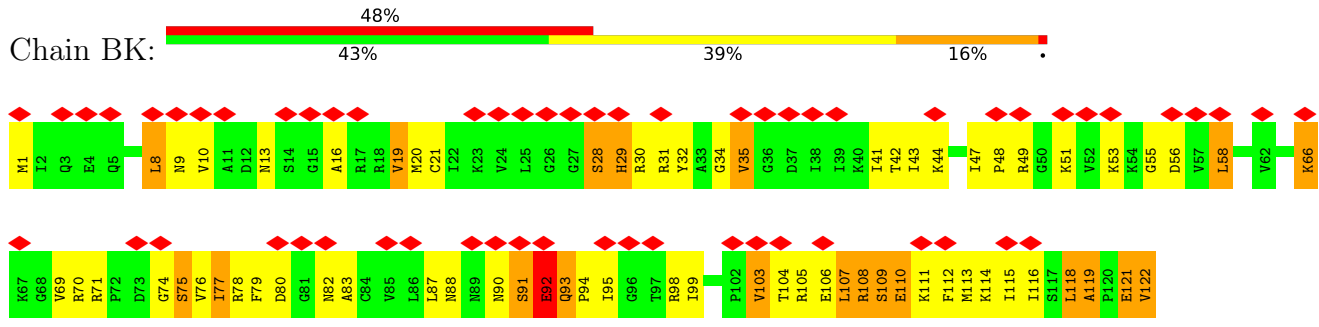
• Molecule 33: 50S ribosomal protein L11



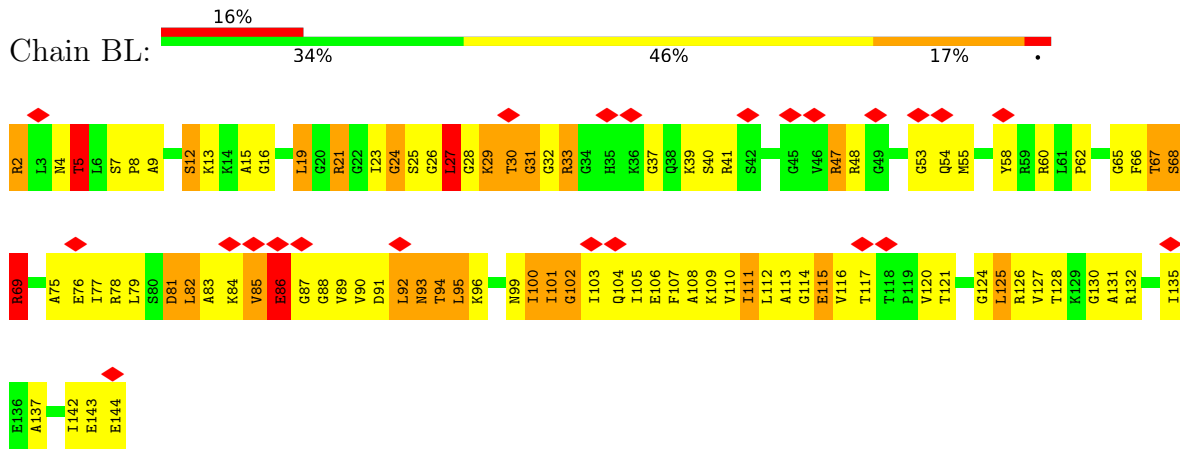
• Molecule 34: 50S ribosomal protein L13



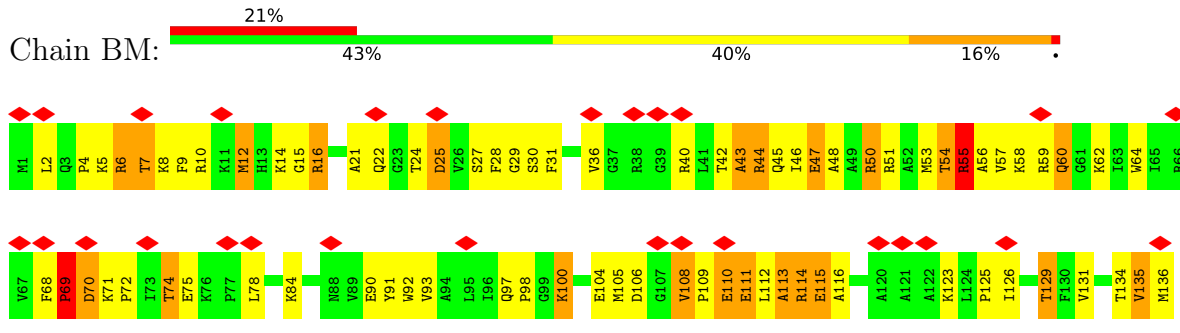
• Molecule 35: 50S ribosomal protein L14



• Molecule 36: 50S ribosomal protein L15

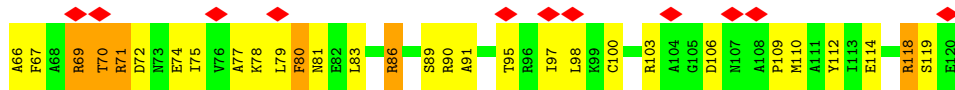


• Molecule 37: 50S ribosomal protein L16

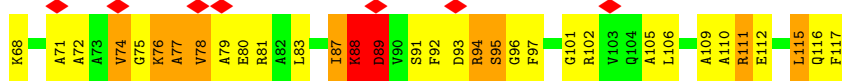
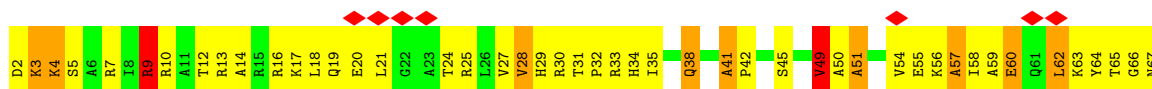


• Molecule 38: 50S ribosomal protein L17

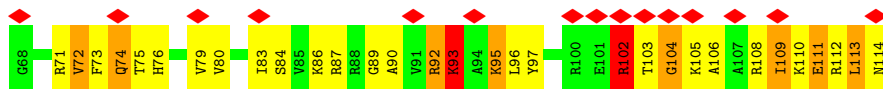
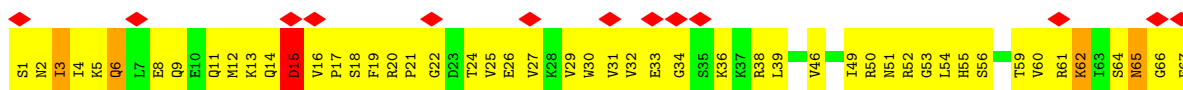




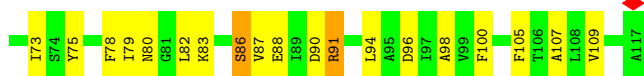
- Molecule 39: 50S ribosomal protein L18



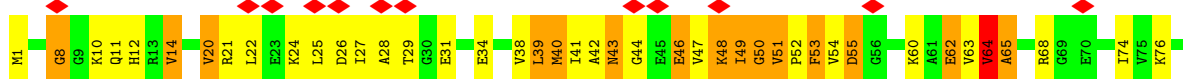
- Molecule 40: 50S ribosomal protein L19

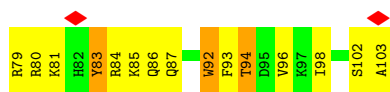


- Molecule 41: 50S ribosomal protein L20

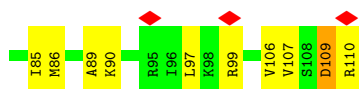


- Molecule 42: 50S ribosomal protein L21

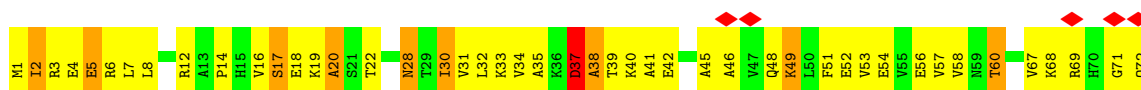




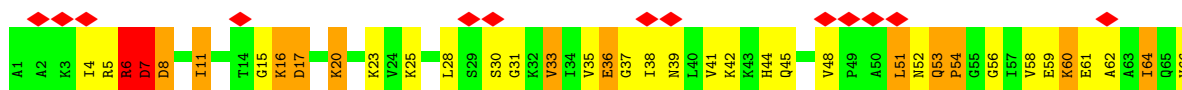
- Molecule 43: 50S ribosomal protein L22



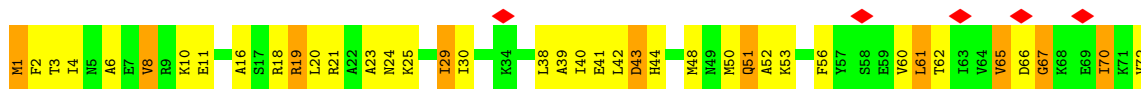
- Molecule 44: 50S ribosomal protein L23



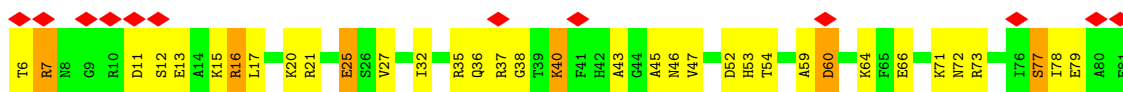
- Molecule 45: 50S ribosomal protein L24



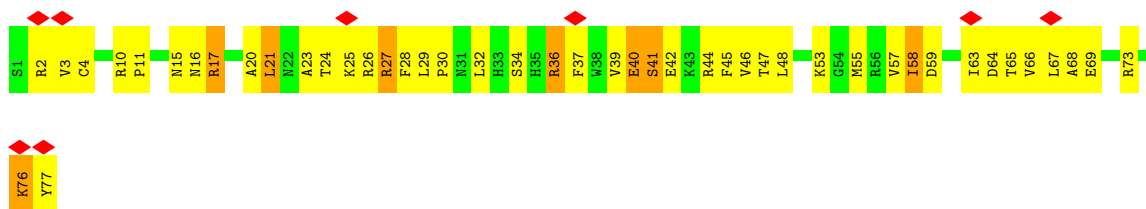
- Molecule 46: 50S ribosomal protein L25



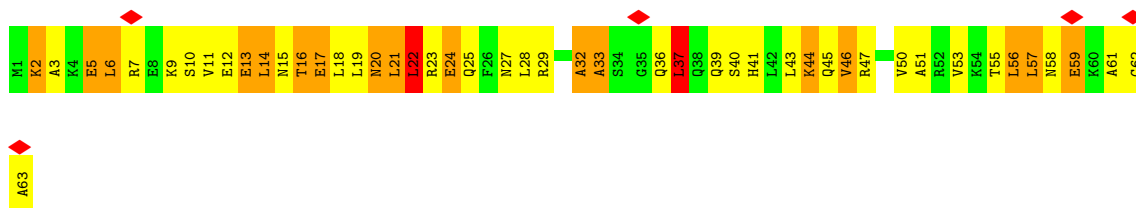
- Molecule 47: 50S ribosomal protein L27



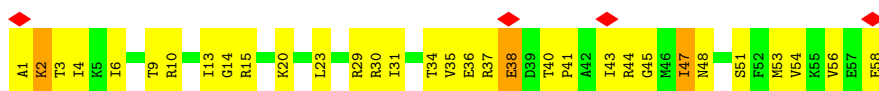
• Molecule 48: 50S ribosomal protein L28



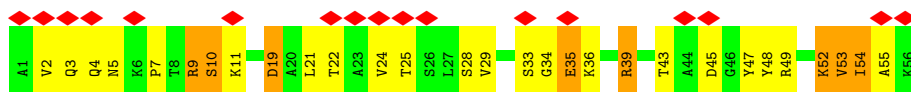
• Molecule 49: 50S ribosomal protein L29



• Molecule 50: 50S ribosomal protein L30



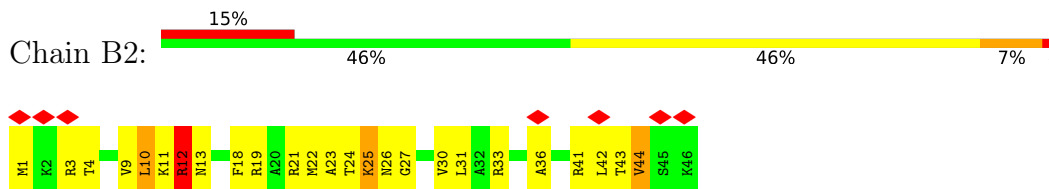
• Molecule 51: 50S ribosomal protein L32



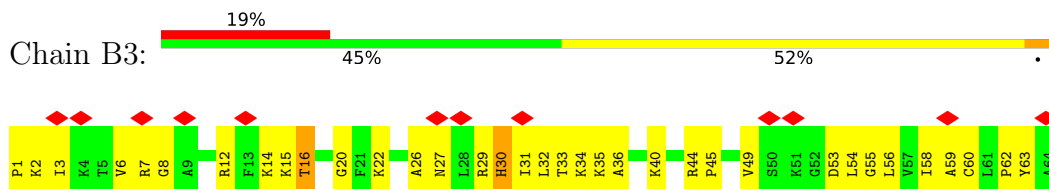
• Molecule 52: 50S ribosomal protein L33



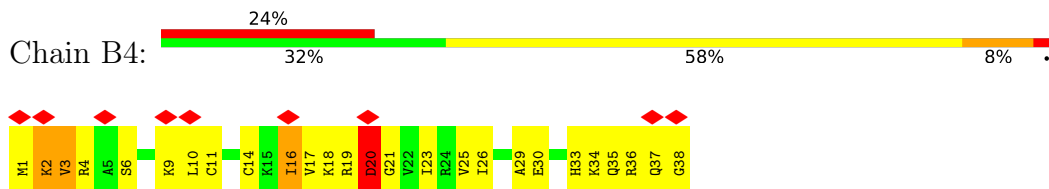
• Molecule 53: 50S ribosomal protein L34



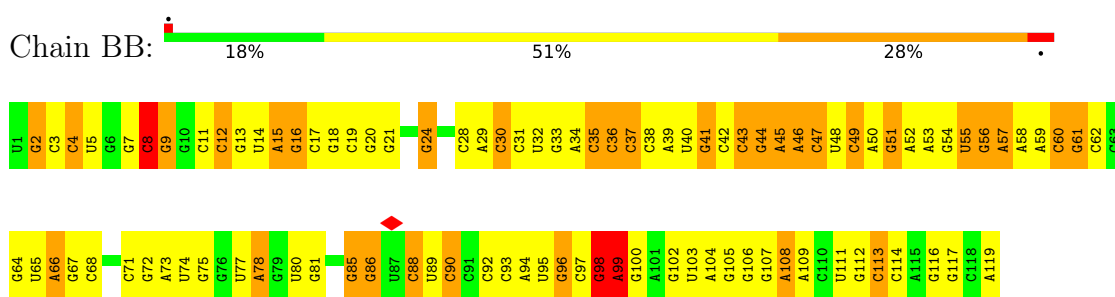
• Molecule 54: 50S ribosomal protein L35



• Molecule 55: 50S ribosomal protein L36



• Molecule 56: 5S ribosomal RNA



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	68843	Depositor
Resolution determination method	Not provided	
CTF correction method	The volumes were CTF-corrected in defocus groups, with an average of approximately 215 individual images per group	Depositor
Microscope	FEI POLARA 300	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	20	Depositor
Minimum defocus (nm)	2500	Depositor
Maximum defocus (nm)	5000	Depositor
Magnification	39000	Depositor
Image detector	KODAK SO-163 FILM	Depositor
Maximum map value	9.001	Depositor
Minimum map value	-3.389	Depositor
Average map value	0.205	Depositor
Map value standard deviation	0.751	Depositor
Recommended contour level	2.0	Depositor
Map size (\AA)	378.0, 378.0, 378.0	wwPDB
Map dimensions	300, 300, 300	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.26, 1.26, 1.26	Depositor

5 Model quality i

5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: PSU, 5MU

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# $ Z > 5$	RMSZ	# $ Z > 5$
1	AA	0.85	5/36944 (0.0%)	1.26	314/57632 (0.5%)
2	AB	0.60	0/1736	0.79	0/2338
3	AC	0.56	0/1652	0.71	0/2225
4	AD	0.59	0/1665	0.74	1/2227 (0.0%)
5	AE	0.62	0/1119	0.85	0/1504
6	AF	0.65	0/836	0.82	1/1128 (0.1%)
7	AG	0.50	0/1196	0.67	0/1602
8	AH	0.60	0/989	0.78	0/1326
9	AI	0.52	1/1034 (0.1%)	0.71	0/1375
10	AJ	0.57	0/797	0.74	0/1077
11	AK	0.67	0/893	0.82	0/1205
12	AL	0.61	0/969	0.81	0/1300
13	AM	0.52	0/893	0.74	0/1193
14	AN	0.55	0/785	0.76	0/1043
15	AO	0.55	0/722	0.73	0/964
16	AP	0.54	0/659	0.82	1/884 (0.1%)
17	AQ	0.57	0/658	0.74	0/881
18	AR	0.61	0/463	0.70	0/621
19	AS	0.48	0/653	0.73	0/877
20	AT	0.54	0/671	0.69	0/888
21	AU	0.93	0/431	0.97	0/570
22	AV	0.56	13/7912 (0.2%)	0.91	43/12332 (0.3%)
23	AW	0.79	1/1011 (0.1%)	0.96	1/1354 (0.1%)
24	AX	0.65	0/1832	0.81	0/2855
25	AY	0.40	0/5313	0.69	0/7195
26	BA	1.60	611/69795 (0.9%)	1.67	2068/108884 (1.9%)
27	BC	0.80	0/2122	0.90	1/2852 (0.0%)
28	BD	0.96	0/1586	0.92	1/2134 (0.0%)
29	BE	0.91	0/1571	0.89	1/2113 (0.0%)
30	BF	0.65	0/1435	0.74	0/1926
31	BG	0.75	0/1343	0.85	1/1816 (0.1%)
32	BH	0.68	1/1121 (0.1%)	0.77	0/1515

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
33	BI	0.72	0/1046	0.74	0/1410
34	BJ	1.01	0/1152	0.84	1/1551 (0.1%)
35	BK	0.92	2/948 (0.2%)	0.94	1/1268 (0.1%)
36	BL	0.94	0/1054	1.01	0/1403
37	BM	0.94	0/1093	0.96	0/1460
38	BN	0.91	0/974	0.96	1/1301 (0.1%)
39	BO	0.76	0/902	0.87	1/1209 (0.1%)
40	BP	0.89	0/929	0.88	1/1242 (0.1%)
41	BQ	1.14	0/960	0.96	1/1278 (0.1%)
42	BR	1.01	1/829 (0.1%)	0.98	0/1107
43	BS	1.08	1/864 (0.1%)	0.97	1/1156 (0.1%)
44	BT	0.82	0/745	0.86	0/994
45	BU	0.91	0/788	0.90	0/1051
46	BV	0.79	0/766	0.81	0/1025
47	BW	1.02	0/582	0.97	0/769
48	BX	0.79	0/635	0.84	0/848
49	BY	0.76	0/510	0.96	1/677 (0.1%)
50	BZ	1.04	0/453	0.95	0/605
51	B0	0.96	0/450	0.98	2/599 (0.3%)
52	B1	0.75	0/417	0.76	0/554
53	B2	1.03	0/380	0.99	2/498 (0.4%)
54	B3	0.94	0/513	0.85	0/676
55	B4	0.92	0/303	0.99	0/397
56	BB	1.33	4/2847 (0.1%)	1.58	79/4440 (1.8%)
All	All	1.19	640/170946 (0.4%)	1.35	2524/255354 (1.0%)

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
4	AD	0	1
5	AE	0	1
9	AI	0	1
11	AK	0	1
13	AM	0	1
14	AN	0	1
21	AU	0	2
23	AW	0	1
24	AX	0	4
27	BC	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
28	BD	0	2
33	BI	0	1
42	BR	0	1
45	BU	0	1
50	BZ	0	1
All	All	0	20

The worst 5 of 640 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
26	BA	1142	A	N9-C4	-18.15	1.26	1.37
26	BA	984	A	N9-C4	-13.41	1.29	1.37
26	BA	984	A	C5-C6	-10.40	1.31	1.41
26	BA	528	A	N7-C5	-10.33	1.33	1.39
26	BA	2250	G	N9-C4	-10.21	1.29	1.38

The worst 5 of 2524 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
26	BA	984	A	C2-N3-C4	-18.77	101.21	110.60
26	BA	2250	G	N3-C4-C5	17.36	137.28	128.60
26	BA	1638	C	N1-C2-O2	-16.58	108.95	118.90
26	BA	1142	A	C2-N3-C4	-16.57	102.31	110.60
26	BA	1142	A	N3-C4-C5	16.05	138.03	126.80

There are no chirality outliers.

5 of 20 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
4	AD	47	LEU	Peptide
5	AE	100	GLU	Peptide
9	AI	5	TYR	Peptide
11	AK	125	LYS	Peptide
13	AM	111	PRO	Peptide

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	AA	32995	0	16600	2522	0
2	AB	1705	0	1731	418	0
3	AC	1625	0	1695	268	0
4	AD	1643	0	1710	290	0
5	AE	1106	0	1147	238	0
6	AF	818	0	808	108	0
7	AG	1182	0	1238	130	0
8	AH	979	0	1034	159	0
9	AI	1022	0	1070	221	0
10	AJ	787	0	828	179	0
11	AK	877	0	887	162	0
12	AL	955	0	1019	110	0
13	AM	884	0	944	162	0
14	AN	774	0	827	134	0
15	AO	714	0	736	63	0
16	AP	649	0	666	105	0
17	AQ	649	0	691	118	0
18	AR	456	0	478	45	0
19	AS	638	0	665	77	0
20	AT	665	0	714	83	0
21	AU	426	0	449	138	0
22	AV	7135	0	3594	2248	0
23	AW	993	0	1030	330	0
24	AX	1640	0	835	262	0
25	AY	5215	0	5279	930	0
26	BA	62319	0	31328	3013	0
27	BC	2083	0	2157	231	0
28	BD	1565	0	1616	117	0
29	BE	1552	0	1619	139	0
30	BF	1411	0	1443	233	0
31	BG	1323	0	1374	154	0
32	BH	1110	0	1148	153	0
33	BI	1032	0	1086	289	0
34	BJ	1129	0	1162	61	0
35	BK	939	0	1012	77	0
36	BL	1045	0	1117	130	0
37	BM	1074	0	1157	125	0
38	BN	961	0	1000	90	0
39	BO	892	0	923	88	0
40	BP	917	0	965	96	0
41	BQ	947	0	1022	63	0
42	BR	816	0	839	84	0
43	BS	857	0	922	41	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
44	BT	739	0	807	70	0
45	BU	780	0	834	63	0
46	BV	753	0	780	58	0
47	BW	575	0	589	29	0
48	BX	625	0	655	38	0
49	BY	509	0	543	88	0
50	BZ	449	0	491	28	0
51	B0	444	0	461	34	0
52	B1	410	0	440	36	0
53	B2	377	0	418	26	0
54	B3	504	0	574	41	0
55	B4	302	0	343	24	0
56	BB	2548	0	1292	102	0
All	All	157519	0	106792	14112	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 54.

The worst 5 of 14112 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
23:AW:38:LYS:HE2	26:BA:1910:G:P	1.23	1.71
22:AV:172:U:H2'	22:AV:173:C:C6	1.25	1.65
25:AY:633:GLY:HA2	26:BA:1068:G:C8	1.19	1.62
22:AV:323:A:H2'	22:AV:324:G:C8	1.34	1.62
22:AV:48:C:C2'	22:AV:49:C:H5''	1.25	1.62

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	AB	216/218 (99%)	109 (50%)	49 (23%)	58 (27%)	0	0
3	AC	204/206 (99%)	126 (62%)	48 (24%)	30 (15%)	0	4
4	AD	203/205 (99%)	123 (61%)	41 (20%)	39 (19%)	0	2
5	AE	148/150 (99%)	87 (59%)	38 (26%)	23 (16%)	0	3
6	AF	98/100 (98%)	62 (63%)	21 (21%)	15 (15%)	0	3
7	AG	149/151 (99%)	85 (57%)	42 (28%)	22 (15%)	0	3
8	AH	127/129 (98%)	79 (62%)	37 (29%)	11 (9%)	1	11
9	AI	125/127 (98%)	76 (61%)	34 (27%)	15 (12%)	0	6
10	AJ	96/98 (98%)	60 (62%)	14 (15%)	22 (23%)	0	1
11	AK	115/117 (98%)	84 (73%)	17 (15%)	14 (12%)	0	6
12	AL	121/123 (98%)	85 (70%)	29 (24%)	7 (6%)	1	18
13	AM	112/114 (98%)	78 (70%)	22 (20%)	12 (11%)	0	8
14	AN	92/100 (92%)	47 (51%)	27 (29%)	18 (20%)	0	2
15	AO	86/88 (98%)	57 (66%)	22 (26%)	7 (8%)	1	12
16	AP	80/82 (98%)	48 (60%)	11 (14%)	21 (26%)	0	1
17	AQ	78/80 (98%)	47 (60%)	18 (23%)	13 (17%)	0	3
18	AR	53/55 (96%)	34 (64%)	13 (24%)	6 (11%)	0	7
19	AS	77/79 (98%)	37 (48%)	28 (36%)	12 (16%)	0	3
20	AT	83/85 (98%)	37 (45%)	31 (37%)	15 (18%)	0	3
21	AU	49/51 (96%)	20 (41%)	15 (31%)	14 (29%)	0	0
23	AW	120/123 (98%)	84 (70%)	24 (20%)	12 (10%)	0	9
25	AY	663/691 (96%)	436 (66%)	136 (20%)	91 (14%)	0	4
27	BC	269/271 (99%)	217 (81%)	31 (12%)	21 (8%)	1	13
28	BD	207/209 (99%)	166 (80%)	30 (14%)	11 (5%)	2	19
29	BE	199/201 (99%)	158 (79%)	32 (16%)	9 (4%)	2	22
30	BF	175/177 (99%)	118 (67%)	38 (22%)	19 (11%)	0	8
31	BG	174/176 (99%)	129 (74%)	30 (17%)	15 (9%)	1	12
32	BH	147/149 (99%)	95 (65%)	29 (20%)	23 (16%)	0	3
33	BI	139/141 (99%)	65 (47%)	47 (34%)	27 (19%)	0	2
34	BJ	140/142 (99%)	123 (88%)	11 (8%)	6 (4%)	2	22
35	BK	120/122 (98%)	88 (73%)	24 (20%)	8 (7%)	1	15
36	BL	141/143 (99%)	99 (70%)	21 (15%)	21 (15%)	0	3

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
37	BM	134/136 (98%)	111 (83%)	14 (10%)	9 (7%)	1	15
38	BN	118/120 (98%)	92 (78%)	20 (17%)	6 (5%)	2	19
39	BO	114/116 (98%)	83 (73%)	17 (15%)	14 (12%)	0	5
40	BP	112/114 (98%)	96 (86%)	12 (11%)	4 (4%)	3	25
41	BQ	115/117 (98%)	100 (87%)	13 (11%)	2 (2%)	9	42
42	BR	101/103 (98%)	84 (83%)	9 (9%)	8 (8%)	1	13
43	BS	108/110 (98%)	90 (83%)	12 (11%)	6 (6%)	2	19
44	BT	91/93 (98%)	67 (74%)	13 (14%)	11 (12%)	0	6
45	BU	100/102 (98%)	75 (75%)	13 (13%)	12 (12%)	0	6
46	BV	92/94 (98%)	79 (86%)	11 (12%)	2 (2%)	6	35
47	BW	74/76 (97%)	68 (92%)	4 (5%)	2 (3%)	5	31
48	BX	75/77 (97%)	64 (85%)	9 (12%)	2 (3%)	5	31
49	BY	61/63 (97%)	34 (56%)	13 (21%)	14 (23%)	0	1
50	BZ	56/58 (97%)	50 (89%)	6 (11%)	0	100	100
51	B0	54/56 (96%)	44 (82%)	8 (15%)	2 (4%)	3	24
52	B1	48/50 (96%)	32 (67%)	12 (25%)	4 (8%)	1	12
53	B2	44/46 (96%)	37 (84%)	6 (14%)	1 (2%)	6	34
54	B3	62/64 (97%)	56 (90%)	6 (10%)	0	100	100
55	B4	36/38 (95%)	31 (86%)	4 (11%)	1 (3%)	5	30
All	All	6401/6536 (98%)	4452 (70%)	1212 (19%)	737 (12%)	1	6

5 of 737 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	AB	15	PHE
2	AB	21	TYR
2	AB	33	ALA
2	AB	63	LYS
2	AB	67	LEU

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	AB	180/180 (100%)	114 (63%)	66 (37%)	0	1
3	AC	170/170 (100%)	125 (74%)	45 (26%)	0	3
4	AD	172/172 (100%)	132 (77%)	40 (23%)	1	4
5	AE	113/113 (100%)	80 (71%)	33 (29%)	0	2
6	AF	87/87 (100%)	60 (69%)	27 (31%)	0	2
7	AG	124/124 (100%)	90 (73%)	34 (27%)	0	3
8	AH	104/104 (100%)	78 (75%)	26 (25%)	0	3
9	AI	105/105 (100%)	74 (70%)	31 (30%)	0	2
10	AJ	86/86 (100%)	63 (73%)	23 (27%)	0	3
11	AK	90/90 (100%)	66 (73%)	24 (27%)	0	3
12	AL	103/103 (100%)	86 (84%)	17 (16%)	2	12
13	AM	92/92 (100%)	73 (79%)	19 (21%)	1	6
14	AN	79/83 (95%)	56 (71%)	23 (29%)	0	2
15	AO	76/76 (100%)	61 (80%)	15 (20%)	1	8
16	AP	65/65 (100%)	45 (69%)	20 (31%)	0	2
17	AQ	74/74 (100%)	54 (73%)	20 (27%)	0	3
18	AR	48/48 (100%)	40 (83%)	8 (17%)	2	12
19	AS	70/70 (100%)	56 (80%)	14 (20%)	1	7
20	AT	65/65 (100%)	45 (69%)	20 (31%)	0	2
21	AU	44/44 (100%)	23 (52%)	21 (48%)	0	0
23	AW	101/102 (99%)	76 (75%)	25 (25%)	0	3
25	AY	563/582 (97%)	489 (87%)	74 (13%)	4	18
27	BC	216/216 (100%)	182 (84%)	34 (16%)	2	14
28	BD	164/164 (100%)	143 (87%)	21 (13%)	4	18
29	BE	165/165 (100%)	143 (87%)	22 (13%)	4	18
30	BF	148/148 (100%)	112 (76%)	36 (24%)	0	4
31	BG	137/137 (100%)	114 (83%)	23 (17%)	2	12
32	BH	114/114 (100%)	89 (78%)	25 (22%)	1	5
33	BI	109/109 (100%)	78 (72%)	31 (28%)	0	2
34	BJ	116/116 (100%)	97 (84%)	19 (16%)	2	12

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
35	BK	103/103 (100%)	85 (82%)	18 (18%)	2	11
36	BL	102/102 (100%)	81 (79%)	21 (21%)	1	7
37	BM	109/109 (100%)	87 (80%)	22 (20%)	1	7
38	BN	100/100 (100%)	83 (83%)	17 (17%)	2	12
39	BO	86/86 (100%)	68 (79%)	18 (21%)	1	6
40	BP	99/99 (100%)	78 (79%)	21 (21%)	1	6
41	BQ	89/89 (100%)	76 (85%)	13 (15%)	3	15
42	BR	84/84 (100%)	70 (83%)	14 (17%)	2	12
43	BS	93/93 (100%)	83 (89%)	10 (11%)	6	23
44	BT	80/80 (100%)	69 (86%)	11 (14%)	3	17
45	BU	83/83 (100%)	64 (77%)	19 (23%)	1	4
46	BV	78/78 (100%)	63 (81%)	15 (19%)	1	8
47	BW	56/58 (97%)	50 (89%)	6 (11%)	6	23
48	BX	67/67 (100%)	56 (84%)	11 (16%)	2	12
49	BY	55/55 (100%)	46 (84%)	9 (16%)	2	12
50	BZ	48/48 (100%)	40 (83%)	8 (17%)	2	12
51	B0	47/47 (100%)	41 (87%)	6 (13%)	4	18
52	B1	45/45 (100%)	38 (84%)	7 (16%)	2	14
53	B2	38/38 (100%)	32 (84%)	6 (16%)	2	13
54	B3	51/51 (100%)	48 (94%)	3 (6%)	19	45
55	B4	34/34 (100%)	28 (82%)	6 (18%)	2	11
All	All	5327/5353 (100%)	4230 (79%)	1097 (21%)	3	7

5 of 1097 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
39	BO	78	VAL
41	BQ	3	VAL
39	BO	74	VAL
47	BW	77	SER
14	AN	23	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 114 such sidechains are listed below:

Mol	Chain	Res	Type
27	BC	85	ASN
52	B1	18	HIS
31	BG	21	GLN
51	B0	41	HIS
42	BR	87	GLN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	AA	1537/1539 (99%)	457 (29%)	27 (1%)
22	AV	332/363 (91%)	187 (56%)	32 (9%)
24	AX	76/77 (98%)	37 (48%)	3 (3%)
26	BA	2901/2903 (99%)	770 (26%)	58 (1%)
56	BB	118/119 (99%)	24 (20%)	1 (0%)
All	All	4964/5001 (99%)	1475 (29%)	121 (2%)

5 of 1475 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	AA	5	U
1	AA	6	G
1	AA	7	A
1	AA	9	G
1	AA	12	U

5 of 121 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
22	AV	332	G
26	BA	2211	A
26	BA	479	A
26	BA	2157	G
26	BA	2848	G

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

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

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond

length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
22	5MU	AV	341	22	19,22,23	1.02	1 (5%)	28,32,35	2.37	8 (28%)
22	PSU	AV	347	22	18,21,22	1.52	2 (11%)	22,30,33	1.43	3 (13%)
22	PSU	AV	342	22	18,21,22	0.79	0	22,30,33	1.50	4 (18%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
22	5MU	AV	341	22	-	0/7/25/26	0/2/2/2
22	PSU	AV	347	22	-	1/7/25/26	0/2/2/2
22	PSU	AV	342	22	-	1/7/25/26	0/2/2/2

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
22	AV	347	PSU	C2-N1	4.86	1.43	1.36
22	AV	347	PSU	C6-C5	2.80	1.38	1.35
22	AV	341	5MU	C6-N1	2.65	1.42	1.38

The worst 5 of 15 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
22	AV	341	5MU	C5-C4-N3	6.08	120.50	115.31
22	AV	341	5MU	C4-N3-C2	-5.78	119.86	127.35
22	AV	341	5MU	O4-C4-C5	-4.89	119.23	124.90
22	AV	342	PSU	C6-C5-C4	4.13	121.09	118.20
22	AV	341	5MU	N3-C2-N1	3.98	120.17	114.89

There are no chirality outliers.

All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
22	AV	347	PSU	C4'-C5'-O5'-P
22	AV	342	PSU	O4'-C1'-C5-C4

There are no ring outliers.

3 monomers are involved in 16 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
22	AV	341	5MU	6	0
22	AV	347	PSU	7	0
22	AV	342	PSU	3	0

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

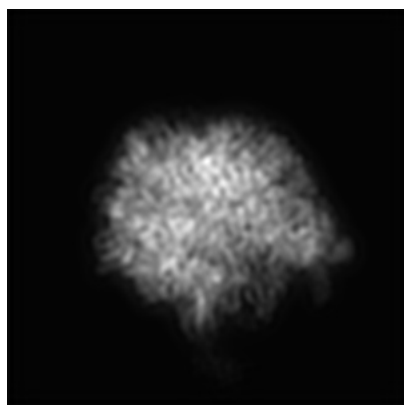
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-5386. These allow visual inspection of the internal detail of the map and identification of artifacts.

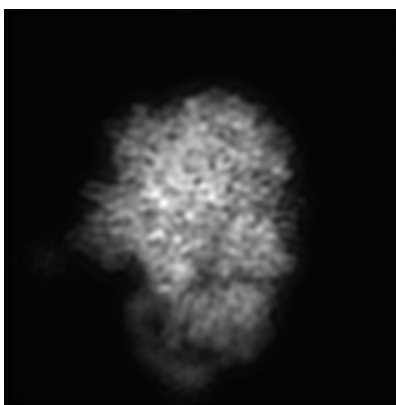
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

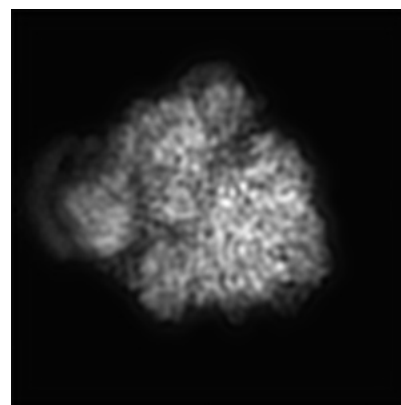
6.1.1 Primary map



X



Y

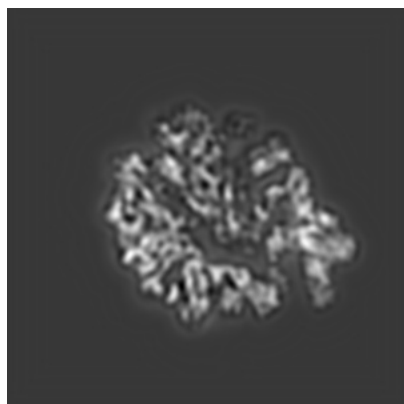


Z

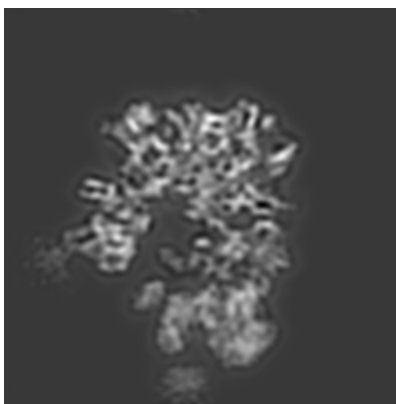
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

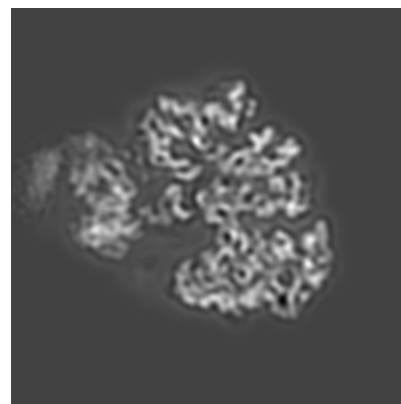
6.2.1 Primary map



X Index: 150



Y Index: 150

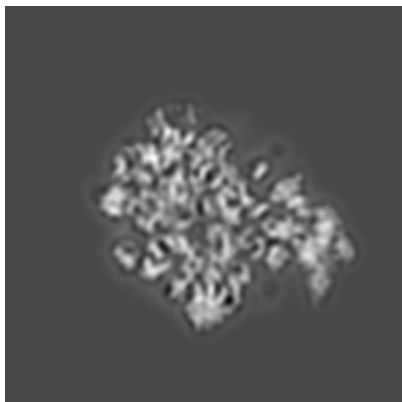


Z Index: 150

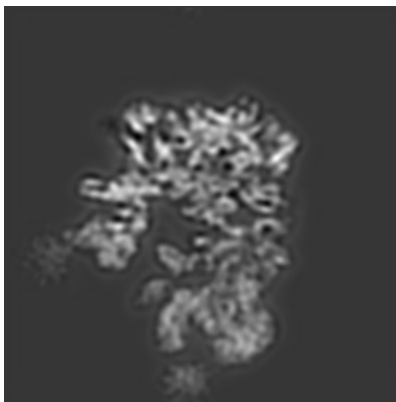
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

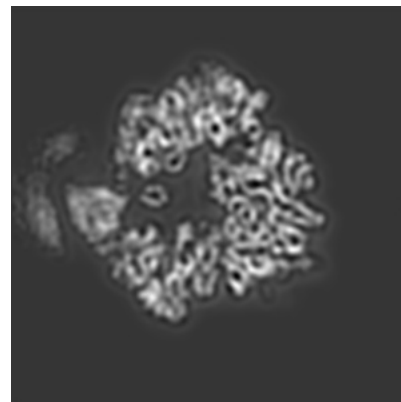
6.3.1 Primary map



X Index: 158



Y Index: 153

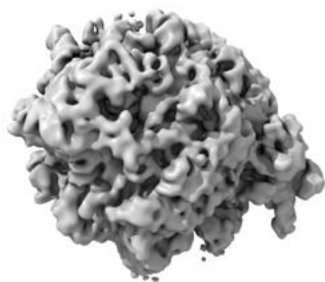


Z Index: 130

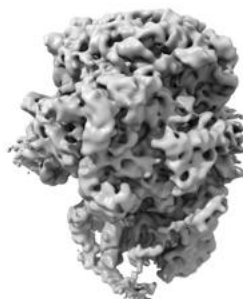
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal surface views [i](#)

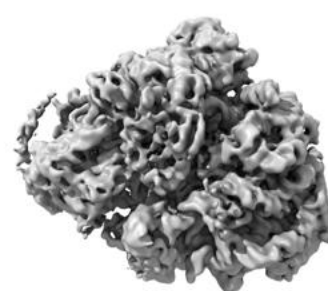
6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 2.0. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

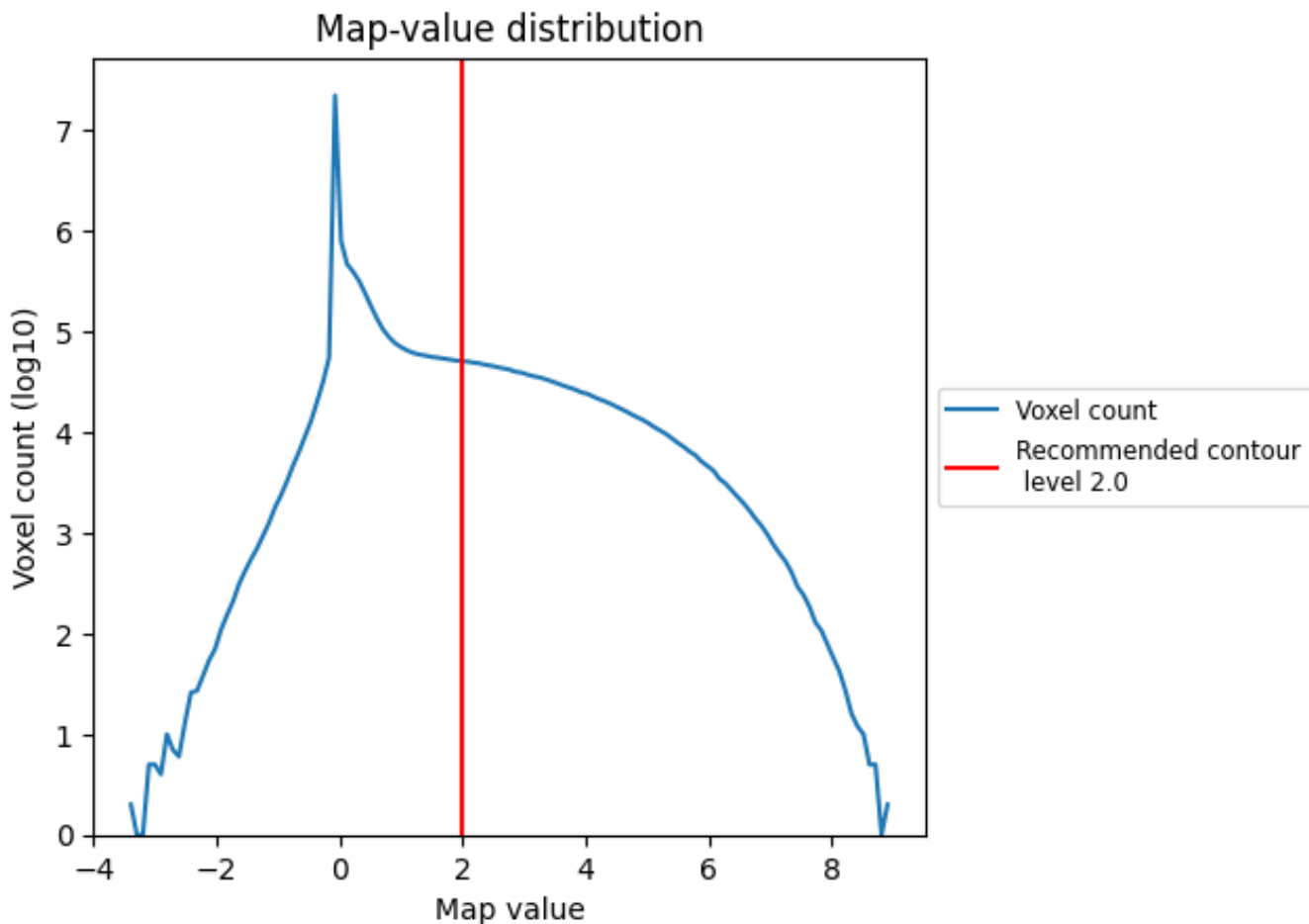
6.5 Mask visualisation

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

7 Map analysis [i](#)

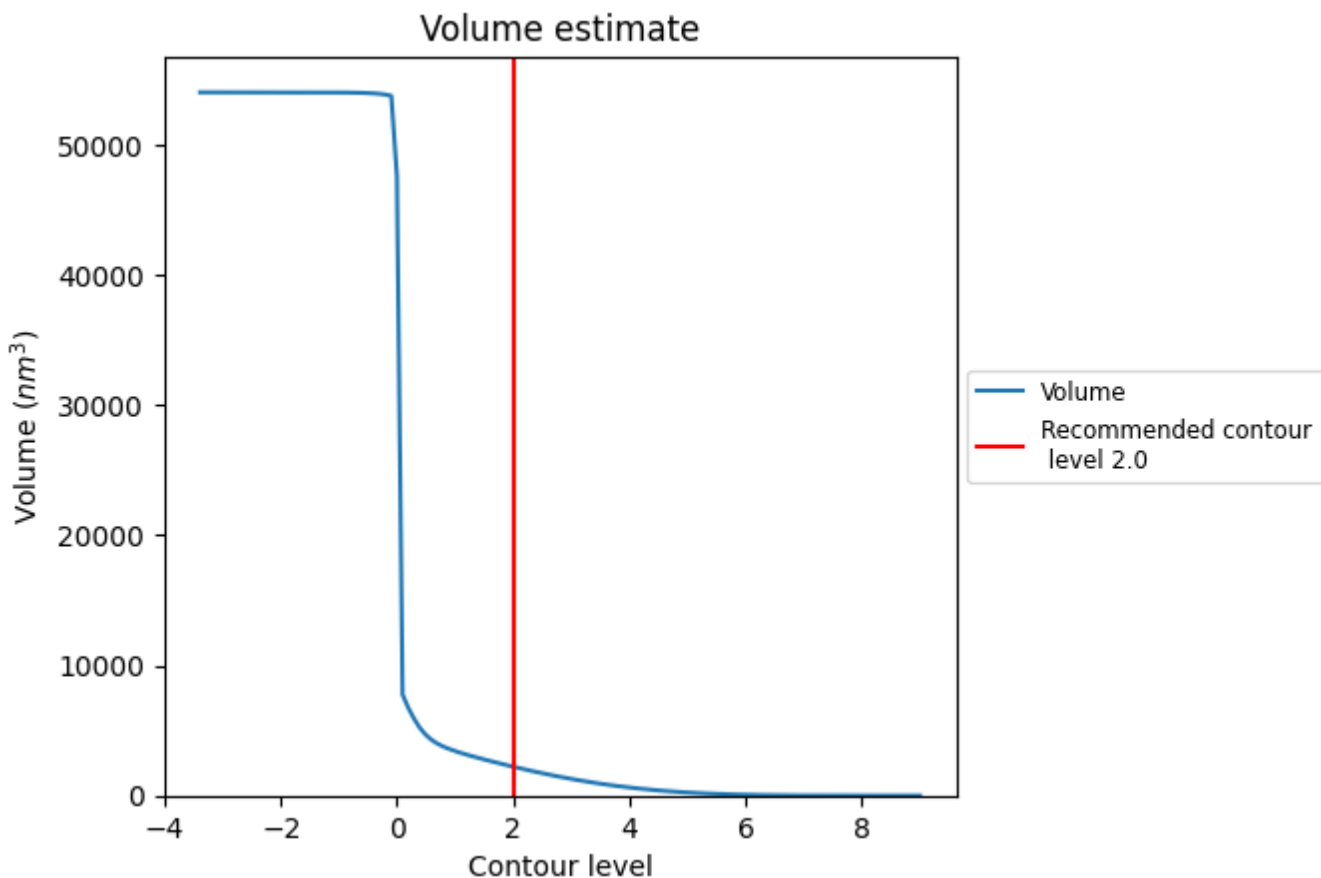
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

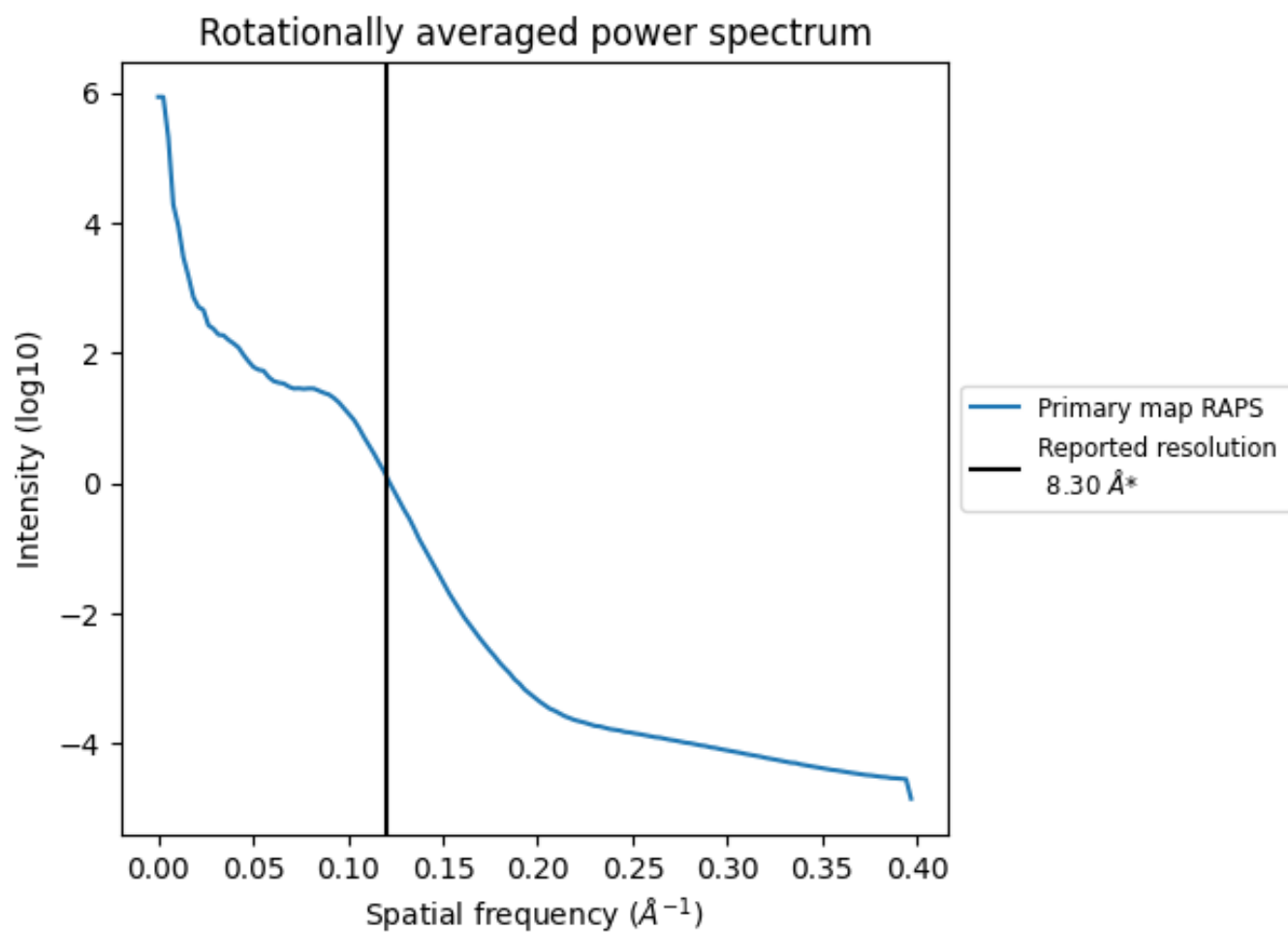
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 2217 nm^3 ; this corresponds to an approximate mass of 2002 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum [i](#)



*Reported resolution corresponds to spatial frequency of 0.120 Å⁻¹

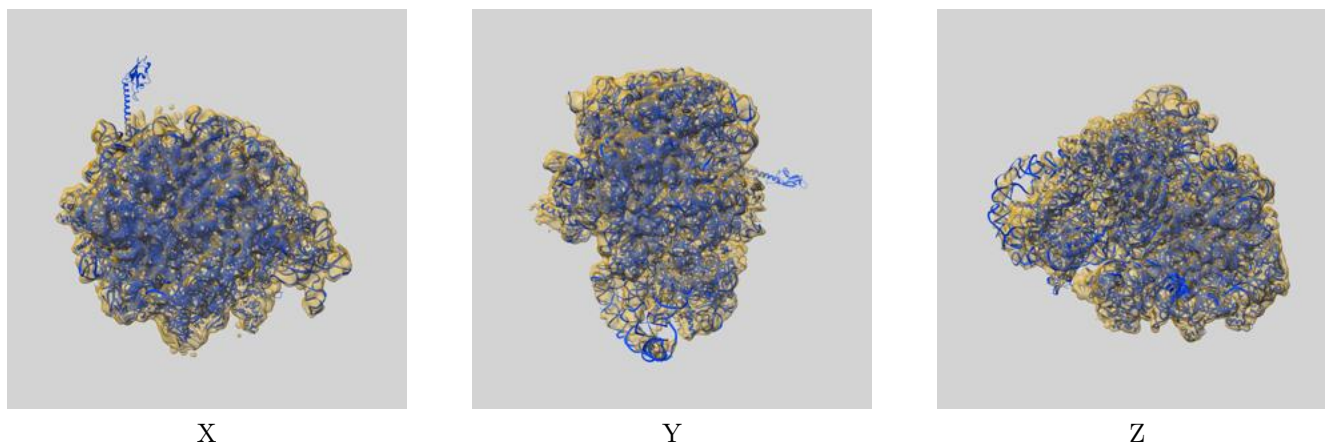
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

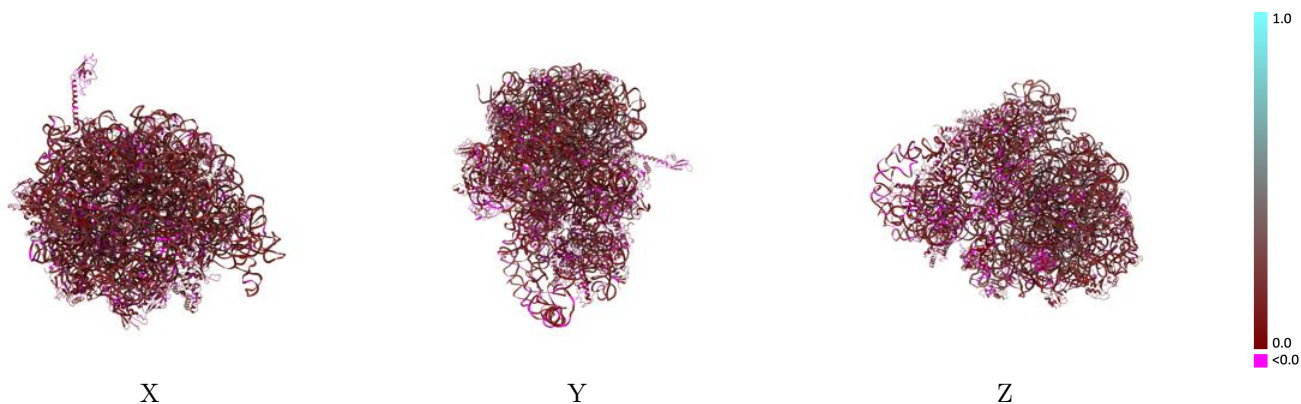
This section contains information regarding the fit between EMDB map EMD-5386 and PDB model 4V6T. Per-residue inclusion information can be found in section 3 on page 15.

9.1 Map-model overlay [i](#)



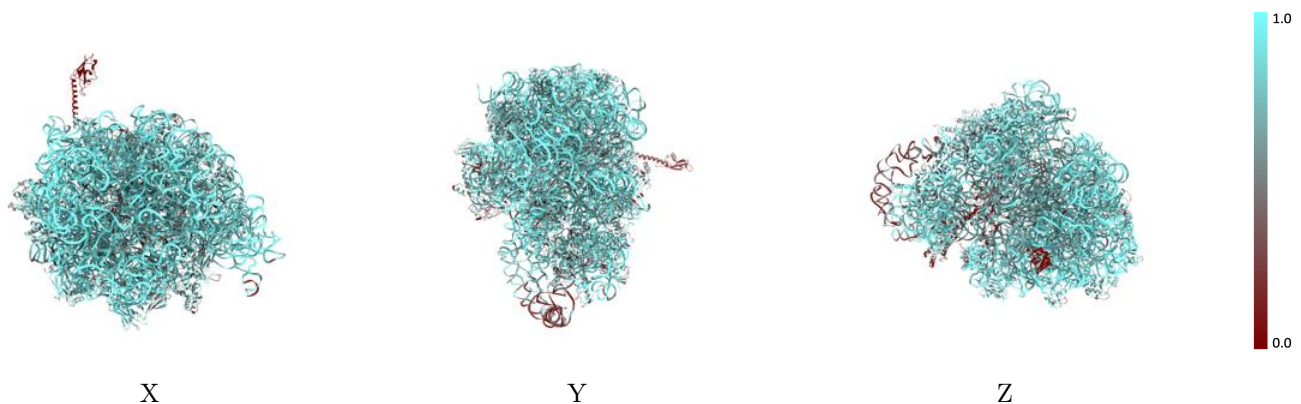
The images above show the 3D surface view of the map at the recommended contour level 2.0 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



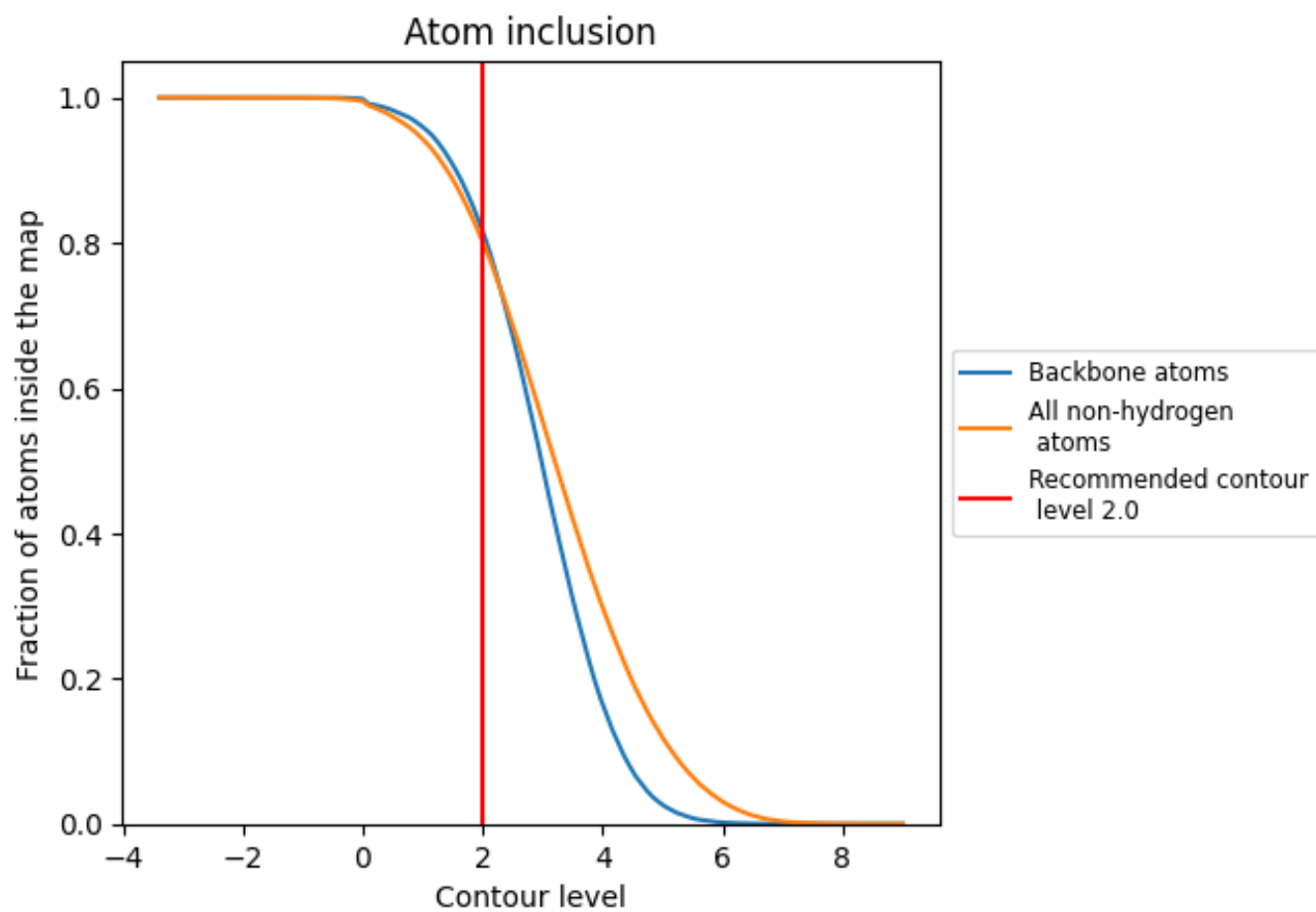
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (2.0).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 82% of all backbone atoms, 80% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary













































The table lists the average atom inclusion at the recommended contour level (2.0) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8015	 0.1360
AA	 0.8936	 0.1490
AB	 0.6724	 0.1300
AC	 0.6808	 0.1110
AD	 0.7119	 0.1150
AE	 0.6780	 0.1240
AF	 0.6186	 0.1010
AG	 0.5336	 0.0810
AH	 0.6875	 0.1120
AI	 0.7385	 0.0930
AJ	 0.7218	 0.0580
AK	 0.5873	 0.0750
AL	 0.4213	 0.0930
AM	 0.3627	 0.0840
AN	 0.7604	 0.0880
AO	 0.7101	 0.1200
AP	 0.7432	 0.1090
AQ	 0.7125	 0.1020
AR	 0.7071	 0.0780
AS	 0.6640	 0.0700
AT	 0.7631	 0.1540
AU	 0.5676	 0.1290
AV	 0.5074	 0.0940
AW	 0.3205	 0.0650
AX	 0.6976	 0.1370
AY	 0.5988	 0.1110
B0	 0.6519	 0.0730
B1	 0.6866	 0.0940
B2	 0.6817	 0.0990
B3	 0.6558	 0.1000
B4	 0.6815	 0.0760
BA	 0.9098	 0.1620
BB	 0.9317	 0.1580
BC	 0.6445	 0.1040
BD	 0.6678	 0.1030



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Chain	Atom inclusion	Q-score
BE	 0.7099	 0.1270
BF	 0.6376	 0.0640
BG	 0.7286	 0.1210
BH	 0.2265	 0.0470
BI	 0.3757	 0.0160
BJ	 0.7318	 0.1140
BK	 0.4606	 0.1000
BL	 0.6900	 0.1020
BM	 0.6152	 0.1210
BN	 0.7129	 0.0930
BO	 0.7798	 0.1080
BP	 0.6306	 0.1080
BQ	 0.7654	 0.1160
BR	 0.7327	 0.1150
BS	 0.7022	 0.1150
BT	 0.7165	 0.1190
BU	 0.7812	 0.1130
BV	 0.7886	 0.1230
BW	 0.7174	 0.0720
BX	 0.7055	 0.1170
BY	 0.7726	 0.1420
BZ	 0.7551	 0.1300