



wwPDB EM Validation Summary Report ⓘ

Nov 19, 2022 – 07:10 pm GMT

PDB ID : 4V5N
EMDB ID : EMD-1799
Title : tRNA translocation on the 70S ribosome: the post- translocational translocation intermediate TI(POST)
Authors : Ratje, A.H.; Loerke, J.; Mikolajka, A.; Bruenner, M.; Hildebrand, P.W.; Starosta, A.L.; Doenhoefer, A.; Connell, S.R.; Fucini, P.; Mielke, T.; Whitford, P.C.; Onuchic, J.N.; Yu, Y.; Sanbonmatsu, K.Y.; Hartmann, R.K.; Penczek, P.A.; Wilson, D.N.; Spahn, C.M.T.
Deposited on : 2010-10-21
Resolution : 7.60 Å(reported)
Based on initial models : 2WRJ, 2WRI

This is a wwPDB EM Validation Summary Report for a publicly released PDB entry.

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

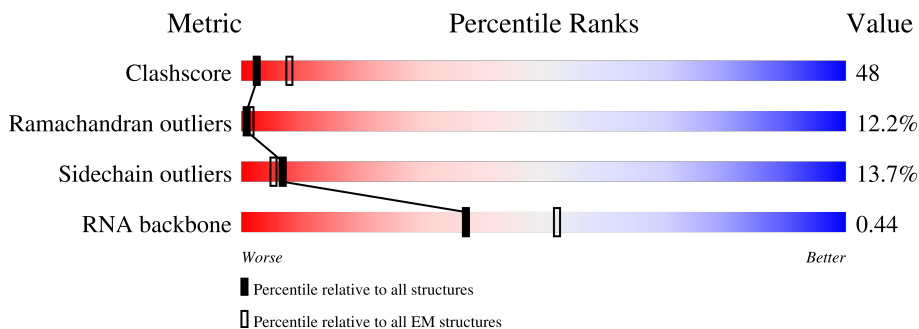
EMDB validation analysis : 0.0.1.dev43
Mogul : 1.8.4, CSD as541be (2020)
MolProbity : 4.02b-467
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.9
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)

1 Overall quality at a glance i

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

The reported resolution of this entry is 7.60 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	1522	97% 22% 58% 18%
2	AB	256	91% 23% 49% 14% 5% 9%
3	AC	239	86% 24% 44% 14% 5% 14%
4	AD	209	100% 30% 49% 16% 5%
5	AE	162	93% 31% 44% 14% 7%

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Mol	Chain	Length	Quality of chain
6	AF	101	100% 33% 50% 15%
7	AG	156	99% 34% 48% 15%
8	AH	138	100% 30% 57% 10%
9	AI	128	99% 18% 59% 17% 5%
10	AJ	105	93% 11% 54% 22% 6% 7%
11	AK	129	92% 29% 54% 8% 8%
12	AL	132	94% 22% 51% 15% 6% 6%
13	AM	126	98% 18% 55% 19% 6%
14	AN	61	98% 34% 44% 10% 10%
15	AO	89	99% 34% 44% 19%
16	AP	88	94% 11% 66% 15% 6%
17	AQ	105	94% 25% 56% 10% 6%
18	AR	88	80% 20% 42% 15% 20%
19	AS	93	84% 8% 49% 23% 16%
20	AT	106	93% 18% 48% 23% 5% 7%
21	AU	27	89% 30% 37% 19% 11%
22	AV	77	99% 29% 51% 19%
23	AX	11	100% 9% 45% 45%
24	AY	691	96% 21% 52% 20%
25	B0	85	99% 40% 41% 14%
26	B1	98	95% 15% 54% 22% 5%
27	B2	72	99% 8% 57% 29%
28	B3	60	98% 17% 58% 15% 8%
29	B4	71	80% 13% 37% 15% 15% 20%
30	B5	60	98% 37% 37% 15% 10%

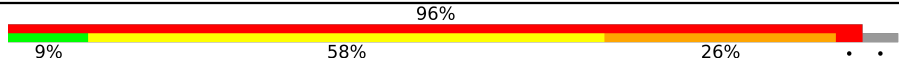
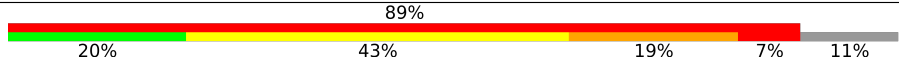
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Mol	Chain	Length	Quality of chain
31	B6	54	93% 6% 37% 33% 17% 7%
32	B7	49	98% 20% 57% 18% ..
33	B8	65	97% 17% 58% 11% 11% .
34	B9	37	100% 30% 43% 22% 5%
35	BA	2915	97% 24% 54% 21%
36	BB	122	98% 16% 66% 15% .
37	BC	229	100% 36% 52% 8% .
38	BD	276	100% 26% 48% 21% .
39	BE	206	99% 19% 49% 26% ..
40	BF	210	99% 17% 58% 21% ..
41	BG	182	99% 15% 55% 22% 7% .
42	BH	180	92% 17% 53% 18% . 8%
43	BK	147	95% 24% 51% 18% . 5%
44	BL	121	55% 39% 15% .. 45%
45	BN	140	99% 21% 52% 21% ..
46	BO	122	100% 26% 55% 17% .
47	BP	150	97% 16% 48% 25% 8% .
48	BQ	141	100% 23% 52% 18% 6%
49	BR	118	99% 22% 53% 20% ..
50	BS	112	88% 8% 53% 20% 7% 12%
51	BT	146	94% 12% 47% 21% 14% 6%
52	BU	118	99% 20% 52% 22% 5% .
53	BV	101	100% 21% 51% 22% 6%
54	BW	113	100% 19% 65% 12% .
55	BX	96	96% 23% 53% 20% .

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Mol	Chain	Length	Quality of chain
56	BY	110	 <p>96%</p> <p>9% 58% 26%</p>
57	BZ	206	 <p>89%</p> <p>20% 43% 19% 7% 11%</p>

2 Entry composition [i](#)

There are 59 unique types of molecules in this entry. The entry contains 152777 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 RRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	AA	1504	32329	14390	5992	10444	1503	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	234	1900	1213	341	341	5	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	1612	1016	314	281	1	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	208	1703	1066	339	291	7	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	1146	724	217	201	4	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	101	843	531	155	154	3	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	155	1257	781	252	218	6	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	138	1116	705	215	193	3	0	0

- Molecule 9 is a protein called 30S RIBOSOMAL PROTEIN S9.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
9	AI	127	1010	639	197	174	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	794	499	156	138	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	119	885	549	168	165	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	124	970	611	195	163	1	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	124	987	611	205	169	2	0	0

- Molecule 14 is a protein called 30S RIBOSOMAL PROTEIN S14 TYPE Z.

Mol	Chain	Residues	Atoms				AltConf	Trace	
14	AN	60	Total	C	N	O	S	0	0
			492	312	104	72	4		

- 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
			734	459	147	126	2		

- Molecule 16 is a protein called 30S RIBOSOMAL PROTEIN S16.

Mol	Chain	Residues	Atoms				AltConf	Trace	
16	AP	83	Total	C	N	O	S	0	0
			700	443	139	117	1		

- Molecule 17 is a protein called 30S RIBOSOMAL PROTEIN S17.

Mol	Chain	Residues	Atoms				AltConf	Trace	
17	AQ	99	Total	C	N	O	S	0	0
			823	528	151	142	2		

- Molecule 18 is a protein called 30S RIBOSOMAL PROTEIN S18.

Mol	Chain	Residues	Atoms			AltConf	Trace	
18	AR	70	Total	C	N	O	0	0
			574	367	112	95		

- Molecule 19 is a protein called 30S RIBOSOMAL PROTEIN S19.

Mol	Chain	Residues	Atoms				AltConf	Trace	
19	AS	78	Total	C	N	O	S	0	0
			629	403	114	110	2		

- Molecule 20 is a protein called 30S RIBOSOMAL PROTEIN S20.

Mol	Chain	Residues	Atoms				AltConf	Trace	
20	AT	99	Total	C	N	O	S	0	0
			763	470	162	129	2		

- Molecule 21 is a protein called 30S RIBOSOMAL PROTEIN THX.

Mol	Chain	Residues	Atoms				AltConf	Trace
21	AU	24	Total	C	N	O	0	0
			208	128	50	30		

- Molecule 22 is a RNA chain called TRNA.

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

- Molecule 23 is a RNA chain called MRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	AX	11	Total	C	N	O	P	0	0
			230	105	41	74	10		

- Molecule 24 is a protein called ELONGATION FACTOR G.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	AY	666	Total	C	N	O	S	0	0
			5214	3316	892	988	18		

- Molecule 25 is a protein called 50S RIBOSOMAL PROTEIN L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	B0	84	Total	C	N	O	S	0	0
			662	410	140	111	1		

- Molecule 26 is a protein called 50S RIBOSOMAL PROTEIN L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	B1	93	Total	C	N	O	S	0	0
			731	460	145	125	1		

- Molecule 27 is a protein called 50S RIBOSOMAL PROTEIN L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	B2	71	Total	C	N	O	S	0	0
			598	370	121	106	1		

- Molecule 28 is a protein called 50S RIBOSOMAL PROTEIN L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	B3	59	Total	C	N	O	S	0	0
			467	298	90	78	1		

- Molecule 29 is a protein called 50S RIBOSOMAL PROTEIN L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	B4	57	Total	C	N	O	S	0	0
			450	285	77	83	5		

- Molecule 30 is a protein called 50S RIBOSOMAL PROTEIN L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	B5	59	Total	C	N	O	S	0	0
			459	288	90	76	5		

- Molecule 31 is a protein called 50S RIBOSOMAL PROTEIN L33.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	B6	50	Total	C	N	O	S	0	0
			433	270	88	71	4		

- Molecule 32 is a protein called 50S RIBOSOMAL PROTEIN L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	B7	48	Total	C	N	O	S	0	0
			418	257	104	55	2		

- Molecule 33 is a protein called 50S RIBOSOMAL PROTEIN L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	B8	63	Total	C	N	O	S	0	0
			507	326	101	78	2		

- Molecule 34 is a protein called 50S RIBOSOMAL PROTEIN L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	B9	37	Total	C	N	O	S	0	0
			307	188	68	47	4		

- Molecule 35 is a RNA chain called 23S RIBOSOMAL RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
35	BA	2901	62474	27806	11681	20087	2900	0	0

- Molecule 36 is a RNA chain called 5S RIBOSOMAL RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
36	BB	119	2551	1136	471	826	118	0	0

- Molecule 37 is a protein called 50S RIBOSOMAL PROTEIN L1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
37	BC	228	1742	1101	319	319	3	0	0

- Molecule 38 is a protein called 50S RIBOSOMAL PROTEIN L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
38	BD	275	2145	1353	428	361	3	0	0

- Molecule 39 is a protein called 50S RIBOSOMAL PROTEIN L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
39	BE	204	1563	988	299	270	6	0	0

- Molecule 40 is a protein called 50S RIBOSOMAL PROTEIN L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
40	BF	207	1623	1035	303	282	3	0	0

- Molecule 41 is a protein called 50S RIBOSOMAL PROTEIN L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
41	BG	181	1474	942	268	260	4	0	0

- Molecule 42 is a protein called 50S RIBOSOMAL PROTEIN L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
42	BH	166	1268	803	237	227	1	0	0

- Molecule 43 is a protein called 50S RIBOSOMAL PROTEIN L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
43	BK	139	1025	653	181	186	5	0	0

- Molecule 44 is a protein called 50S RIBOSOMAL PROTEIN L7/L12.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
44	BL	67	477	301	81	95	0	0

- Molecule 45 is a protein called 50S RIBOSOMAL PROTEIN L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
45	BN	138	1104	712	206	182	4	0	0

- Molecule 46 is a protein called 50S RIBOSOMAL PROTEIN L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
46	BO	122	933	588	171	170	4	0	0

- Molecule 47 is a protein called 50S RIBOSOMAL PROTEIN L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
47	BP	146	1114	692	227	193	2	0	0

- Molecule 48 is a protein called 50S RIBOSOMAL PROTEIN L16.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
48	BQ	141	1122	715	212	188	7	0	0

- Molecule 49 is a protein called 50S RIBOSOMAL PROTEIN L17.

Mol	Chain	Residues	Atoms				AltConf	Trace
49	BR	117	Total	C	N	O	0	0
			960	599	202	159		

- Molecule 50 is a protein called 50S RIBOSOMAL PROTEIN L18.

Mol	Chain	Residues	Atoms				AltConf	Trace
50	BS	98	Total	C	N	O	0	0
			770	486	154	130		

- Molecule 51 is a protein called 50S RIBOSOMAL PROTEIN L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	BT	137	Total	C	N	O	S	0	0
			1141	710	234	196	1		

- Molecule 52 is a protein called 50S RIBOSOMAL PROTEIN L20.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	BU	117	Total	C	N	O	S	0	0
			958	604	202	151	1		

- Molecule 53 is a protein called 50S RIBOSOMAL PROTEIN L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	BV	101	Total	C	N	O	S	0	0
			779	501	142	135	1		

- Molecule 54 is a protein called 50S RIBOSOMAL PROTEIN L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	BW	113	Total	C	N	O	S	0	0
			896	563	176	155	2		

- Molecule 55 is a protein called 50S RIBOSOMAL PROTEIN L23.

Mol	Chain	Residues	Atoms				AltConf	Trace
55	BX	92	Total	C	N	O	0	0
			725	471	131	123		

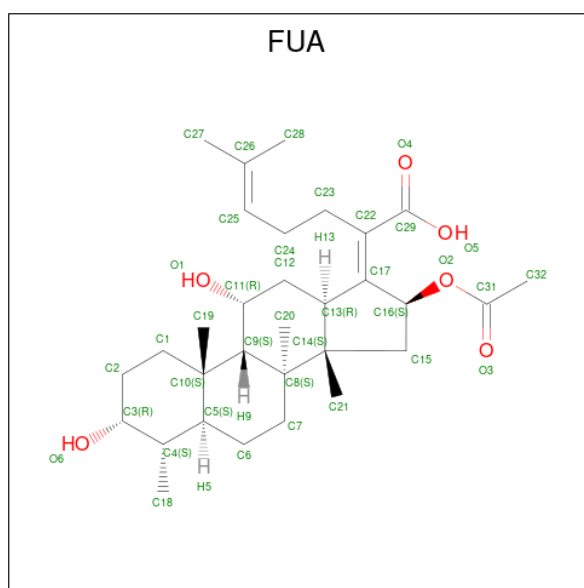
- Molecule 56 is a protein called 50S RIBOSOMAL PROTEIN L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
56	BY	106	810	520	154	131	5	0	0

- Molecule 57 is a protein called 50S RIBOSOMAL PROTEIN L25.

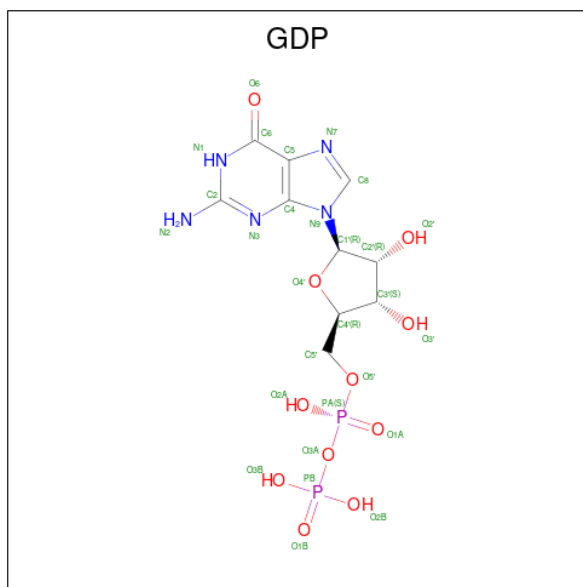
Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
57	BZ	184	1467	936	261	268	2	0	0

- Molecule 58 is FUSIDIC ACID (three-letter code: FUA) (formula: $C_{31}H_{48}O_6$).



Mol	Chain	Residues	Atoms			AltConf
			Total	C	O	
58	AY	1	37	31	6	0

- Molecule 59 is GUANOSINE-5'-DIPHOSPHATE (three-letter code: GDP) (formula: $C_{10}H_{15}N_5O_{11}P_2$).

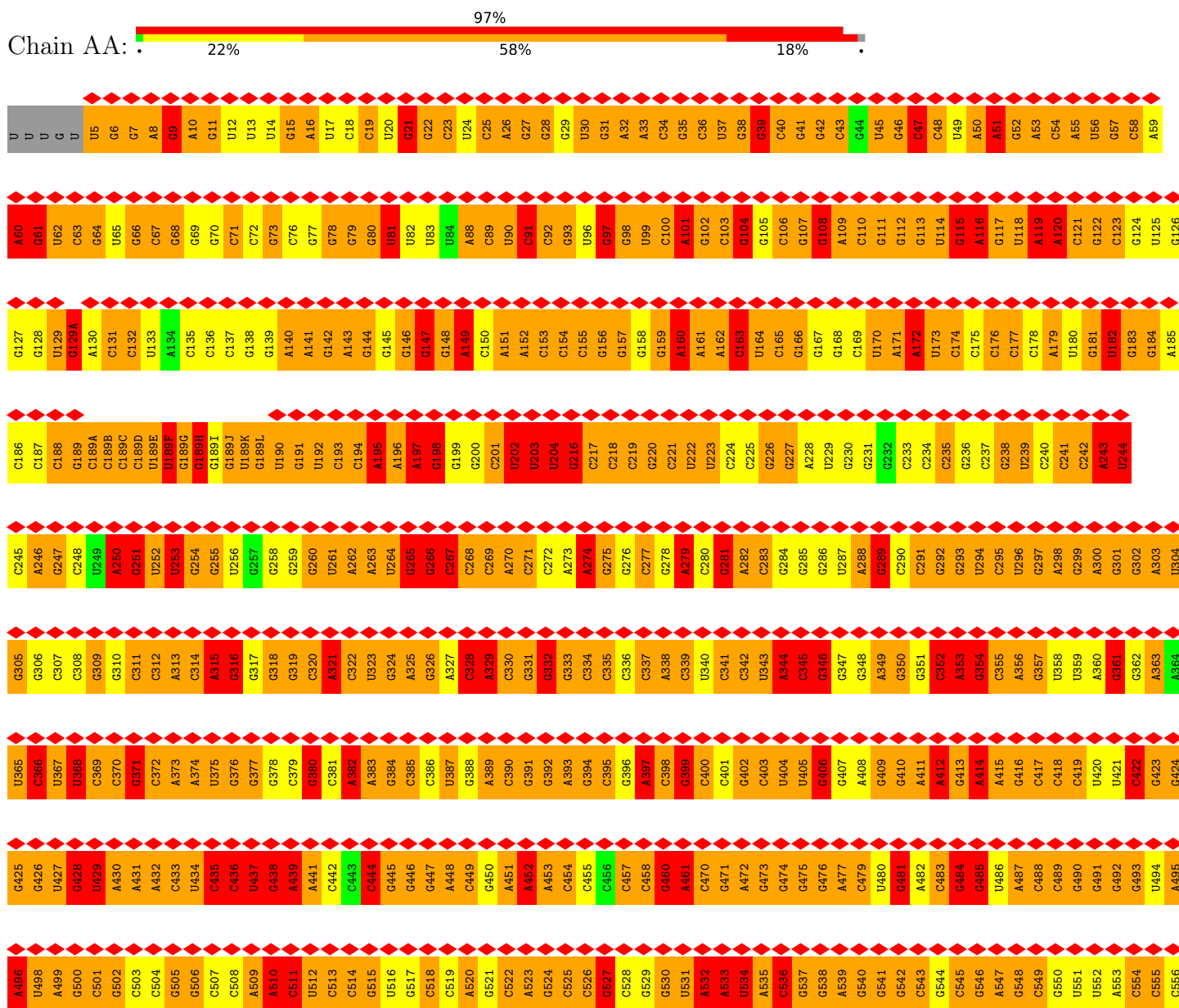


Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
59	AY	1	28	10	5	11	2	0

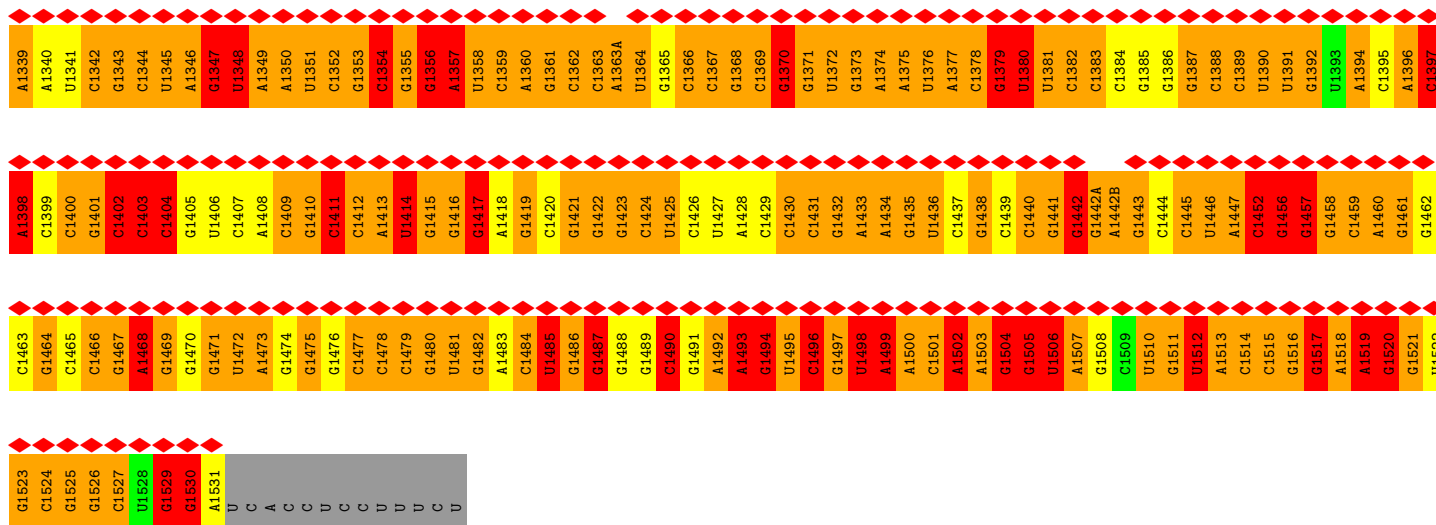
3 Residue-property plots

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.

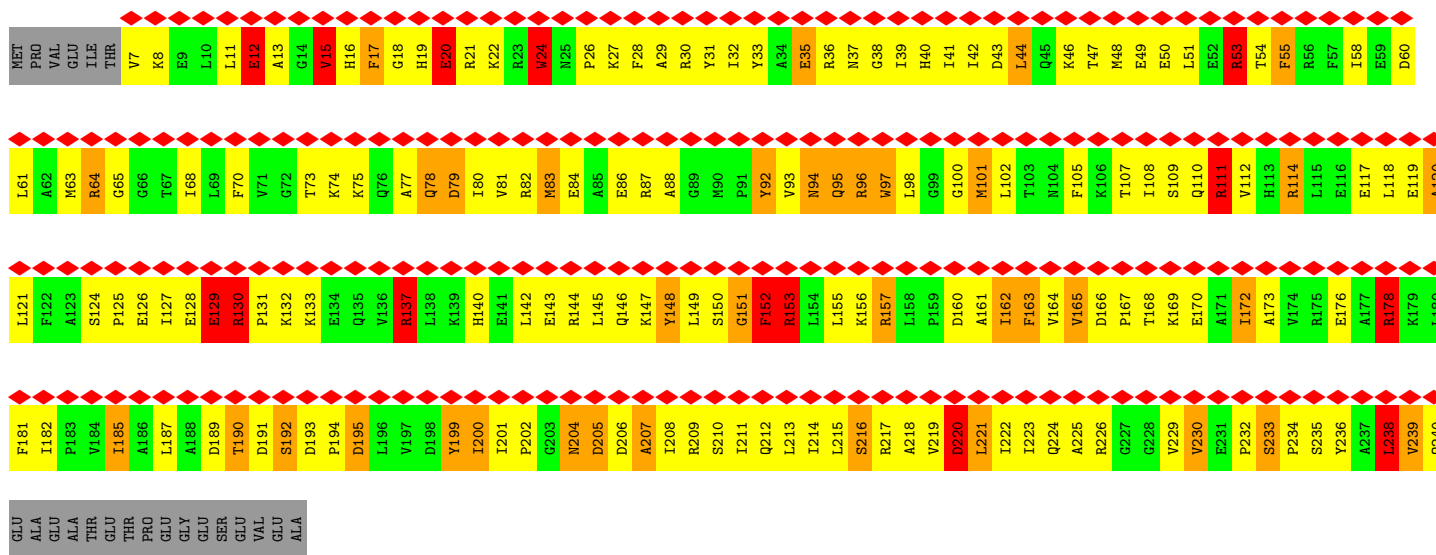
• Molecule 1: 16S rRNA



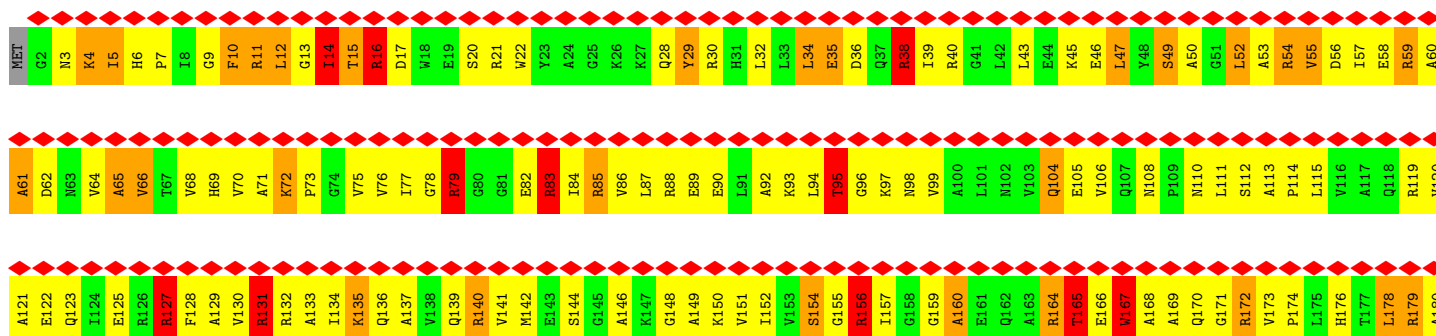
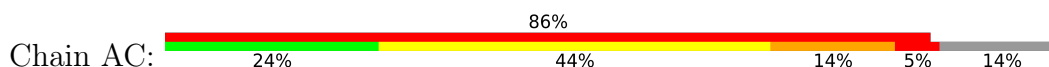
A1279	A1280	U1281	C1282	G1283	C1284	A1285	A1286	A1287	A1288	A1289	G1290	G1291	U1292	G1293	G1294	G1295	C1296	C1297	C1298	A1299	G1300	U1301	U1302	C1303	G1304	G1305	A1306	U1307	U1308	G1309	G1310	G1311	U1312	U1313	C1314	U1315	G1316	C1317	A1318	A1319	C1320	C1321	C1322	G1323	A1324	C1325	C1326	C1327	C1328	A1329	U1330	G1331	A1332	A1333	C1334	C1335	C1336	G1337	G1338						
U1219	G1220	G1221	G1222	C1223	G1224	A1225	C1226	A1227	C1228	A1229	C1230	G1231	U1232	G1233	C1234	U1235	A1236	C1237	A1238	A1239	U1240	G1241	C1242	C1243	G1244	A1245	C1246	U1247	A1248	C1249	A1250	A1251	C1252	G1253	C1254	G1255	U1256	U1257	C1258	C1259	C1260	A1261	C1262	C1263	C1264	G1265	G1266	C1267	C1268	A1269	C1270	G1271	U1272	G1273	G1274	A1275	G1276	C1277	U1278						
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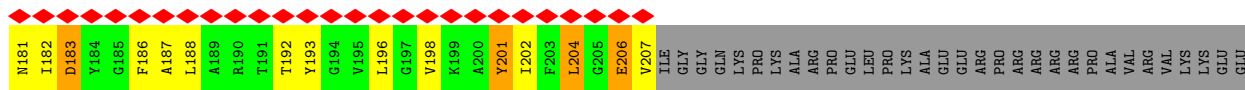


• Molecule 2: 30S RIBOSOMAL PROTEIN S2

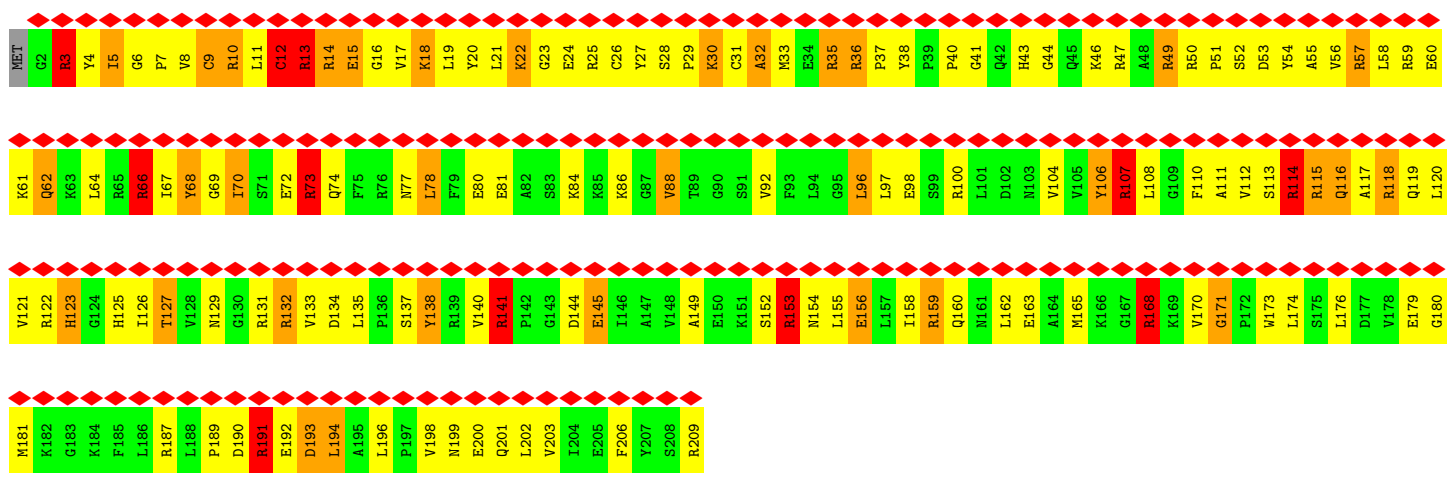


• Molecule 3: 30S RIBOSOMAL PROTEIN S3

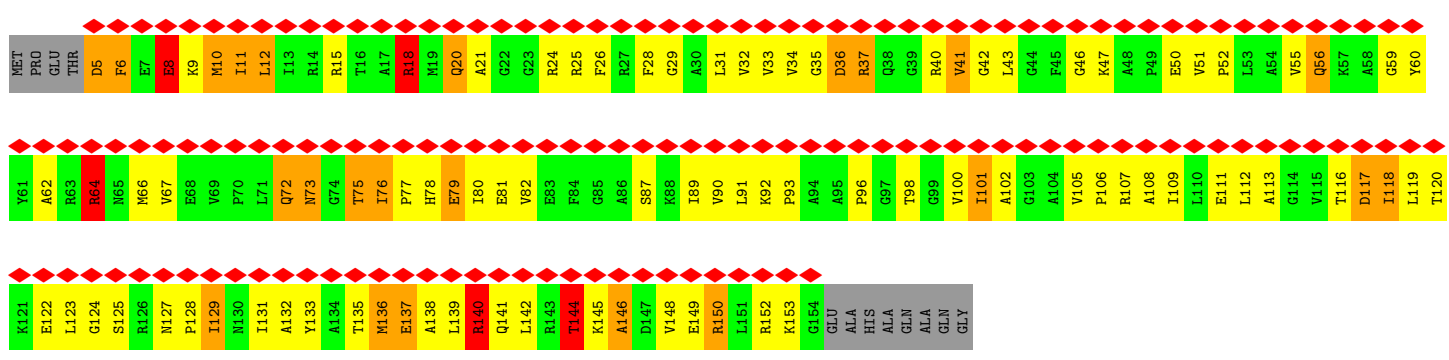




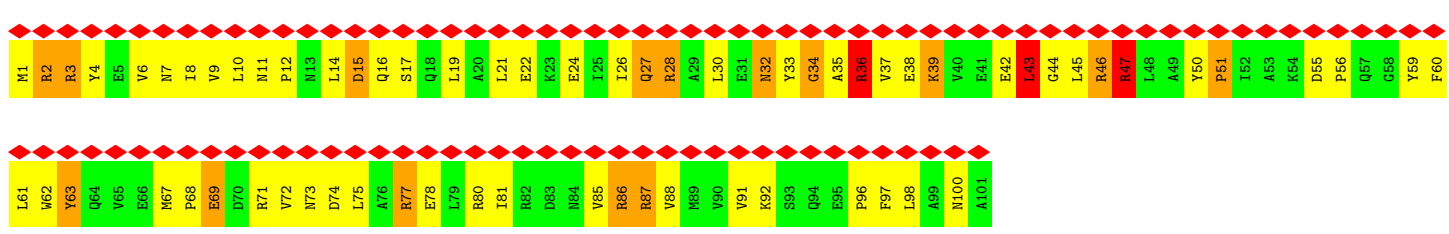
• Molecule 4: 30S RIBOSOMAL PROTEIN S4



• Molecule 5: 30S RIBOSOMAL PROTEIN S5



• Molecule 6: 30S RIBOSOMAL PROTEIN S6



• Molecule 7: 30S RIBOSOMAL PROTEIN S7

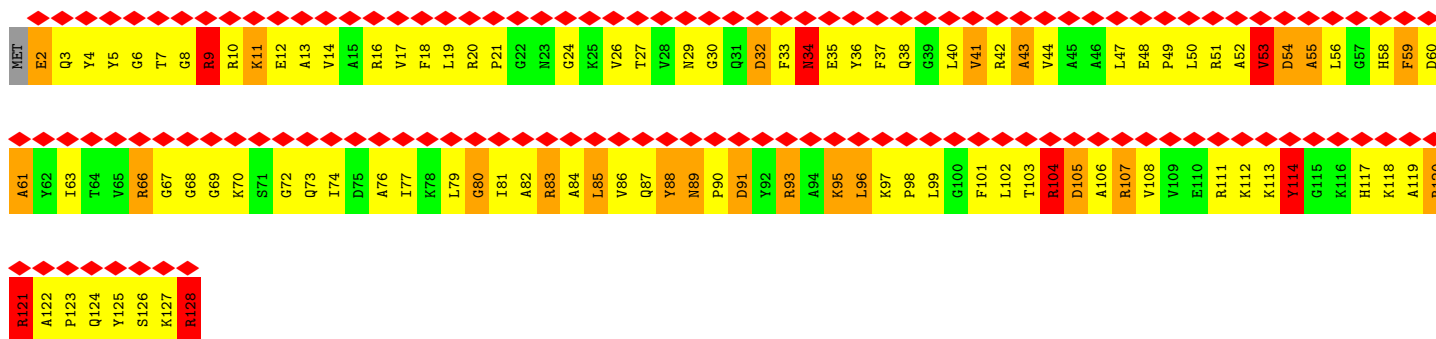




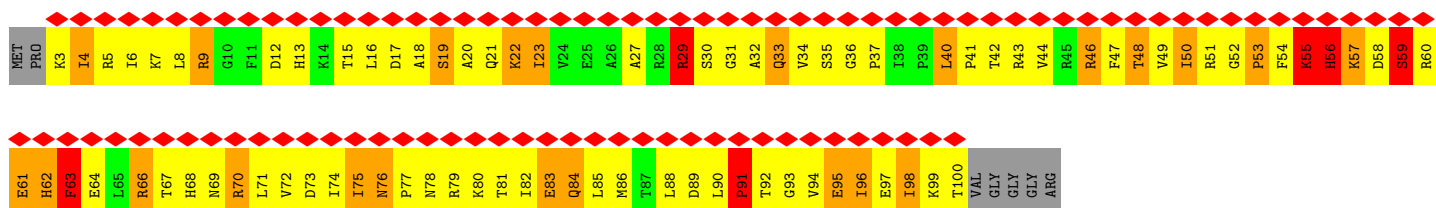
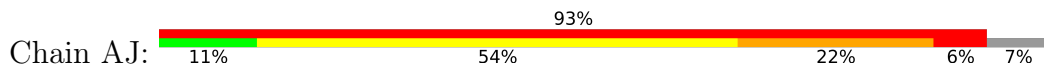
• Molecule 8: 30S RIBOSOMAL PROTEIN S8



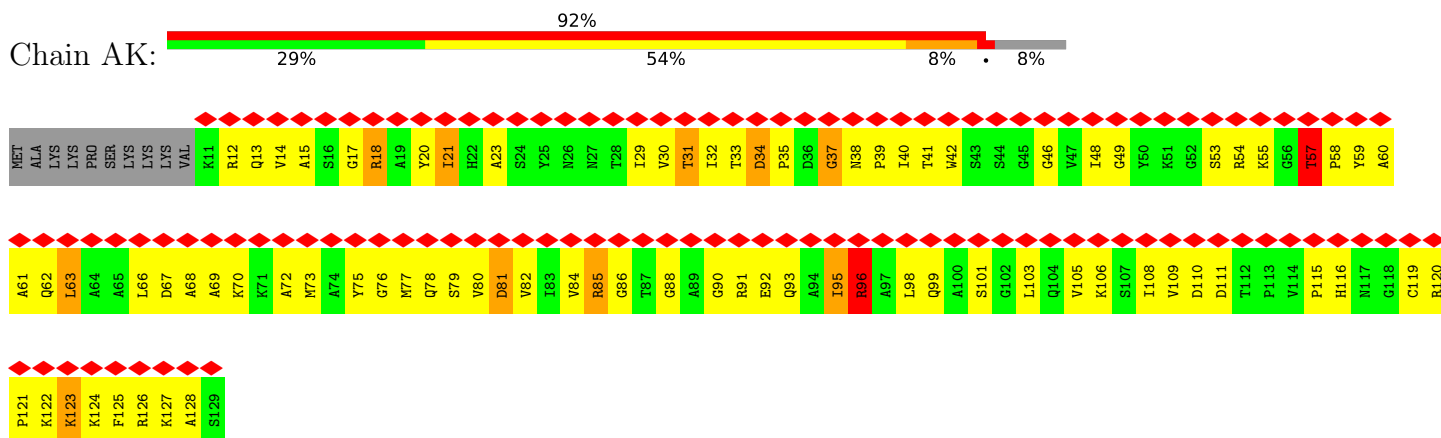
• Molecule 9: 30S RIBOSOMAL PROTEIN S9



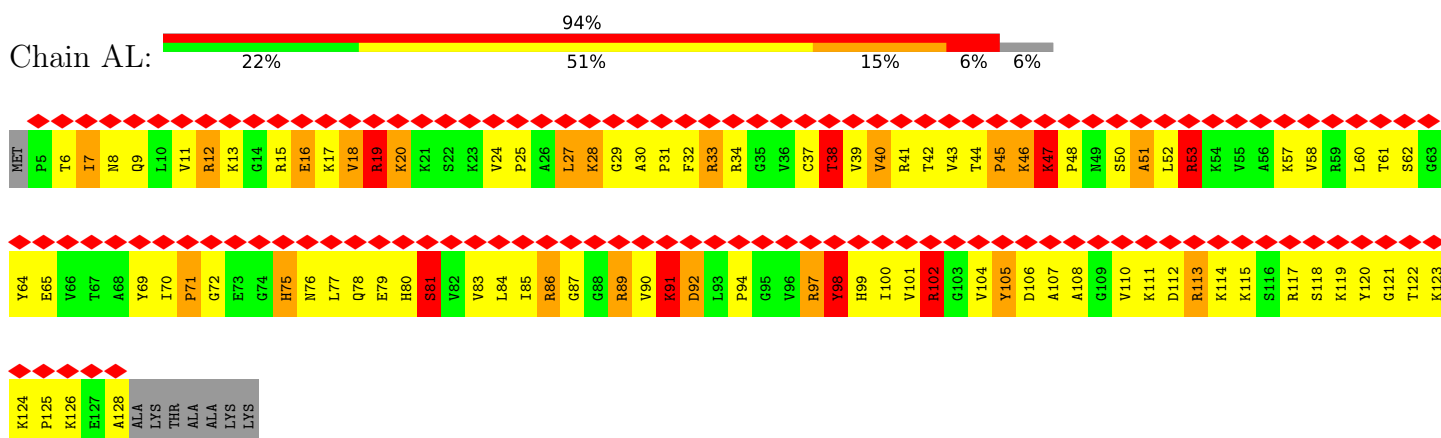
• Molecule 10: 30S RIBOSOMAL PROTEIN S10



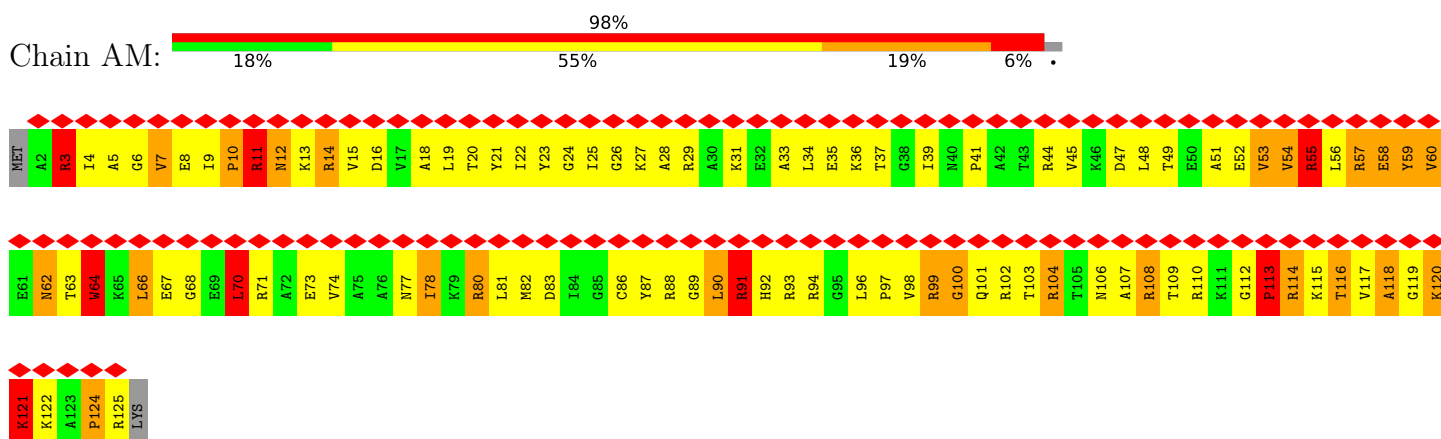
● Molecule 11: 30S RIBOSOMAL PROTEIN S11



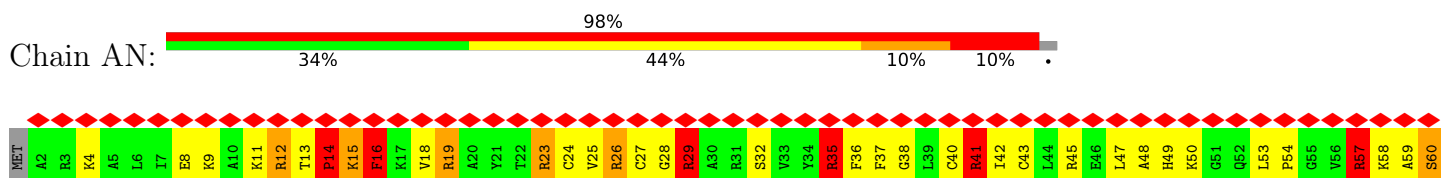
● Molecule 12: 30S RIBOSOMAL PROTEIN S12



● Molecule 13: 30S RIBOSOMAL PROTEIN S13

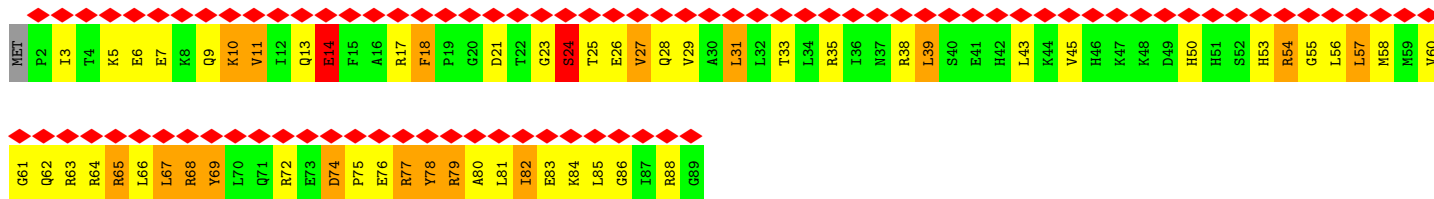


● Molecule 14: 30S RIBOSOMAL PROTEIN S14 TYPE Z

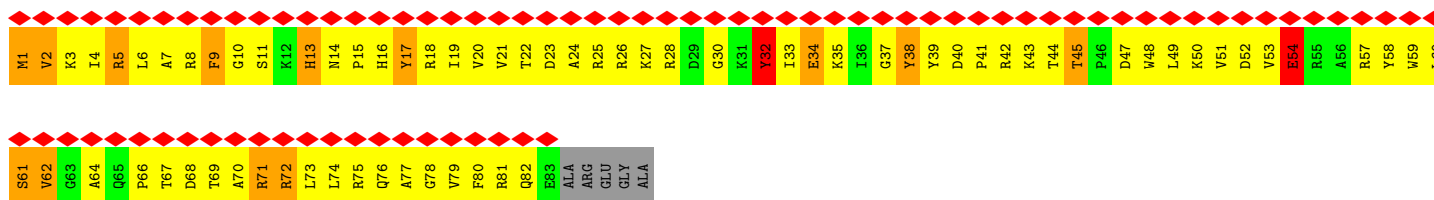
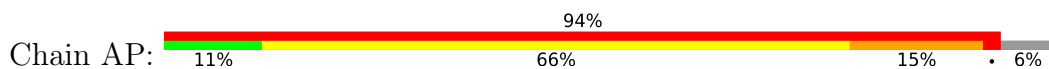


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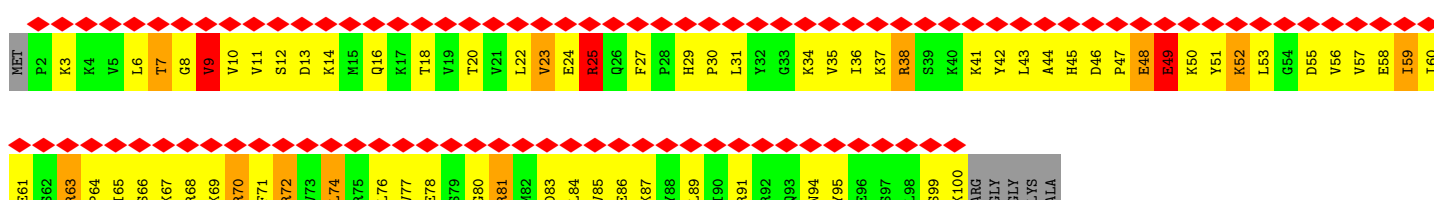
• Molecule 15: 30S RIBOSOMAL PROTEIN S15



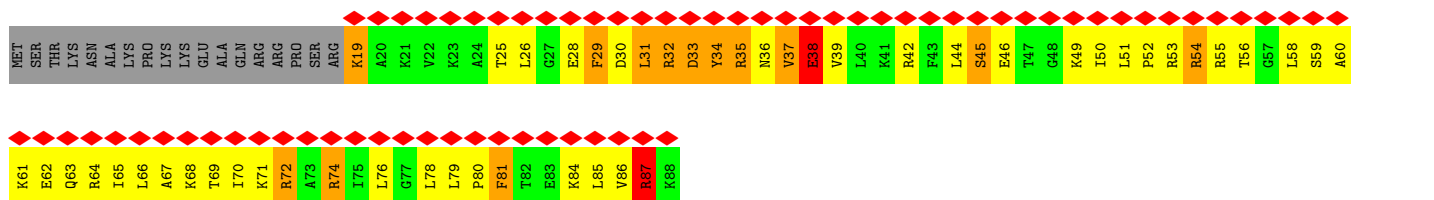
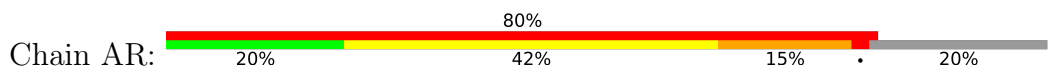
• Molecule 16: 30S RIBOSOMAL PROTEIN S16



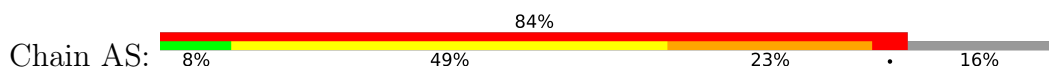
• Molecule 17: 30S RIBOSOMAL PROTEIN S17

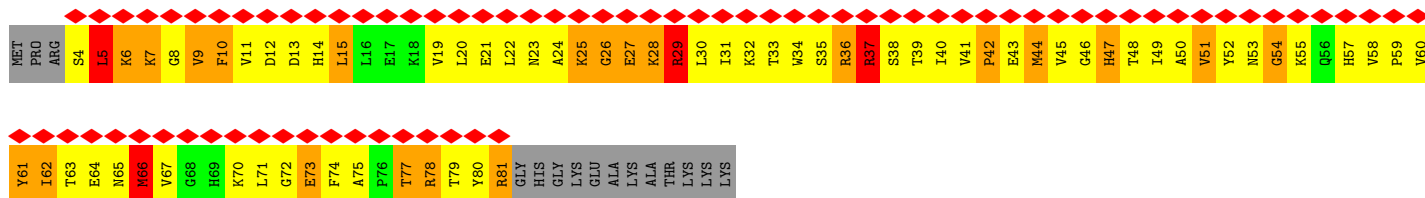


• Molecule 18: 30S RIBOSOMAL PROTEIN S18

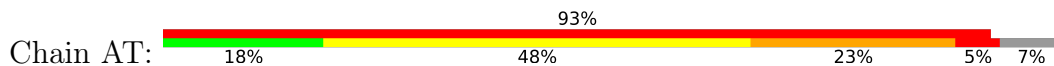


• Molecule 19: 30S RIBOSOMAL PROTEIN S19

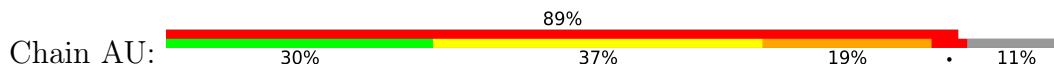




• Molecule 20: 30S RIBOSOMAL PROTEIN S20



• Molecule 21: 30S RIBOSOMAL PROTEIN THX



• Molecule 22: TRNA



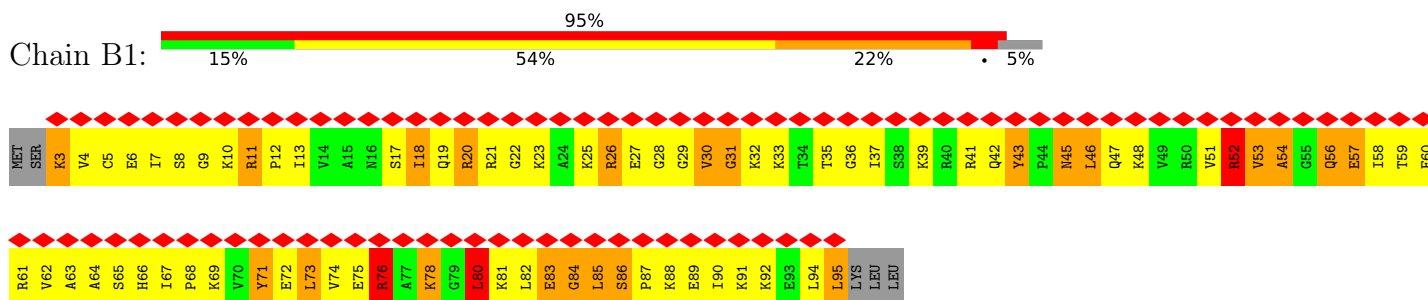
• Molecule 23: MRNA



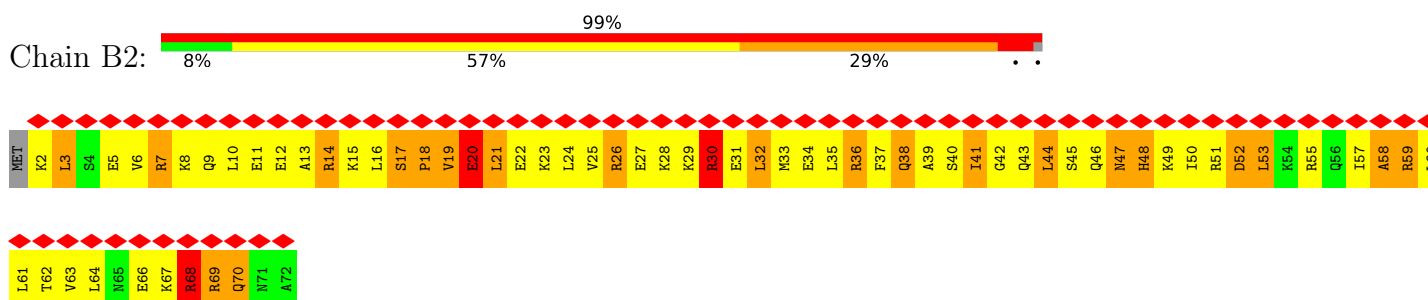
• Molecule 24: ELONGATION FACTOR G



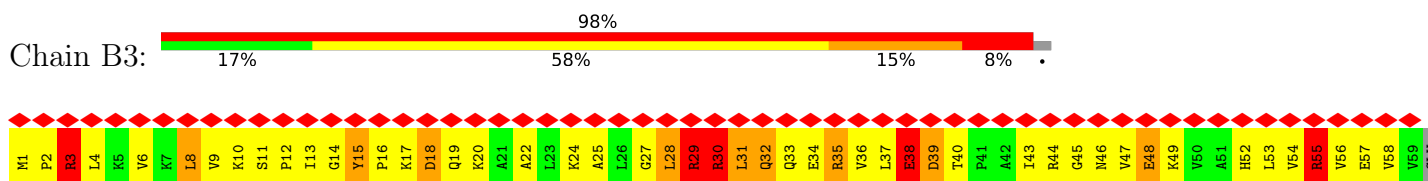
- Molecule 26: 50S RIBOSOMAL PROTEIN L28



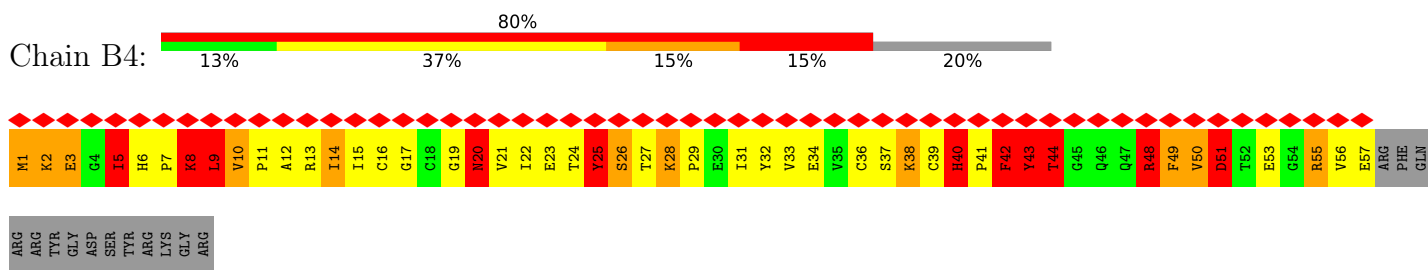
- Molecule 27: 50S RIBOSOMAL PROTEIN L29



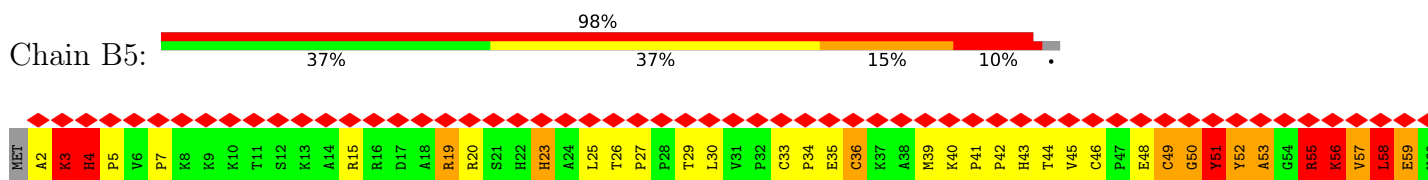
- Molecule 28: 50S RIBOSOMAL PROTEIN L30



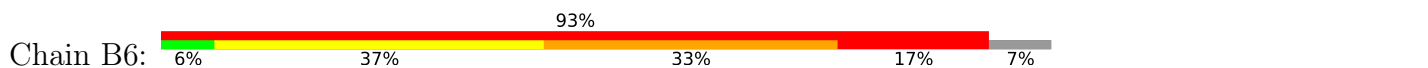
- Molecule 29: 50S RIBOSOMAL PROTEIN L31

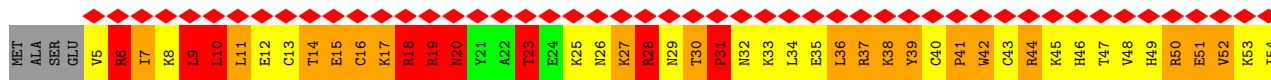


- Molecule 30: 50S RIBOSOMAL PROTEIN L32



- Molecule 31: 50S RIBOSOMAL PROTEIN L33





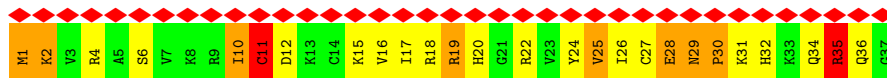
• Molecule 32: 50S RIBOSOMAL PROTEIN L34



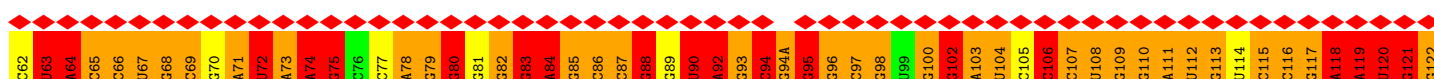
• Molecule 33: 50S RIBOSOMAL PROTEIN L35



• Molecule 34: 50S RIBOSOMAL PROTEIN L36



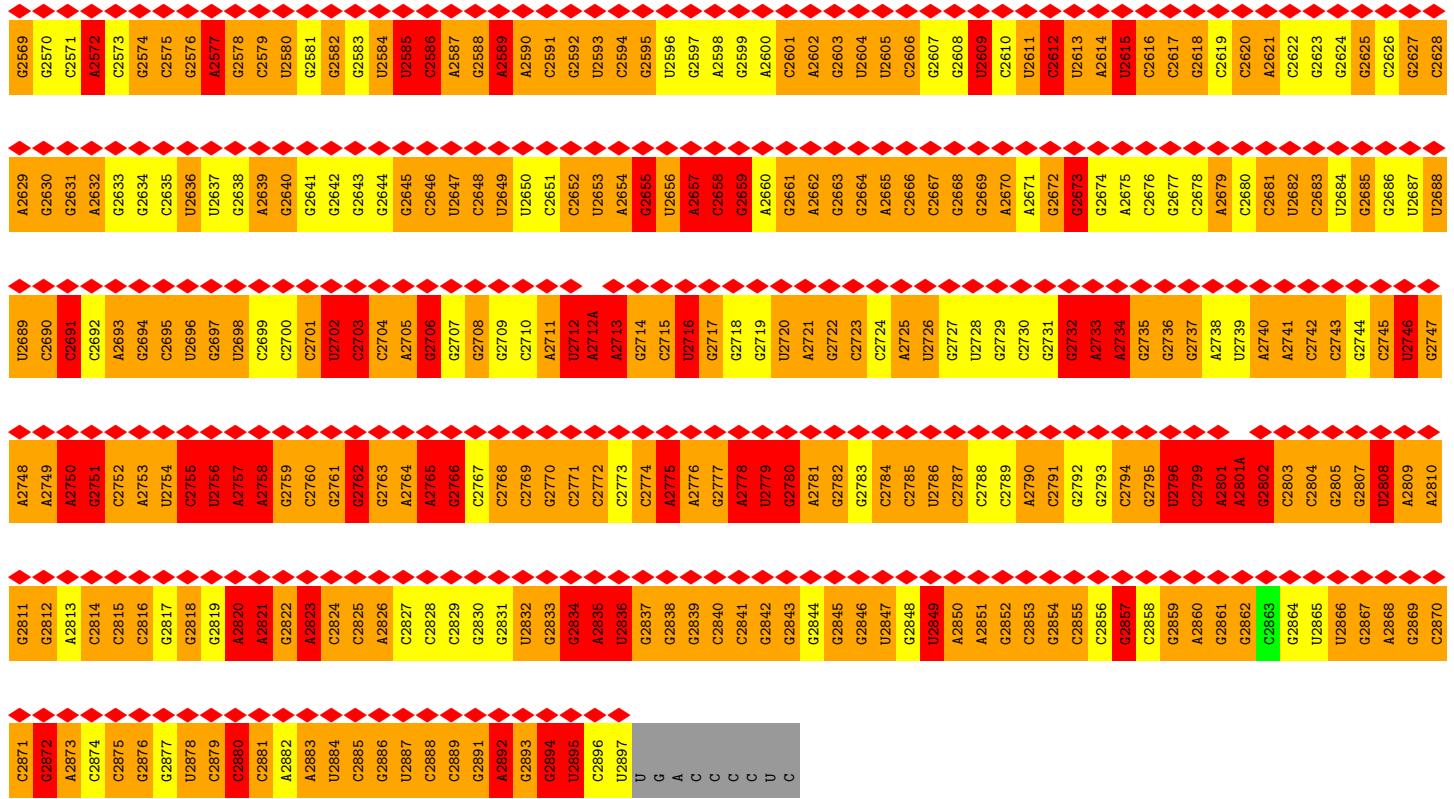
• Molecule 35: 23S RIBOSOMAL RNA



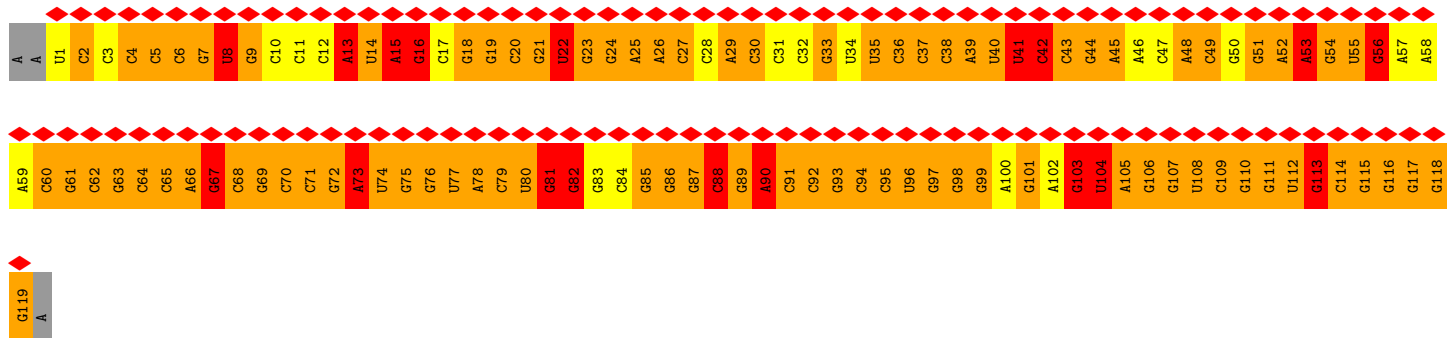
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G1696	C1636	U1576	G1515	G1456	U1397	G1337	C1218	A1157	U1097	G1037
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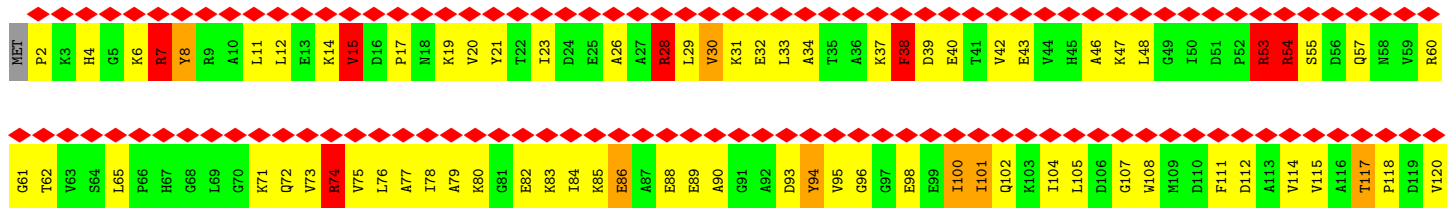
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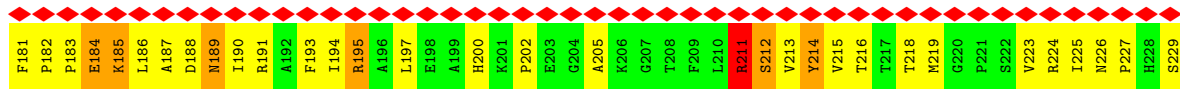


• Molecule 36: 5S RIBOSOMAL RNA

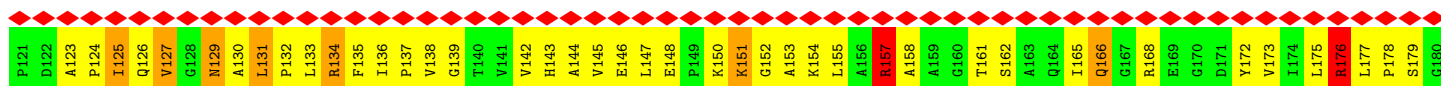
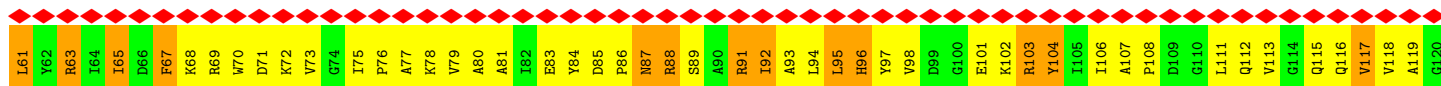
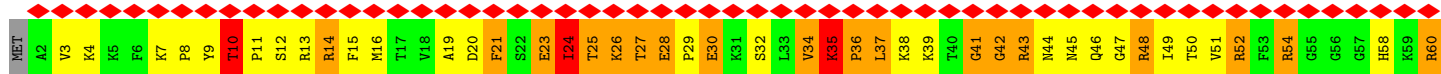


• Molecule 37: 50S RIBOSOMAL PROTEIN L1

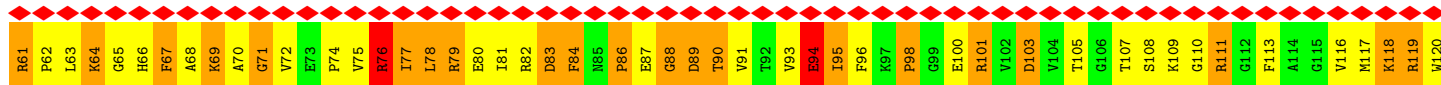
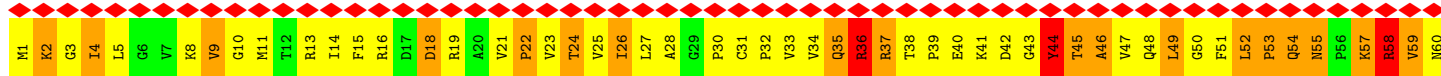
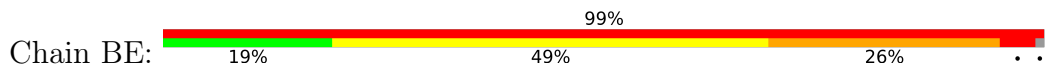




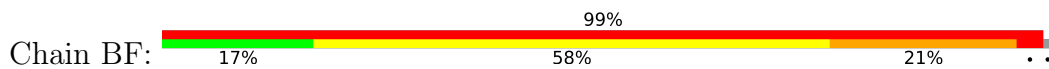
• Molecule 38: 50S RIBOSOMAL PROTEIN L2

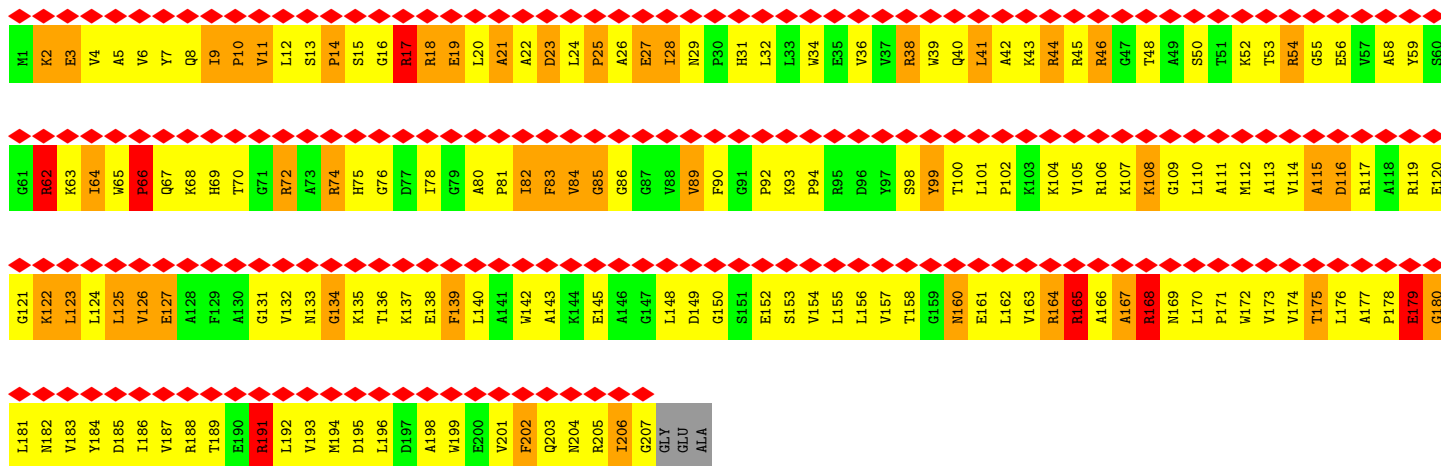


• Molecule 39: 50S RIBOSOMAL PROTEIN L3

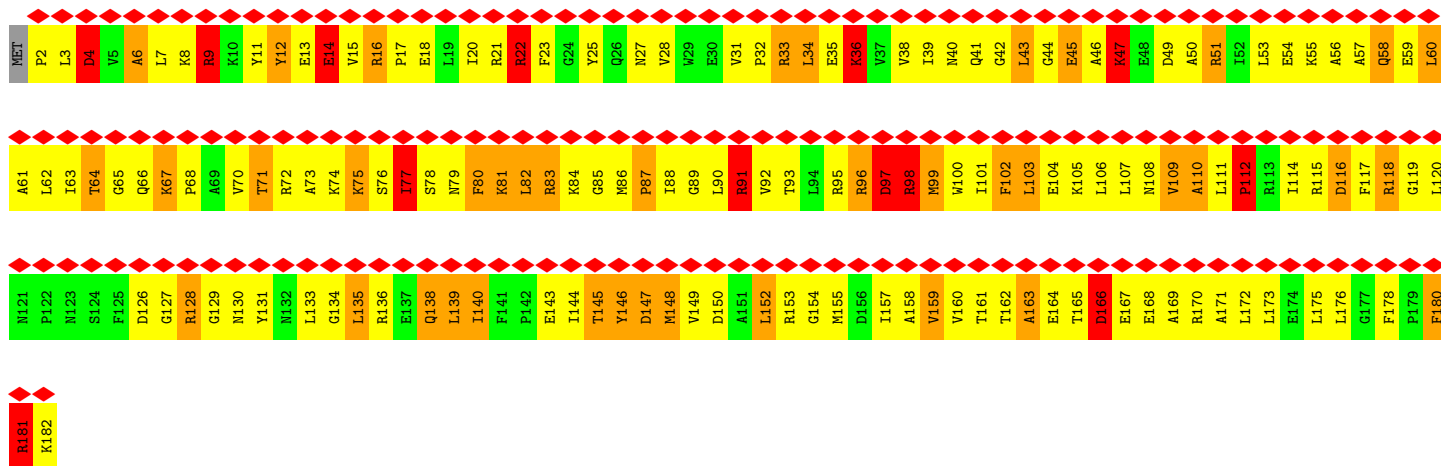
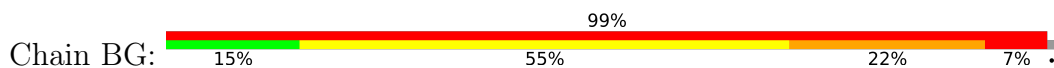


• Molecule 40: 50S RIBOSOMAL PROTEIN L4

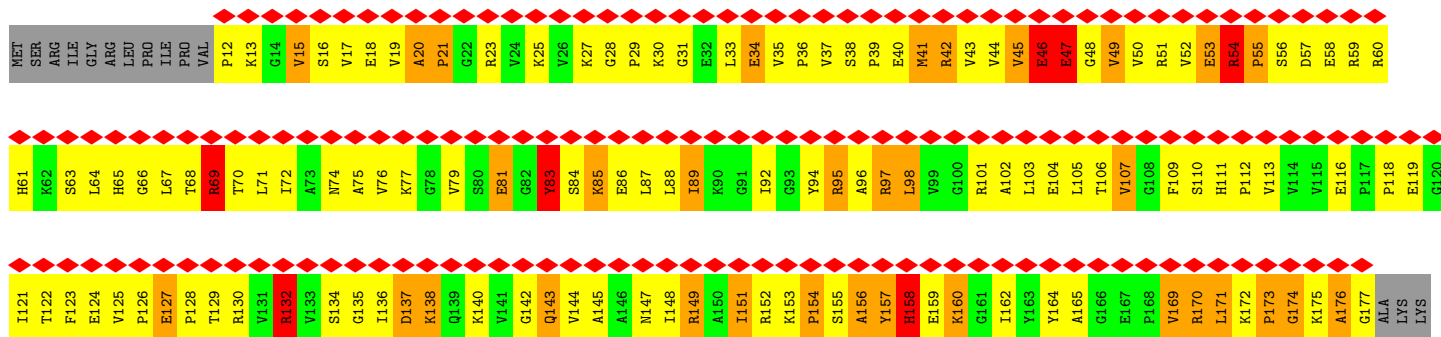
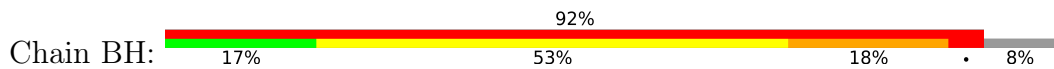




• Molecule 41: 50S RIBOSOMAL PROTEIN L5

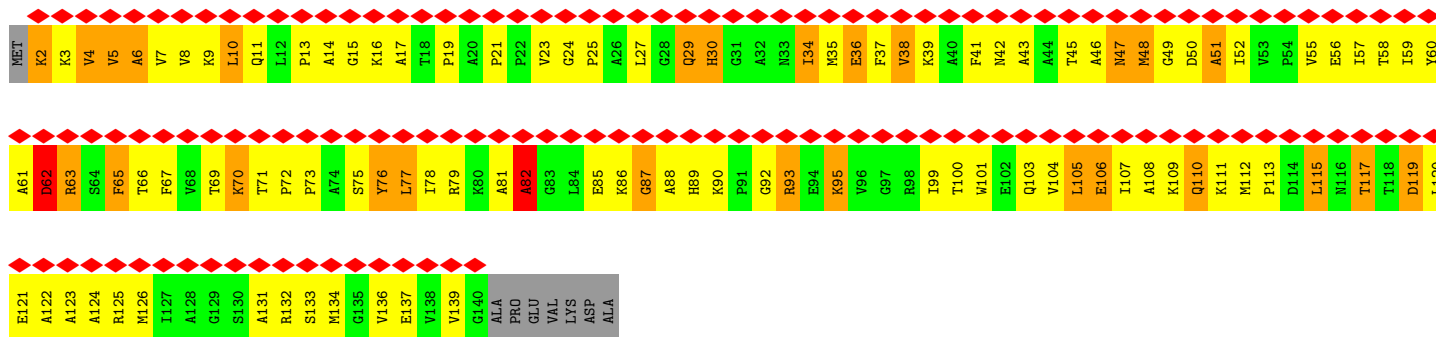


• Molecule 42: 50S RIBOSOMAL PROTEIN L6

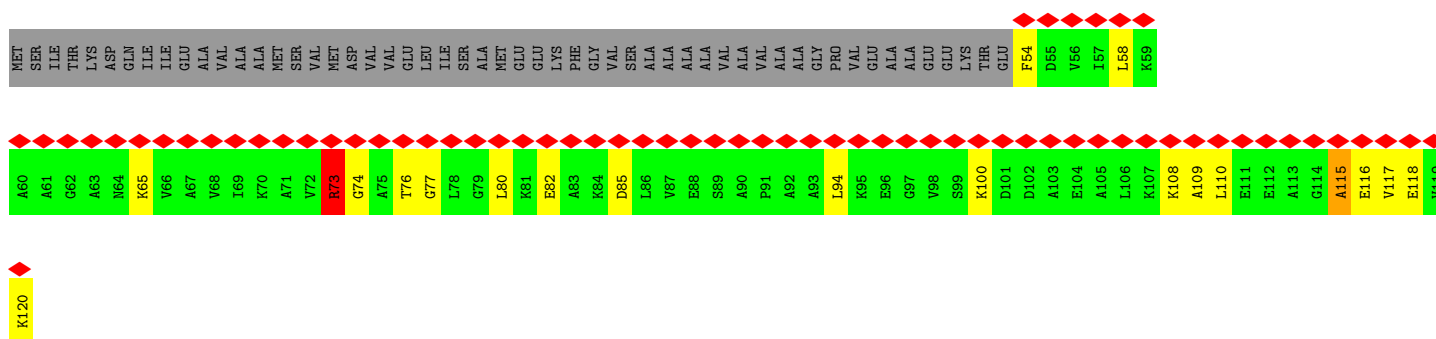
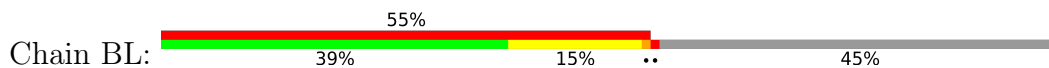


• Molecule 43: 50S RIBOSOMAL PROTEIN L11





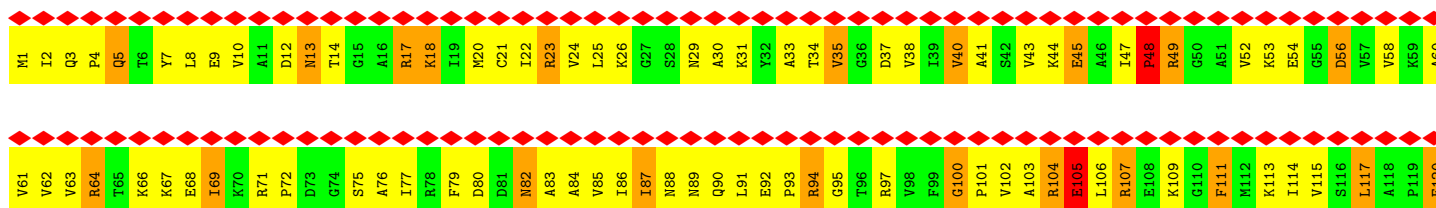
● Molecule 44: 50S RIBOSOMAL PROTEIN L7/L12



● Molecule 45: 50S RIBOSOMAL PROTEIN L13

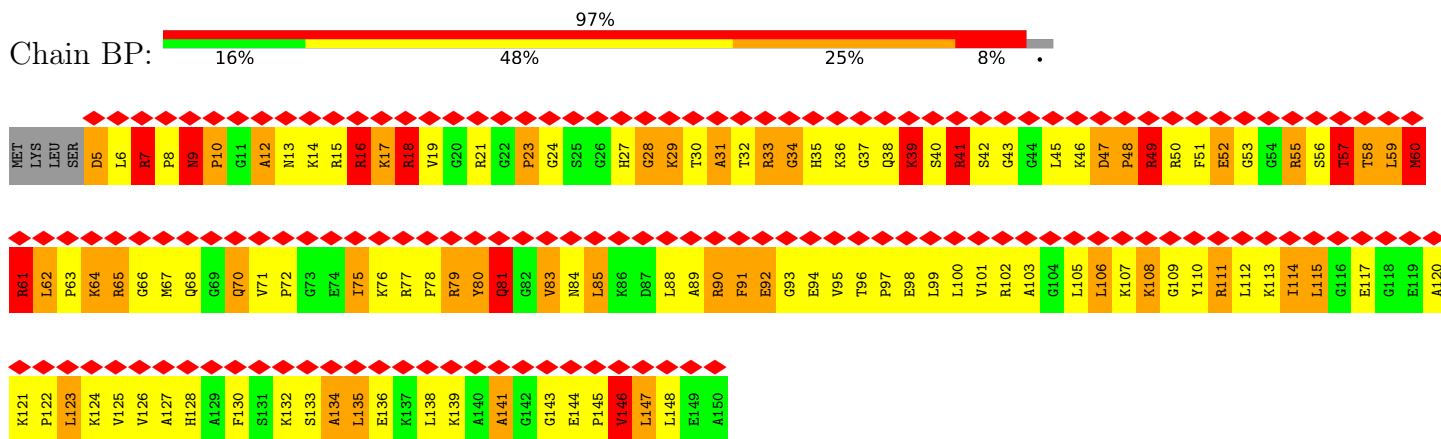


● Molecule 46: 50S RIBOSOMAL PROTEIN L14

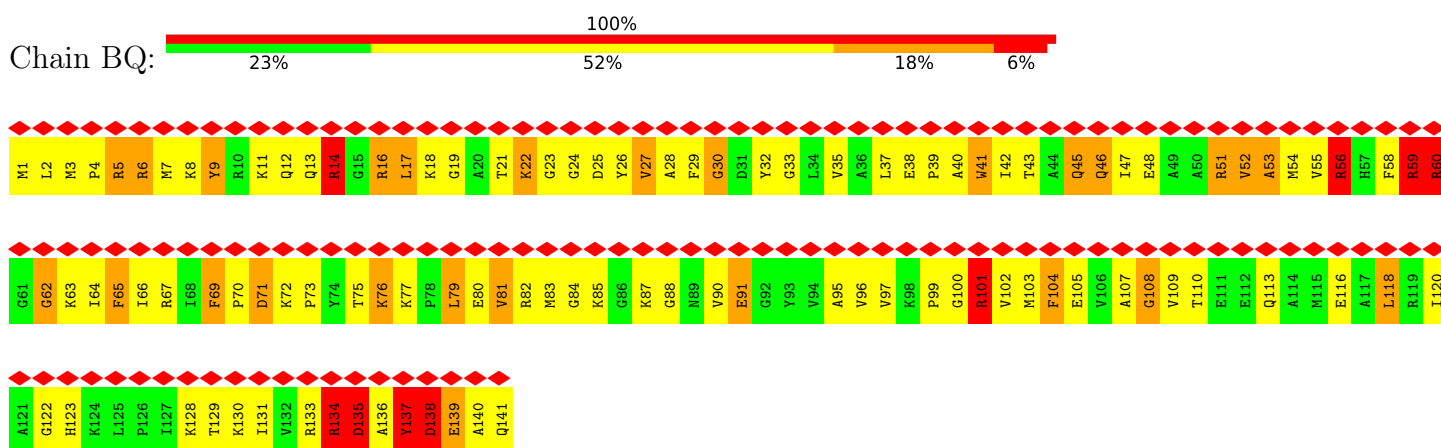


V121
L122

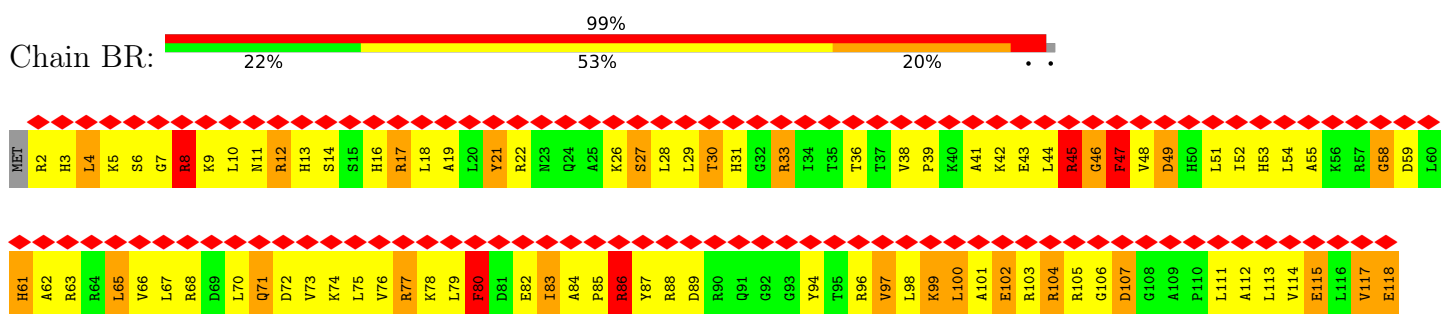
• Molecule 47: 50S RIBOSOMAL PROTEIN L15



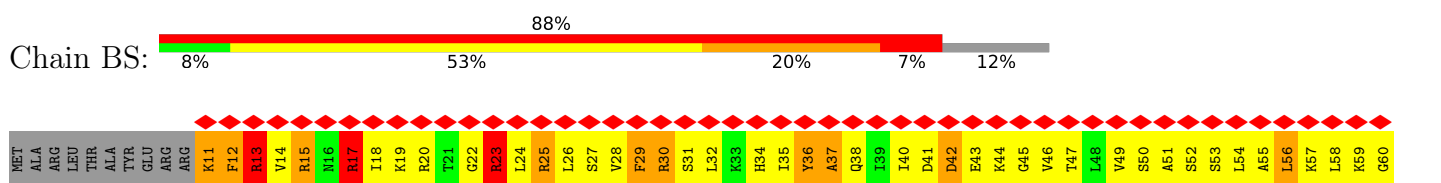
• Molecule 48: 50S RIBOSOMAL PROTEIN L16



• Molecule 49: 50S RIBOSOMAL PROTEIN L17

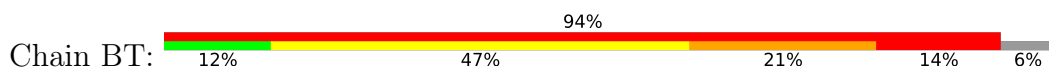


• Molecule 50: 50S RIBOSOMAL PROTEIN L18

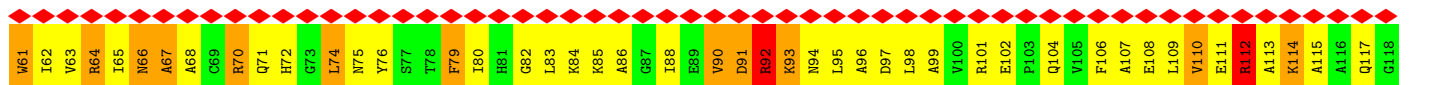
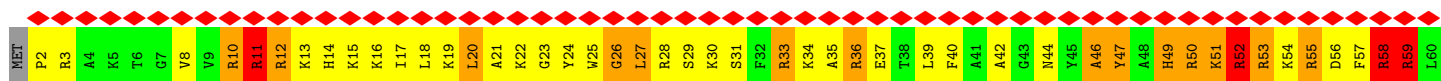




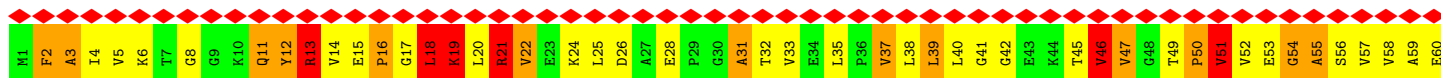
• Molecule 51: 50S RIBOSOMAL PROTEIN L19



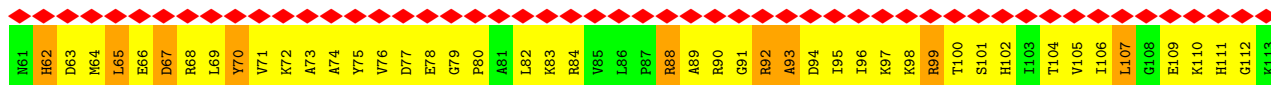
• Molecule 52: 50S RIBOSOMAL PROTEIN L20



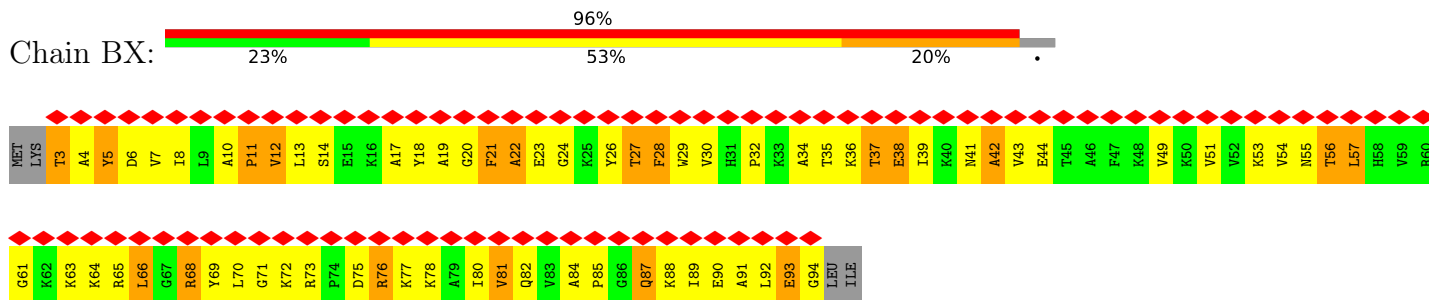
• Molecule 53: 50S RIBOSOMAL PROTEIN L21



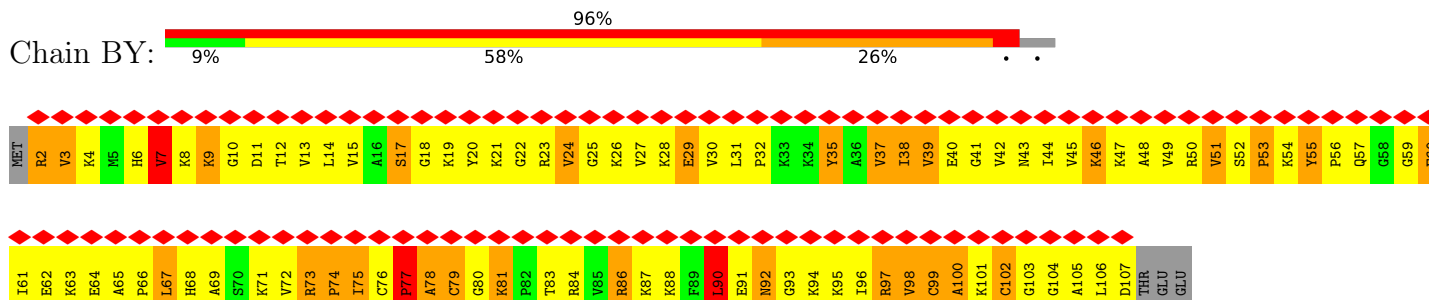
• Molecule 54: 50S RIBOSOMAL PROTEIN L22



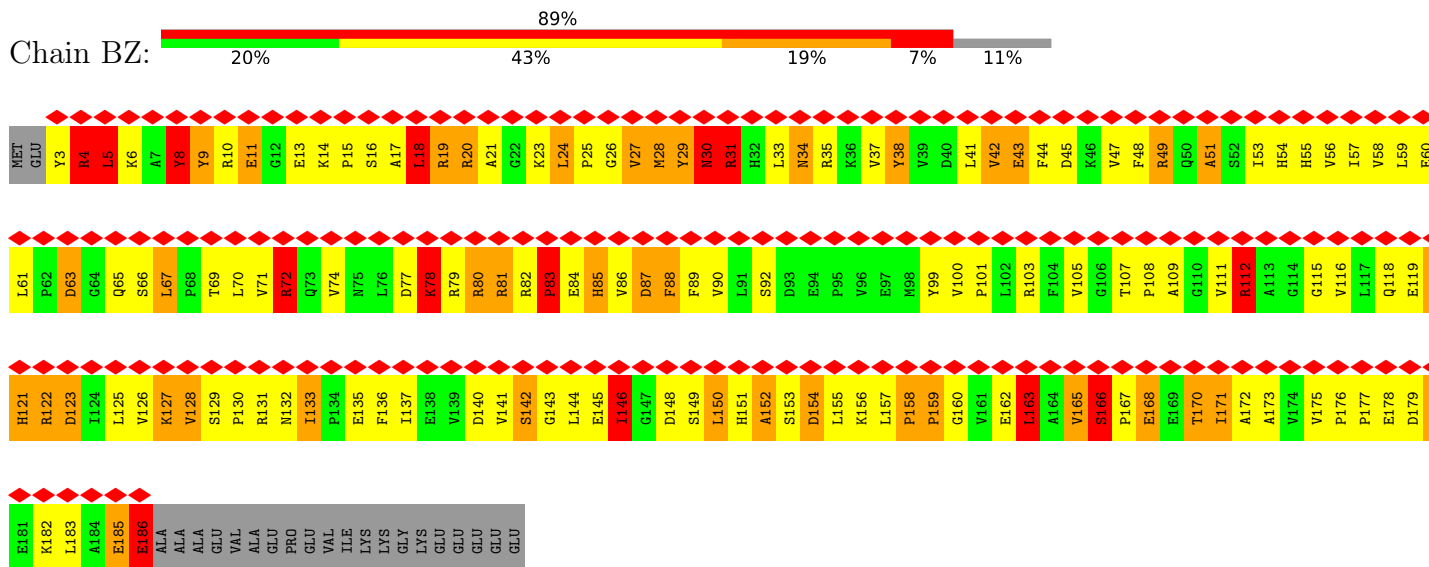
• Molecule 55: 50S RIBOSOMAL PROTEIN L23



• Molecule 56: 50S RIBOSOMAL PROTEIN L24



• Molecule 57: 50S RIBOSOMAL PROTEIN L25



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	Not provided	
Resolution determination method	Not provided	
CTF correction method	DEFOCUS GROUPS	Depositor
Microscope	FEI POLARA 300	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	20	Depositor
Minimum defocus (nm)	2000	Depositor
Maximum defocus (nm)	4000	Depositor
Magnification	65520	Depositor
Image detector	KODAK SO-163 FILM	Depositor
Maximum map value	11.899	Depositor
Minimum map value	-4.902	Depositor
Average map value	0.213	Depositor
Map value standard deviation	0.884	Depositor
Recommended contour level	2.5	Depositor
Map size (\AA)	378, 378, 378	wwPDB
Map dimensions	300, 300, 300	wwPDB
Map angles ($^\circ$)	90, 90, 90	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: FUA, GDP

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	2.73	2519/36190 (7.0%)	2.44	3195/56486 (5.7%)
2	AB	1.36	3/1935 (0.2%)	1.50	19/2609 (0.7%)
3	AC	1.44	1/1636 (0.1%)	1.59	20/2205 (0.9%)
4	AD	1.38	0/1733	1.56	26/2318 (1.1%)
5	AE	1.45	1/1162 (0.1%)	1.44	9/1564 (0.6%)
6	AF	1.39	0/856	1.57	12/1154 (1.0%)
7	AG	1.34	1/1276 (0.1%)	1.51	12/1709 (0.7%)
8	AH	1.41	1/1136 (0.1%)	1.60	15/1527 (1.0%)
9	AI	1.48	4/1029 (0.4%)	2.08	17/1379 (1.2%)
10	AJ	1.33	0/807	1.53	8/1085 (0.7%)
11	AK	1.40	1/900 (0.1%)	1.50	6/1213 (0.5%)
12	AL	1.42	1/986 (0.1%)	1.58	13/1320 (1.0%)
13	AM	1.33	0/998	1.68	17/1336 (1.3%)
14	AN	1.52	1/501 (0.2%)	1.72	9/664 (1.4%)
15	AO	1.36	1/745 (0.1%)	1.58	9/992 (0.9%)
16	AP	1.47	1/716 (0.1%)	1.59	11/963 (1.1%)
17	AQ	1.43	1/836 (0.1%)	1.57	11/1117 (1.0%)
18	AR	1.41	1/579 (0.2%)	1.56	12/768 (1.6%)
19	AS	1.30	0/642	1.50	6/865 (0.7%)
20	AT	1.32	0/765	1.53	10/1007 (1.0%)
21	AU	1.50	1/212 (0.5%)	1.82	8/277 (2.9%)
22	AV	2.70	127/1832 (6.9%)	2.42	155/2855 (5.4%)
23	AX	2.50	14/257 (5.4%)	2.35	20/398 (5.0%)
24	AY	1.35	3/5312 (0.1%)	1.53	54/7193 (0.8%)
25	B0	1.32	0/671	1.75	11/892 (1.2%)
26	B1	1.34	1/738 (0.1%)	1.58	9/981 (0.9%)
27	B2	1.32	2/600 (0.3%)	1.60	9/793 (1.1%)
28	B3	1.42	0/472	1.51	5/634 (0.8%)
29	B4	1.28	0/460	1.67	9/621 (1.4%)
30	B5	1.26	0/473	1.57	6/639 (0.9%)
31	B6	1.29	0/440	1.71	9/586 (1.5%)
32	B7	1.37	0/426	1.76	9/561 (1.6%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
33	B8	1.35	0/515	1.68	7/679 (1.0%)
34	B9	1.36	1/310 (0.3%)	1.54	3/407 (0.7%)
35	BA	2.69	4845/69972 (6.9%)	2.42	5972/109237 (5.5%)
36	BB	2.63	174/2853 (6.1%)	2.36	226/4451 (5.1%)
37	BC	1.32	1/1774 (0.1%)	1.51	18/2391 (0.8%)
38	BD	1.40	5/2195 (0.2%)	1.62	27/2955 (0.9%)
39	BE	1.37	3/1596 (0.2%)	1.52	17/2153 (0.8%)
40	BF	1.36	1/1658 (0.1%)	1.64	27/2244 (1.2%)
41	BG	1.34	1/1499 (0.1%)	1.97	24/2016 (1.2%)
42	BH	1.32	4/1292 (0.3%)	1.50	11/1744 (0.6%)
43	BK	1.27	1/1044 (0.1%)	1.39	8/1416 (0.6%)
44	BL	1.08	0/478	1.54	3/640 (0.5%)
45	BN	1.34	2/1131 (0.2%)	1.52	11/1525 (0.7%)
46	BO	1.40	2/943 (0.2%)	1.55	9/1269 (0.7%)
47	BP	1.38	1/1131 (0.1%)	1.64	20/1504 (1.3%)
48	BQ	1.43	3/1143 (0.3%)	1.59	18/1527 (1.2%)
49	BR	1.35	2/974 (0.2%)	1.57	14/1302 (1.1%)
50	BS	1.36	1/778 (0.1%)	1.71	13/1036 (1.3%)
51	BT	1.32	0/1155	1.77	33/1542 (2.1%)
52	BU	1.35	1/975 (0.1%)	1.59	18/1297 (1.4%)
53	BV	1.27	0/790	1.55	9/1057 (0.9%)
54	BW	1.33	0/907	1.59	11/1216 (0.9%)
55	BX	1.37	0/739	1.39	5/993 (0.5%)
56	BY	1.29	0/823	1.43	4/1098 (0.4%)
57	BZ	1.41	2/1499 (0.1%)	1.54	16/2035 (0.8%)
All	All	2.35	7735/165495 (4.7%)	2.21	10265/246445 (4.2%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	AA	1	111
2	AB	0	10
3	AC	0	1
4	AD	0	14
5	AE	0	3
6	AF	0	5
7	AG	0	11
8	AH	0	8
9	AI	0	9

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Mol	Chain	#Chirality outliers	#Planarity outliers
10	AJ	0	3
11	AK	0	3
12	AL	0	3
13	AM	0	6
14	AN	0	3
15	AO	0	2
16	AP	0	2
18	AR	0	1
20	AT	0	7
21	AU	0	1
22	AV	0	4
23	AX	0	2
24	AY	0	19
25	B0	0	3
26	B1	0	3
27	B2	0	5
28	B3	0	4
29	B4	0	1
30	B5	0	1
31	B6	0	3
32	B7	0	2
33	B8	0	3
35	BA	2	161
36	BB	0	2
37	BC	0	7
38	BD	0	8
39	BE	0	6
40	BF	0	4
41	BG	0	4
42	BH	0	5
43	BK	0	5
44	BL	0	3
45	BN	0	5
46	BO	0	4
47	BP	0	6
48	BQ	0	4
49	BR	0	3
50	BS	0	3
51	BT	0	10
52	BU	0	4
53	BV	0	3
54	BW	0	5

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Mol	Chain	#Chirality outliers	#Planarity outliers
55	BX	0	1
56	BY	0	2
57	BZ	0	6
All	All	3	514

The worst 5 of 7735 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
35	BA	1696	G	N7-C5	-15.22	1.30	1.39
1	AA	607	A	N7-C5	-14.64	1.30	1.39
35	BA	406	G	N7-C5	-14.28	1.30	1.39
1	AA	1144	G	C8-N7	-14.17	1.22	1.30
1	AA	1129	C	N3-C4	-13.63	1.24	1.33

The worst 5 of 10265 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
41	BG	112	PRO	O-C-N	-44.90	50.85	122.70
9	AI	53	VAL	O-C-N	-38.46	61.16	122.70
9	AI	104	ARG	O-C-N	-29.23	75.94	122.70
41	BG	112	PRO	CA-C-N	20.32	161.90	117.20
1	AA	1463	C	C6-N1-C2	18.92	127.87	120.30

All (3) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
1	AA	575	G	C3'
35	BA	1799	G	C3'
35	BA	1992	G	C3'

5 of 514 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	AA	108	G	Sidechain
1	AA	21	G	Sidechain
1	AA	37	U	Sidechain
1	AA	39	G	Sidechain
1	AA	5	U	Sidechain

5.2 Too-close contacts

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	32329	0	16035	1572	0
2	AB	1900	0	1951	268	0
3	AC	1612	0	1677	202	0
4	AD	1703	0	1767	195	0
5	AE	1146	0	1207	147	0
6	AF	843	0	857	95	0
7	AG	1257	0	1296	109	0
8	AH	1116	0	1177	98	0
9	AI	1010	0	1037	148	0
10	AJ	794	0	840	178	0
11	AK	885	0	904	79	0
12	AL	970	0	1057	149	0
13	AM	987	0	1059	140	0
14	AN	492	0	533	56	0
15	AO	734	0	771	71	0
16	AP	700	0	720	91	0
17	AQ	823	0	891	71	0
18	AR	574	0	644	92	0
19	AS	629	0	652	142	0
20	AT	763	0	861	124	0
21	AU	208	0	221	15	0
22	AV	1640	0	820	93	0
23	AX	230	0	119	17	0
24	AY	5214	0	5288	759	0
25	B0	662	0	688	86	0
26	B1	731	0	808	132	0
27	B2	598	0	653	123	0
28	B3	467	0	523	75	0
29	B4	450	0	449	101	0
30	B5	459	0	480	97	0
31	B6	433	0	461	177	0
32	B7	418	0	467	45	0
33	B8	507	0	576	112	0
34	B9	307	0	338	41	0
35	BA	62474	0	31032	3259	0
36	BB	2551	0	1278	166	0
37	BC	1742	0	1798	183	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
38	BD	2145	0	2234	311	0
39	BE	1563	0	1629	273	0
40	BF	1623	0	1677	288	0
41	BG	1474	0	1535	278	0
42	BH	1268	0	1337	209	0
43	BK	1025	0	1066	184	0
44	BL	477	0	509	17	0
45	BN	1104	0	1180	154	0
46	BO	933	0	996	116	0
47	BP	1114	0	1187	270	0
48	BQ	1122	0	1179	151	0
49	BR	960	0	1021	157	0
50	BS	770	0	832	177	0
51	BT	1141	0	1202	266	0
52	BU	958	0	1015	166	0
53	BV	779	0	852	142	0
54	BW	896	0	953	123	0
55	BX	725	0	778	97	0
56	BY	810	0	901	174	0
57	BZ	1467	0	1492	249	0
58	AY	37	0	46	17	0
59	AY	28	0	12	6	0
All	All	152777	0	105568	12274	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 48.

The worst 5 of 12274 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)
24:AY:252:ASP:CB	24:AY:254:LYS:HE3	1.55	1.36
37:BC:118:PRO:HA	37:BC:121:MET:CG	1.60	1.31
53:BV:18:LEU:HD22	53:BV:19:LYS:N	1.45	1.30
1:AA:1158:C:C5'	2:AB:133:LYS:HE2	1.62	1.28
53:BV:18:LEU:CD2	53:BV:19:LYS:H	1.50	1.25

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	232/256 (91%)	149 (64%)	49 (21%)	34 (15%)	0	3
3	AC	204/239 (85%)	129 (63%)	56 (28%)	19 (9%)	0	10
4	AD	206/209 (99%)	138 (67%)	49 (24%)	19 (9%)	1	11
5	AE	148/162 (91%)	113 (76%)	25 (17%)	10 (7%)	1	15
6	AF	99/101 (98%)	77 (78%)	18 (18%)	4 (4%)	3	23
7	AG	153/156 (98%)	108 (71%)	35 (23%)	10 (6%)	1	16
8	AH	136/138 (99%)	110 (81%)	23 (17%)	3 (2%)	6	35
9	AI	125/128 (98%)	85 (68%)	24 (19%)	16 (13%)	0	5
10	AJ	96/105 (91%)	60 (62%)	23 (24%)	13 (14%)	0	4
11	AK	117/129 (91%)	91 (78%)	21 (18%)	5 (4%)	2	22
12	AL	122/132 (92%)	82 (67%)	23 (19%)	17 (14%)	0	4
13	AM	122/126 (97%)	73 (60%)	26 (21%)	23 (19%)	0	2
14	AN	58/61 (95%)	49 (84%)	5 (9%)	4 (7%)	1	15
15	AO	86/89 (97%)	55 (64%)	24 (28%)	7 (8%)	1	12
16	AP	81/88 (92%)	56 (69%)	19 (24%)	6 (7%)	1	13
17	AQ	97/105 (92%)	78 (80%)	15 (16%)	4 (4%)	3	22
18	AR	68/88 (77%)	49 (72%)	15 (22%)	4 (6%)	1	17
19	AS	76/93 (82%)	37 (49%)	21 (28%)	18 (24%)	0	1
20	AT	97/106 (92%)	49 (50%)	31 (32%)	17 (18%)	0	2
21	AU	22/27 (82%)	13 (59%)	8 (36%)	1 (4%)	2	22
24	AY	662/691 (96%)	440 (66%)	137 (21%)	85 (13%)	0	5
25	B0	82/85 (96%)	66 (80%)	13 (16%)	3 (4%)	3	24
26	B1	91/98 (93%)	65 (71%)	16 (18%)	10 (11%)	0	7
27	B2	69/72 (96%)	32 (46%)	24 (35%)	13 (19%)	0	2
28	B3	57/60 (95%)	41 (72%)	11 (19%)	5 (9%)	1	11

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
29	B4	55/71 (78%)	28 (51%)	12 (22%)	15 (27%)	0	0
30	B5	57/60 (95%)	36 (63%)	11 (19%)	10 (18%)	0	2
31	B6	48/54 (89%)	23 (48%)	11 (23%)	14 (29%)	0	0
32	B7	46/49 (94%)	38 (83%)	5 (11%)	3 (6%)	1	16
33	B8	61/65 (94%)	34 (56%)	16 (26%)	11 (18%)	0	2
34	B9	35/37 (95%)	21 (60%)	9 (26%)	5 (14%)	0	4
37	BC	226/229 (99%)	161 (71%)	55 (24%)	10 (4%)	2	22
38	BD	273/276 (99%)	192 (70%)	47 (17%)	34 (12%)	0	5
39	BE	202/206 (98%)	120 (59%)	49 (24%)	33 (16%)	0	3
40	BF	205/210 (98%)	141 (69%)	37 (18%)	27 (13%)	0	4
41	BG	179/182 (98%)	113 (63%)	41 (23%)	25 (14%)	0	4
42	BH	164/180 (91%)	85 (52%)	43 (26%)	36 (22%)	0	1
43	BK	137/147 (93%)	87 (64%)	41 (30%)	9 (7%)	1	15
44	BL	65/121 (54%)	57 (88%)	8 (12%)	0	100	100
45	BN	136/140 (97%)	90 (66%)	28 (21%)	18 (13%)	0	4
46	BO	120/122 (98%)	95 (79%)	16 (13%)	9 (8%)	1	13
47	BP	144/150 (96%)	78 (54%)	40 (28%)	26 (18%)	0	2
48	BQ	139/141 (99%)	103 (74%)	23 (16%)	13 (9%)	0	10
49	BR	115/118 (98%)	80 (70%)	20 (17%)	15 (13%)	0	5
50	BS	96/112 (86%)	46 (48%)	30 (31%)	20 (21%)	0	2
51	BT	135/146 (92%)	76 (56%)	32 (24%)	27 (20%)	0	2
52	BU	115/118 (98%)	75 (65%)	27 (24%)	13 (11%)	0	7
53	BV	99/101 (98%)	71 (72%)	11 (11%)	17 (17%)	0	3
54	BW	111/113 (98%)	78 (70%)	22 (20%)	11 (10%)	0	9
55	BX	90/96 (94%)	58 (64%)	24 (27%)	8 (9%)	1	11
56	BY	104/110 (94%)	50 (48%)	30 (29%)	24 (23%)	0	1
57	BZ	182/206 (88%)	113 (62%)	41 (22%)	28 (15%)	0	3
All	All	6645/7104 (94%)	4394 (66%)	1440 (22%)	811 (12%)	1	5

5 of 811 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	AB	20	GLU

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Mol	Chain	Res	Type
2	AB	195	ASP
2	AB	233	SER
2	AB	239	VAL
3	AC	12	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	202/220 (92%)	177 (88%)	25 (12%)	4	19
3	AC	160/188 (85%)	134 (84%)	26 (16%)	2	13
4	AD	180/181 (99%)	162 (90%)	18 (10%)	7	26
5	AE	115/123 (94%)	100 (87%)	15 (13%)	4	18
6	AF	90/90 (100%)	81 (90%)	9 (10%)	7	26
7	AG	126/127 (99%)	116 (92%)	10 (8%)	12	35
8	AH	119/119 (100%)	105 (88%)	14 (12%)	5	20
9	AI	98/99 (99%)	88 (90%)	10 (10%)	7	25
10	AJ	88/92 (96%)	73 (83%)	15 (17%)	2	12
11	AK	90/99 (91%)	85 (94%)	5 (6%)	21	46
12	AL	104/109 (95%)	90 (86%)	14 (14%)	4	17
13	AM	99/101 (98%)	87 (88%)	12 (12%)	5	20
14	AN	49/50 (98%)	45 (92%)	4 (8%)	11	34
15	AO	79/80 (99%)	69 (87%)	10 (13%)	4	18
16	AP	72/74 (97%)	67 (93%)	5 (7%)	15	40
17	AQ	94/97 (97%)	82 (87%)	12 (13%)	4	18
18	AR	61/77 (79%)	58 (95%)	3 (5%)	25	50
19	AS	69/80 (86%)	57 (83%)	12 (17%)	2	11
20	AT	76/82 (93%)	67 (88%)	9 (12%)	5	20
21	AU	19/22 (86%)	19 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
24	AY	563/582 (97%)	478 (85%)	85 (15%)	3	14
25	B0	66/67 (98%)	58 (88%)	8 (12%)	5	20
26	B1	78/83 (94%)	61 (78%)	17 (22%)	1	6
27	B2	66/67 (98%)	58 (88%)	8 (12%)	5	20
28	B3	51/52 (98%)	44 (86%)	7 (14%)	3	17
29	B4	51/63 (81%)	34 (67%)	17 (33%)	0	2
30	B5	51/52 (98%)	45 (88%)	6 (12%)	5	20
31	B6	49/52 (94%)	35 (71%)	14 (29%)	0	2
32	B7	41/42 (98%)	36 (88%)	5 (12%)	5	20
33	B8	53/55 (96%)	45 (85%)	8 (15%)	3	14
34	B9	34/34 (100%)	29 (85%)	5 (15%)	3	15
37	BC	180/181 (99%)	166 (92%)	14 (8%)	12	36
38	BD	217/218 (100%)	179 (82%)	38 (18%)	2	11
39	BE	165/166 (99%)	135 (82%)	30 (18%)	1	10
40	BF	165/166 (99%)	151 (92%)	14 (8%)	10	33
41	BG	155/156 (99%)	121 (78%)	34 (22%)	1	5
42	BH	136/148 (92%)	124 (91%)	12 (9%)	10	31
43	BK	104/111 (94%)	88 (85%)	16 (15%)	2	14
44	BL	46/85 (54%)	43 (94%)	3 (6%)	17	42
45	BN	117/119 (98%)	98 (84%)	19 (16%)	2	13
46	BO	100/100 (100%)	90 (90%)	10 (10%)	7	26
47	BP	112/116 (97%)	89 (80%)	23 (20%)	1	7
48	BQ	111/111 (100%)	94 (85%)	17 (15%)	2	14
49	BR	100/101 (99%)	85 (85%)	15 (15%)	3	15
50	BS	77/88 (88%)	67 (87%)	10 (13%)	4	18
51	BT	120/127 (94%)	97 (81%)	23 (19%)	1	8
52	BU	92/94 (98%)	84 (91%)	8 (9%)	10	31
53	BV	82/82 (100%)	71 (87%)	11 (13%)	4	17
54	BW	91/92 (99%)	82 (90%)	9 (10%)	8	26
55	BX	74/78 (95%)	62 (84%)	12 (16%)	2	13
56	BY	87/91 (96%)	75 (86%)	12 (14%)	3	17

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
57	BZ	162/179 (90%)	133 (82%)	29 (18%)	2 10
All	All	5586/5868 (95%)	4819 (86%)	767 (14%)	7 17

5 of 767 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
39	BE	22	PRO
45	BN	26	LEU
39	BE	94	GLU
39	BE	18	ASP
41	BG	80	PHE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 173 such sidechains are listed below:

Mol	Chain	Res	Type
40	BF	133	ASN
49	BR	3	HIS
41	BG	27	ASN
45	BN	101	HIS
51	BT	55	ASN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	AA	1503/1522 (98%)	277 (18%)	43 (2%)
22	AV	76/77 (98%)	16 (21%)	0
23	AX	10/11 (90%)	4 (40%)	0
35	BA	2900/2915 (99%)	637 (21%)	77 (2%)
36	BB	118/122 (96%)	25 (21%)	0
All	All	4607/4647 (99%)	959 (20%)	120 (2%)

5 of 959 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	AA	7	G
1	AA	9	G
1	AA	31	G
1	AA	32	A
1	AA	33	A

5 of 120 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
35	BA	603	A
35	BA	2690	C
35	BA	1210	A
35	BA	2689	U
35	BA	2849	U

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](#)

2 ligands 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
59	GDP	AY	702	-	24,30,30	2.06	6 (25%)	30,47,47	1.83	7 (23%)
58	FUA	AY	701	-	39,40,40	2.24	14 (35%)	49,64,64	1.87	13 (26%)

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
59	GDP	AY	702	-	-	3/12/32/32	0/3/3/3
58	FUA	AY	701	-	-	5/15/92/92	0/4/4/4

The worst 5 of 20 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
59	AY	702	GDP	C5-C6	-6.09	1.35	1.47
58	AY	701	FUA	C14-C8	-4.93	1.50	1.59
58	AY	701	FUA	C29-C22	4.78	1.54	1.47
58	AY	701	FUA	C23-C22	-4.73	1.39	1.51
58	AY	701	FUA	C23-C24	-4.57	1.38	1.53

The worst 5 of 20 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
59	AY	702	GDP	C2-N1-C6	-4.23	117.31	125.10
58	AY	701	FUA	C13-C12-C11	-4.16	106.07	111.90
59	AY	702	GDP	PA-O3A-PB	-4.11	118.74	132.83
58	AY	701	FUA	C6-C5-C10	3.84	116.44	111.65
58	AY	701	FUA	C21-C14-C8	-3.75	108.81	112.27

There are no chirality outliers.

5 of 8 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
58	AY	701	FUA	C13-C17-C22-C29
58	AY	701	FUA	C17-C22-C23-C24
58	AY	701	FUA	C29-C22-C23-C24
59	AY	702	GDP	C5'-O5'-PA-O3A
58	AY	701	FUA	O3-C31-O2-C16

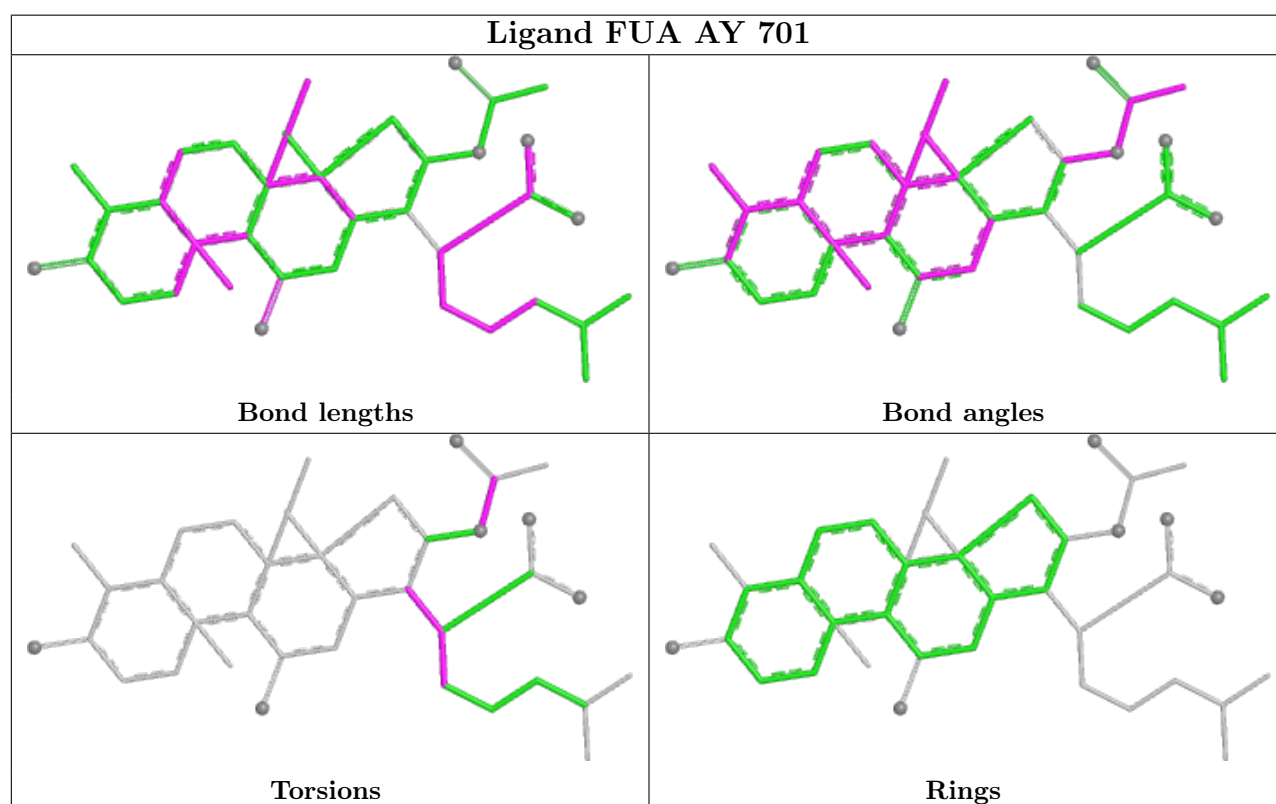
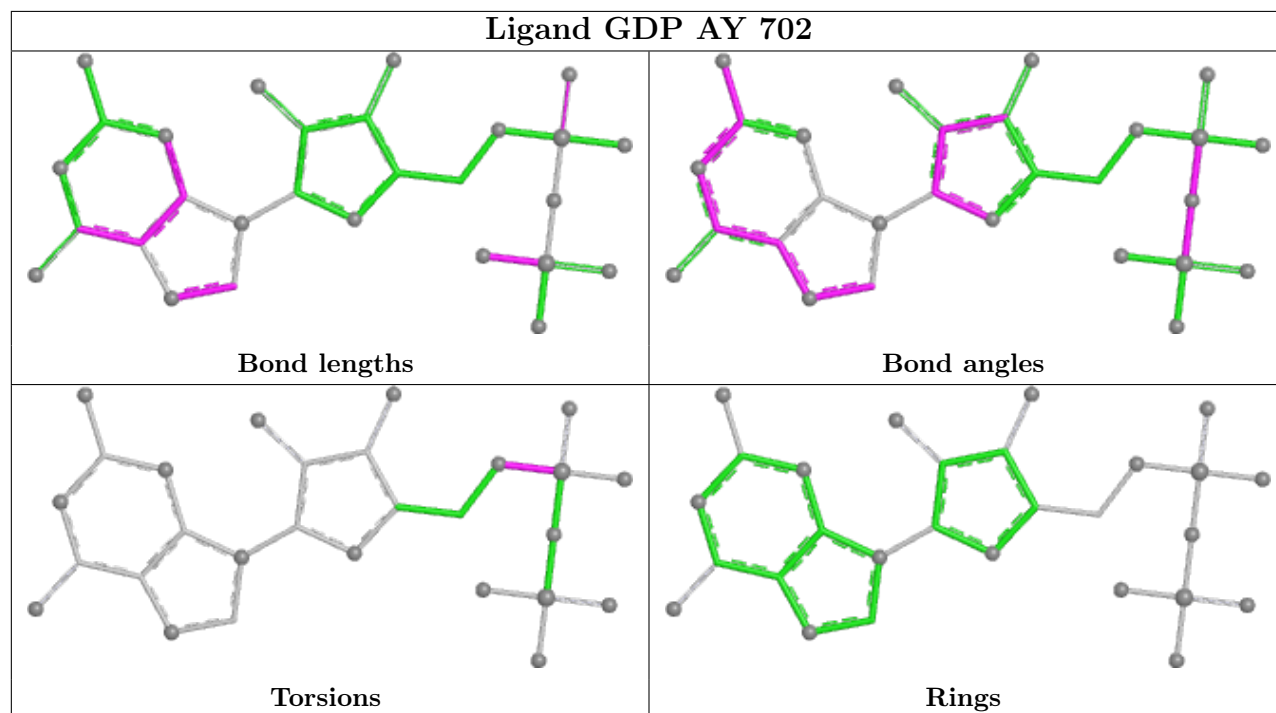
There are no ring outliers.

2 monomers are involved in 23 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
59	AY	702	GDP	6	0
58	AY	701	FUA	17	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and

any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



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.

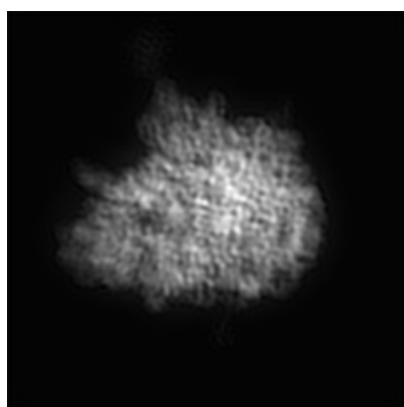
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-1799. These allow visual inspection of the internal detail of the map and identification of artifacts.

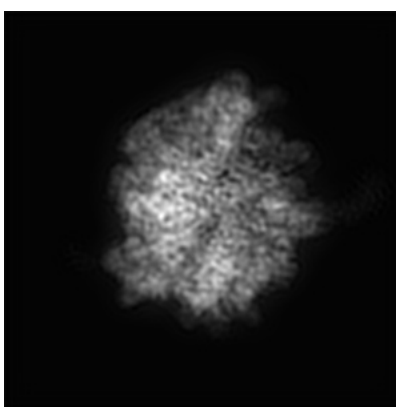
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

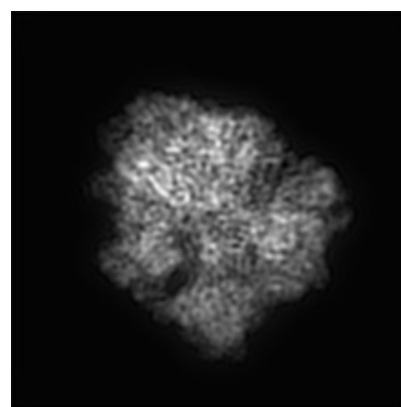
6.1.1 Primary map



X



Y

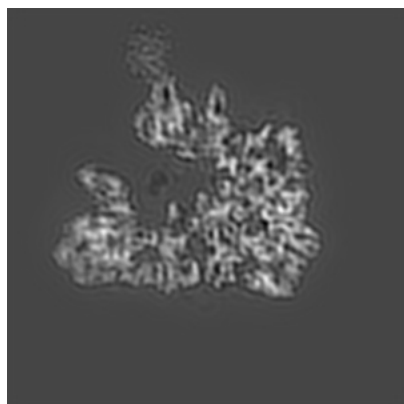


Z

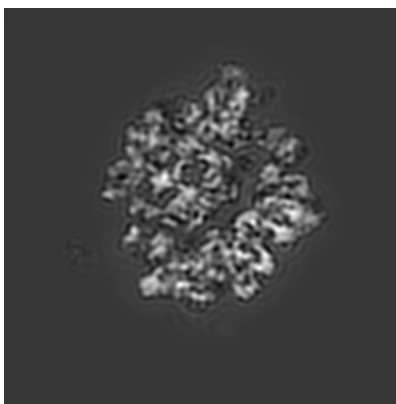
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

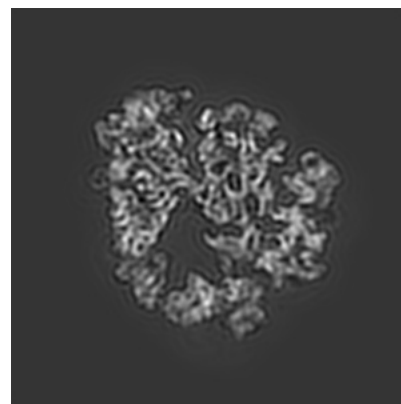
6.2.1 Primary map



X Index: 150



Y Index: 150

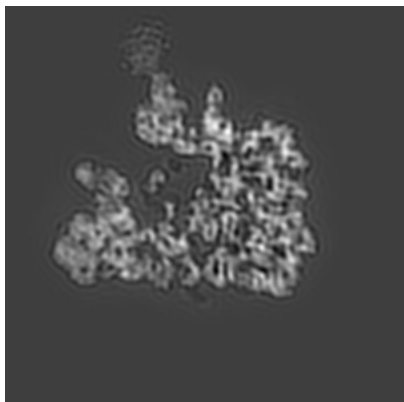


Z Index: 150

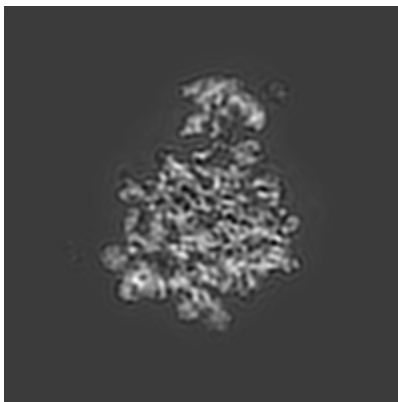
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

6.3.1 Primary map



X Index: 153



Y Index: 174



Z Index: 160

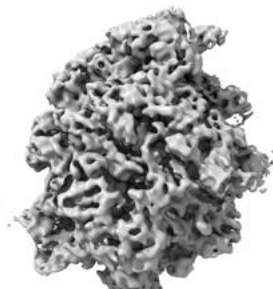
The images above show the largest variance slices of the map in three orthogonal directions.

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

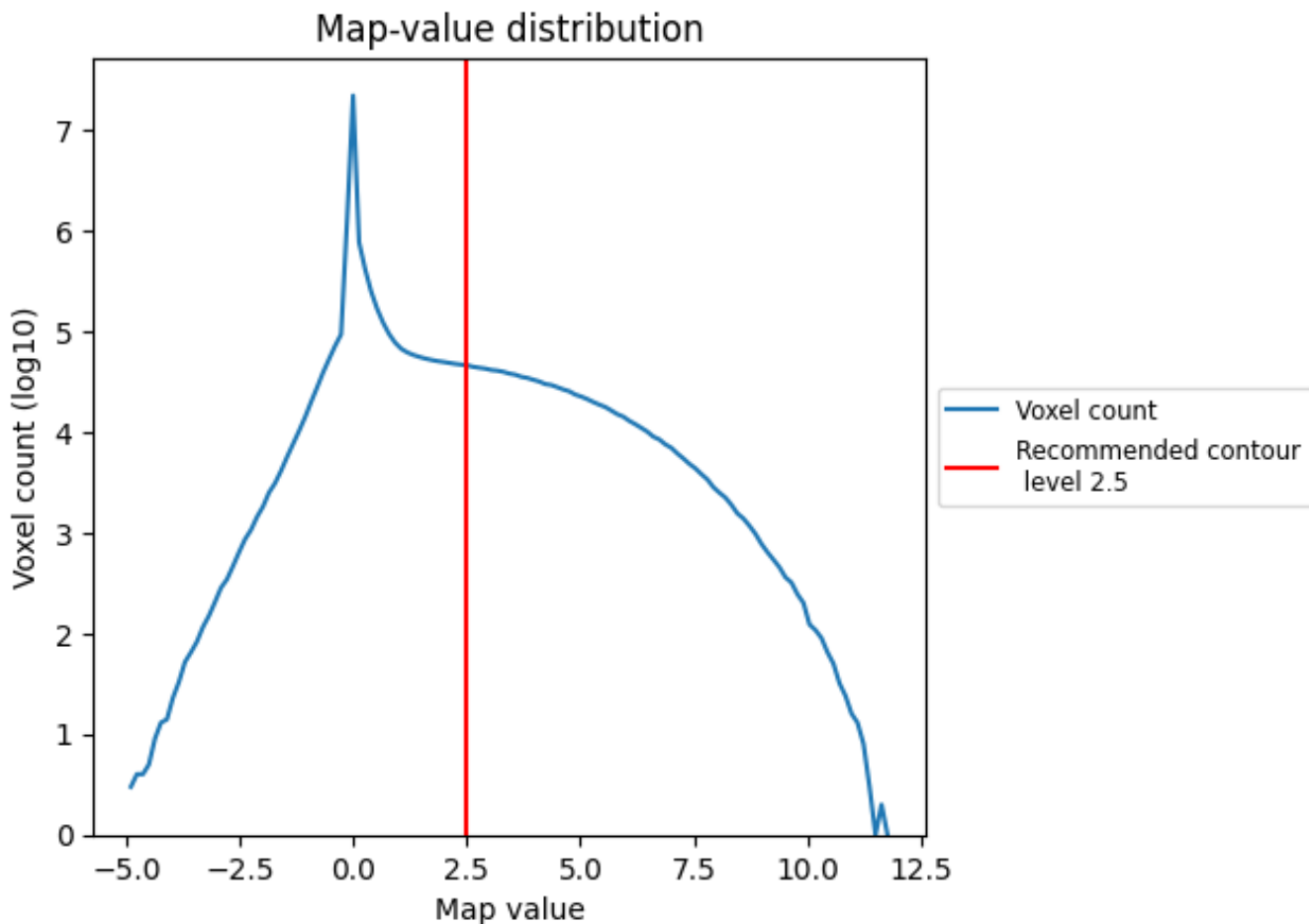
6.5 Mask visualisation

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

7 Map analysis [i](#)

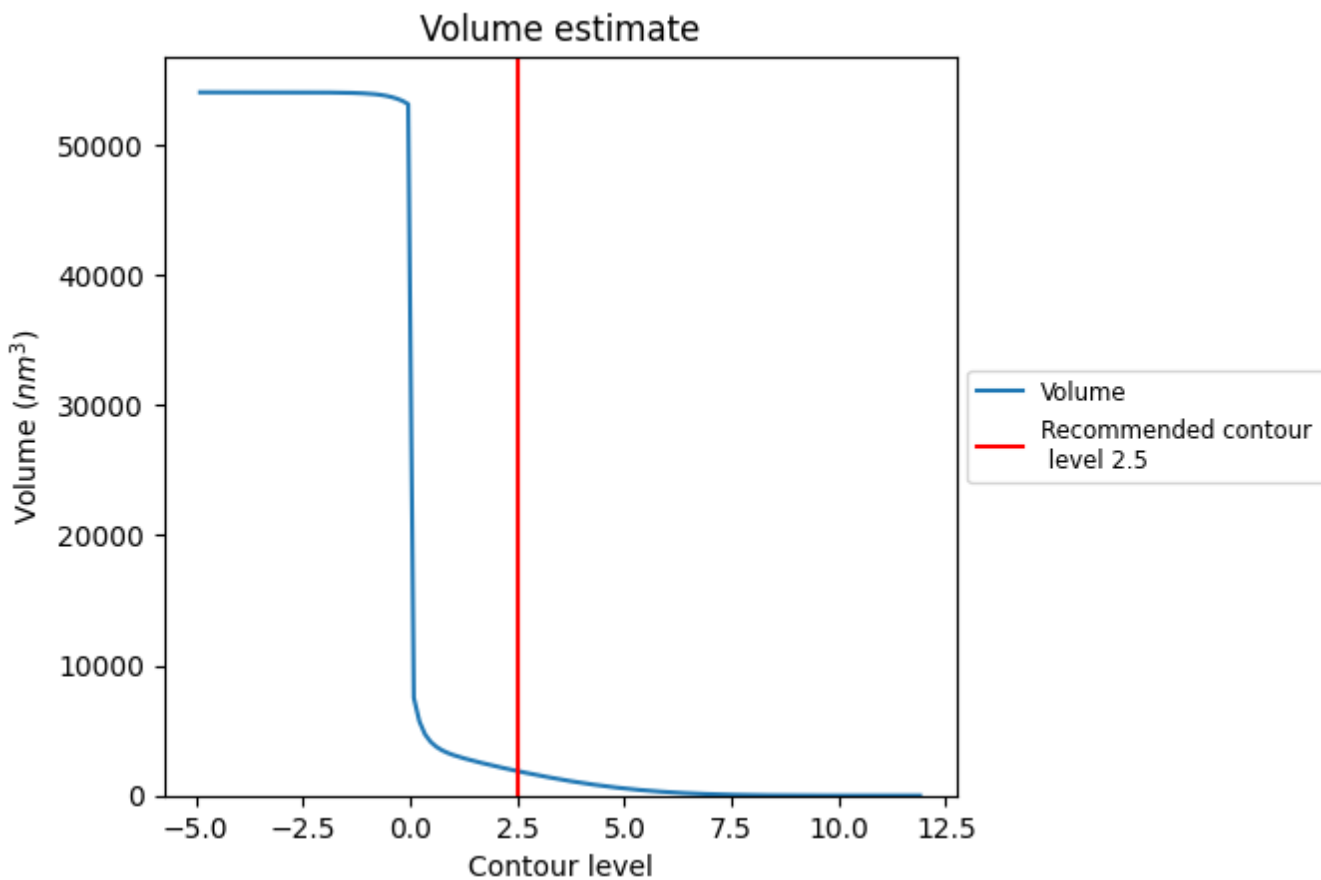
This section contains the results of statistical analysis of the map.

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.

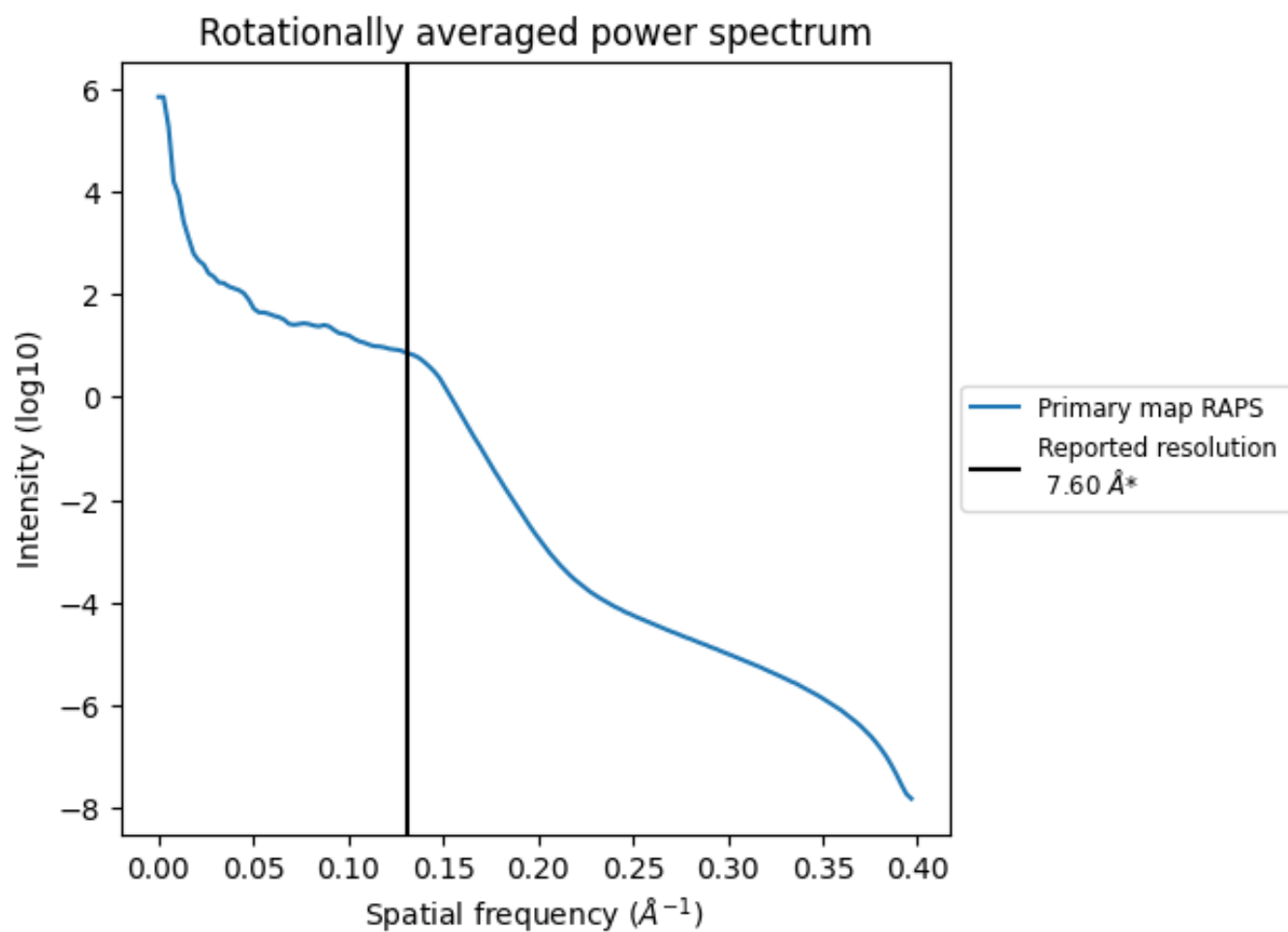
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 1886 nm³; this corresponds to an approximate mass of 1703 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 0.132 Å⁻¹

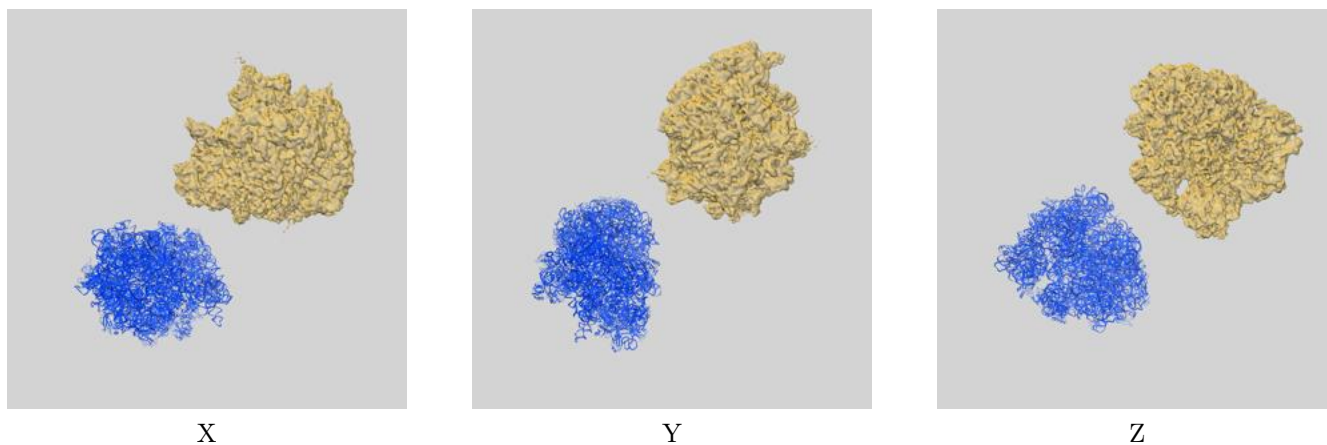
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

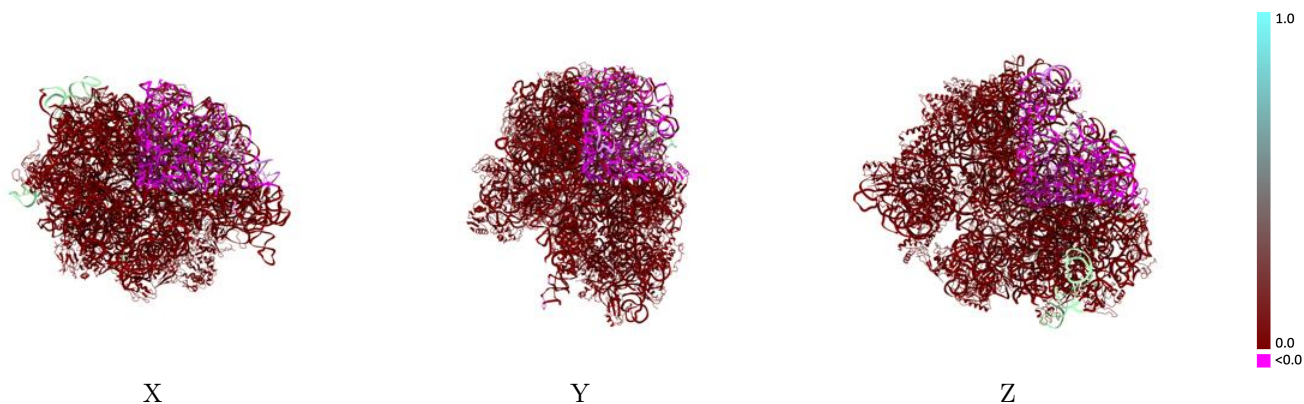
This section contains information regarding the fit between EMDB map EMD-1799 and PDB model 4V5N. Per-residue inclusion information can be found in section 3 on page 16.

9.1 Map-model overlay [i](#)



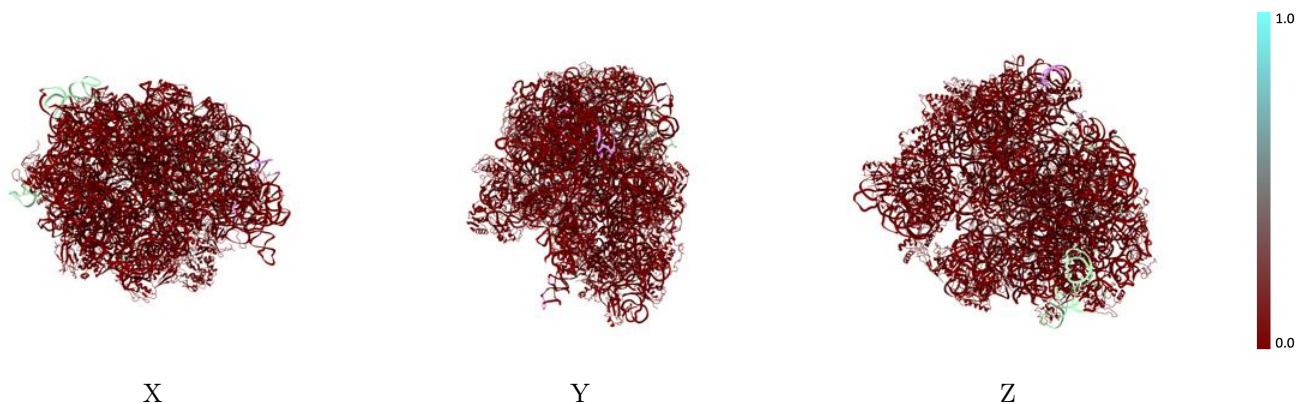
The images above show the 3D surface view of the map at the recommended contour level 2.5 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



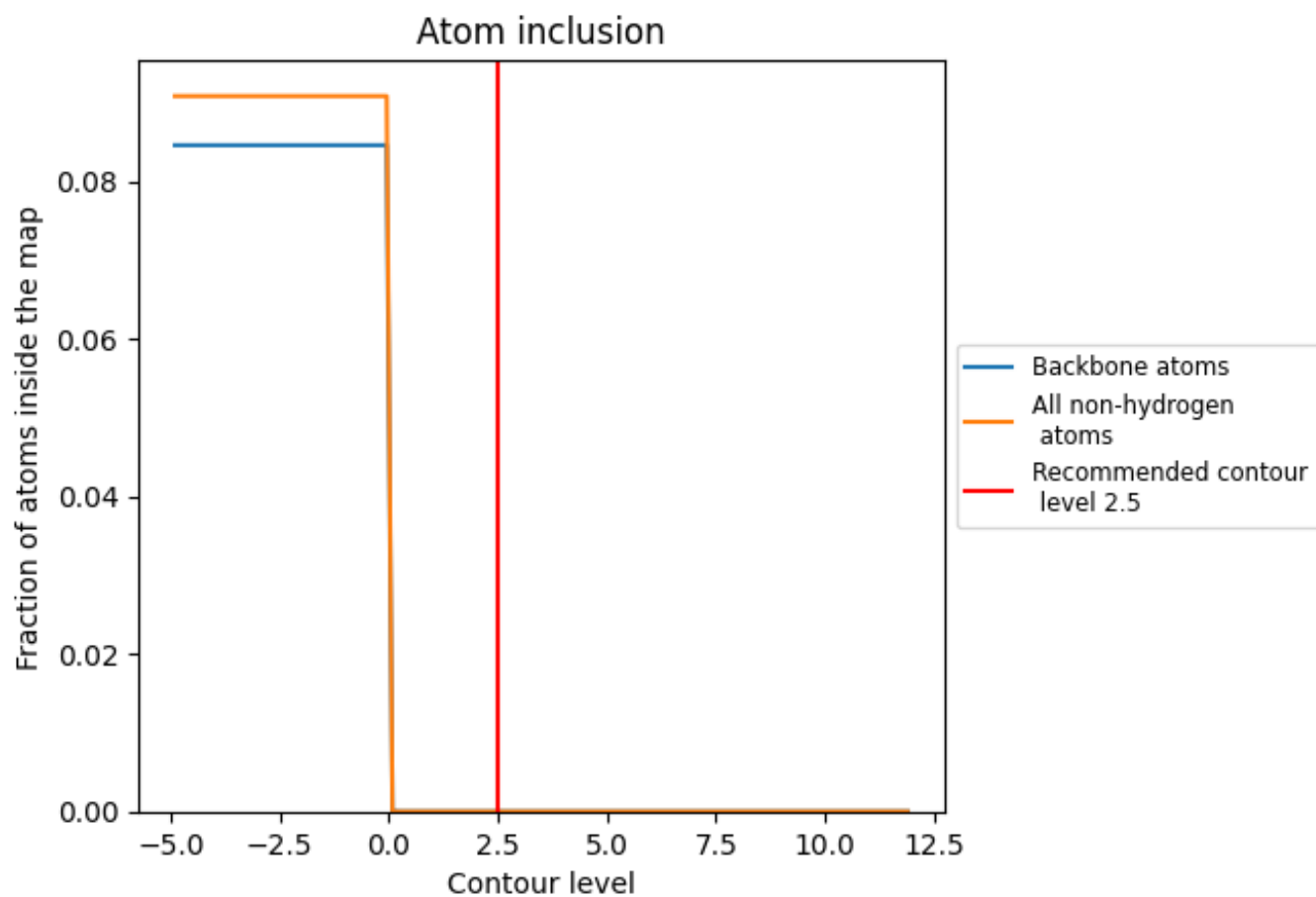
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (2.5).

9.4 Atom inclusion [i](#)



At the recommended contour level, 0% of all backbone atoms, 0% 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 (2.5) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.0000	-0.0010
AA	0.0000	-0.0010
AB	0.0000	0.0000
AC	0.0000	0.0000
AD	0.0000	0.0000
AE	0.0000	0.0000
AF	0.0000	-0.0220
AG	0.0000	0.0000
AH	0.0000	0.0000
AI	0.0000	0.0000
AJ	0.0000	0.0000
AK	0.0000	0.0000
AL	0.0000	0.0000
AM	0.0000	0.0000
AN	0.0000	0.0000
AO	0.0000	0.0000
AP	0.0000	0.0000
AQ	0.0000	-0.0060
AR	0.0000	0.0000
AS	0.0000	0.0000
AT	0.0000	-0.0140
AU	0.0000	0.0000
AV	0.0000	0.0000
AX	0.0000	0.0000
AY	0.0000	0.0000
B0	0.0000	0.0000
B1	0.0000	0.0000
B2	0.0000	0.0000
B3	0.0000	0.0000
B4	0.0000	0.0000
B5	0.0000	0.0000
B6	0.0000	0.0000
B7	0.0000	0.0040
B8	0.0000	0.0000
B9	0.0000	0.0000



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Chain	Atom inclusion	Q-score
BA	0.0000	-0.0020
BB	0.0000	0.0000
BC	0.0000	0.0000
BD	0.0000	-0.0140
BE	0.0000	0.0000
BF	0.0000	0.0000
BG	0.0000	0.0000
BH	0.0000	0.0000
BK	0.0000	0.0000
BL	0.0000	0.0000
BN	0.0000	0.0000
BO	0.0000	0.0000
BP	0.0000	0.0000
BQ	0.0000	0.0000
BR	0.0000	0.0000
BS	0.0000	0.0000
BT	0.0000	0.0000
BU	0.0000	0.0000
BV	0.0000	0.0000
BW	0.0000	0.0000
BX	0.0000	-0.0100
BY	0.0000	0.0000
BZ	0.0000	0.0000