wwPDB EM Validation Summary Report (i)

Sep 8, 2025 – 08:48 PM JST

PDB ID	:	6LSS / pdb_00006lss
EMDB ID	:	EMD-0964
Title	:	Cryo-EM structure of a pre-60S ribosomal subunit - state preA
Authors	:	Liang, X.; Zuo, M.; Zhang, Y.; Li, N.; Ma, C.; Dong, M.; Gao, N.
Deposited on	:	2020-01-20
Resolution	:	3.23 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the (i) symbol.

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

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

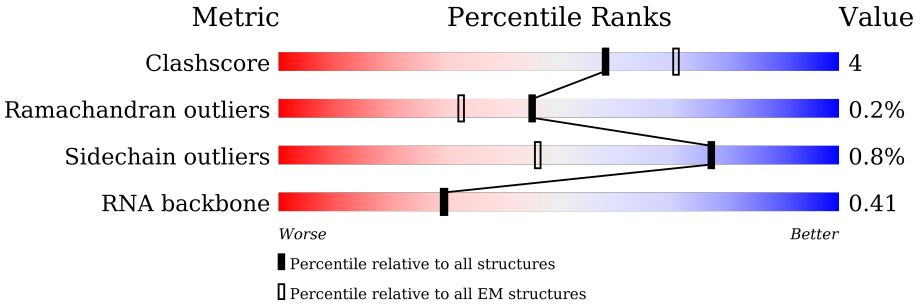
EMDB validation analysis	:	0.0.1.dev126
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4-5-2 with Phenix2.0rc1
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.45.1

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 3.23 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	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	1	731	• 97%
2	2	5070	6% 43% 21% • 31%
3	4	634	20% 82% 16% • •
4	5	120	• 72% 25% •
5	6	245	8% 80% 19%
6	7	163	• 64% 17% • • 17%
7	8	156	• 70% 23% 7%

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Mol	Chain	Length	Quality of chain
8	9	134	46% 16% 36%
9	B	403	86% 14%
10	C	159	9% 48% 11% 42%
11	D	427	73% 11% 16%
12	E	115	8% 75% 10% 15%
13	F	117	80% 13% 7%
14	G	266	13% 76% 14% 9%
15	H	123	86% 13%
16	I	192	6% 83% 16%
17	K	105	5% 90% 8%
18	L	148	86% 12%
19	M	97	78% 10% 11%
20	N	178	20% 73% 20% 7%
21	O	70	13% 83% 16%
22	P	51	71% 27%
23	Q	211	7% 83% 16%
24	R	203	33% 59% 15% 26%
25	S	215	56% 7% 37%
26	U	204	89% 10%
27	V	203	84% 15%
28	W	106	5% 80% 13% 5%
29	X	92	5% 82% 16%
30	Y	184	71% 12% 17%
31	Z	188	88% 12%
32	a	196	70% 5% 24%

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Mol	Chain	Length	Quality of chain
33	b	176	78% 22%
34	c	160	86% 11%
35	d	128	65% 14% 21%
36	e	140	77% 16% 6%
37	g	156	65% 11% 24%
38	h	145	74% 17% 8%
39	i	136	6% 81% 18%
40	j	125	72% 14% 14%
41	k	135	88% 7% 5%
42	l	137	74% 16% 9%
43	m	257	77% 19%
44	n	110	89% 8%
45	o	288	13% 63% 19% 18%
46	p	248	81% 9% 9%
47	r	297	16% 82% 16%
48	z	129	16% 11% 74%

2 Entry composition (i)

There are 50 unique types of molecules in this entry. The entry contains 140545 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called Nucleolar GTP-binding protein 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	1	19	148	88	23	35	2	0	0

- Molecule 2 is a RNA chain called 28S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	2	3474	74611	33280	13653	24205	3473	0	0

- Molecule 3 is a protein called Nucleolar GTP-binding protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	4	620	5093	3198	935	933	27	0	0

- Molecule 4 is a RNA chain called 5S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
4	5	120	2558	1141	456	842	119	0	0

- Molecule 5 is a protein called Eukaryotic translation initiation factor 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	6	244	1852	1149	318	372	13	0	0

- Molecule 6 is a protein called Probable ribosome biogenesis protein RLP24.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	7	135	1159	737	225	187	10	0	0

- Molecule 7 is a RNA chain called 28S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
7	8	156	3315	1481	585	1094	155	0	0

- Molecule 8 is a protein called Zinc finger protein 593.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	9	86	711	433	154	121	3	0	0

- Molecule 9 is a protein called 60S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	B	402	3244	2065	609	556	14	1	0

- Molecule 10 is a protein called 60S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	C	93	764	476	167	117	4	0	0

- Molecule 11 is a protein called 60S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	D	358	2853	1797	570	473	13	0	0

- Molecule 12 is a protein called 60S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	E	98	764	485	135	138	6	0	0

- Molecule 13 is a protein called 60S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	F	109	868	544	179	139	6	0	0

- Molecule 14 is a protein called 60S ribosomal protein L7a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
14	G	241	1935	1233	374	324	4	1	0

- Molecule 15 is a protein called 60S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
15	H	122	1015	641	205	168	1	0	0

- Molecule 16 is a protein called 60S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
16	I	190	1518	956	284	272	6	0	0

- Molecule 17 is a protein called 60S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
17	K	102	832	521	177	129	5	0	0

- Molecule 18 is a protein called 60S ribosomal protein L27a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
18	L	147	1162	736	237	186	3	0	0

- Molecule 19 is a protein called 60S ribosomal protein L37.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
19	M	86	705	434	155	111	5	0	0

- Molecule 20 is a protein called 60S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
20	N	165	1319	836	245	233	5	0	0

- Molecule 21 is a protein called 60S ribosomal protein L38.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
21	O	69	569	366	103	99	1	0	0

- Molecule 22 is a protein called 60S ribosomal protein L39.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
22	P	50	444	281	98	64	1	0	0

- Molecule 23 is a protein called 60S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
23	Q	210	1701	1064	352	281	4	0	0

- Molecule 24 is a protein called Translation machinery-associated protein 16.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
24	R	150	1272	793	244	230	5	0	0

- Molecule 25 is a protein called 60S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
25	S	135	1111	713	213	178	7	0	0

- Molecule 26 is a protein called 60S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
26	U	203	1701	1072	359	266	4	0	0

- Molecule 27 is a protein called 60S ribosomal protein L13a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
27	V	201	1650	1063	321	261	5	0	0

- Molecule 28 is a protein called 60S ribosomal protein L36a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
28	W	101	827	517	170	134	6	0	0

- Molecule 29 is a protein called 60S ribosomal protein L37a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
29	X	91	708	445	136	120	7	0	0

- Molecule 30 is a protein called 60S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
30	Y	153	1242	776	241	216	9	0	0

- Molecule 31 is a protein called 60S ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
31	Z	187	1513	944	314	250	5	0	0

- Molecule 32 is a protein called 60S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
32	a	148	1239	772	266	192	9	0	0

- Molecule 33 is a protein called 60S ribosomal protein L18a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
33	b	176	1461	930	284	236	11	0	0

- Molecule 34 is a protein called 60S ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
34	c	155	1264	801	248	210	5	0	0

- Molecule 35 is a protein called 60S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
35	d	101	825	529	144	150	2	0	0

- Molecule 36 is a protein called 60S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
36	e	131	979	618	184	172	5	0	0

- Molecule 37 is a protein called 60S ribosomal protein L23a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
37	g	118	967	618	181	167	1	0	0

- Molecule 38 is a protein called 60S ribosomal protein L26.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
38	h	134	1115	700	226	186	3	0	0

- Molecule 39 is a protein called 60S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
39	i	135	1107	714	208	182	3	0	0

- Molecule 40 is a protein called 60S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
40	j	107	888	560	171	155	2	0	0

- Molecule 41 is a protein called 60S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
41	k	128	1053	667	216	165	5	0	0

- Molecule 42 is a protein called 60S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
42	l	125	1002	622	207	168	5	0	0

- Molecule 43 is a protein called 60S ribosomal protein L8.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
43	m	248	1898	1189	389	314	6	0	0

- Molecule 44 is a protein called 60S ribosomal protein L35a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
44	n	109	876	555	174	144	3	0	0

- Molecule 45 is a protein called 60S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
45	o	235	1897	1217	360	316	4	0	0

- Molecule 46 is a protein called 60S ribosomal protein L7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
46	p	225	1878	1207	361	301	9	1	0

- Molecule 47 is a protein called 60S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
47	r	293	2382	1507	434	427	14	0	0

- Molecule 48 is a protein called Protein LLP homolog.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
48	z	34	284	179	61	43	1	0	0

- Molecule 49 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
			Total	Mg	
49	2	229	229	229	0
49	4	1	1	1	0
49	5	3	3	3	0
49	8	5	5	5	0
49	9	1	1	1	0
49	B	2	2	2	0
49	D	1	1	1	0
49	F	1	1	1	0
49	L	1	1	1	0
49	M	1	1	1	0
49	R	1	1	1	0
49	k	1	1	1	0
49	m	1	1	1	0
49	n	1	1	1	0
49	p	1	1	1	0

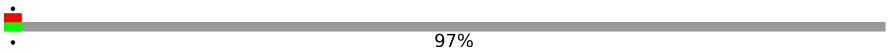
- Molecule 50 is water.

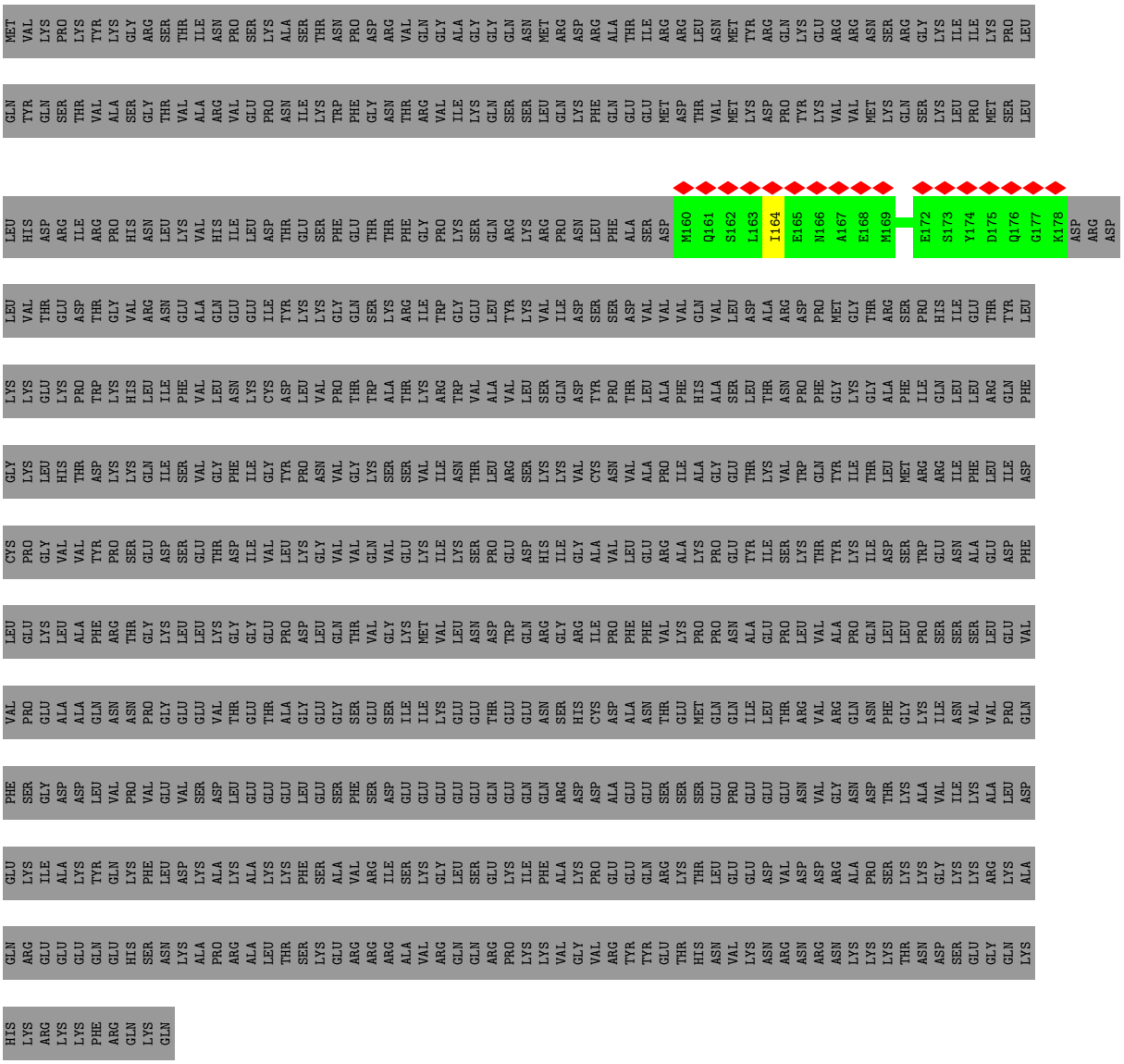
Mol	Chain	Residues	Atoms		AltConf
			Total	O	
50	2	13	13	13	0
50	k	1	1	1	0
50	o	1	1	1	0
50	p	1	1	1	0

3 Residue-property plots (i)

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

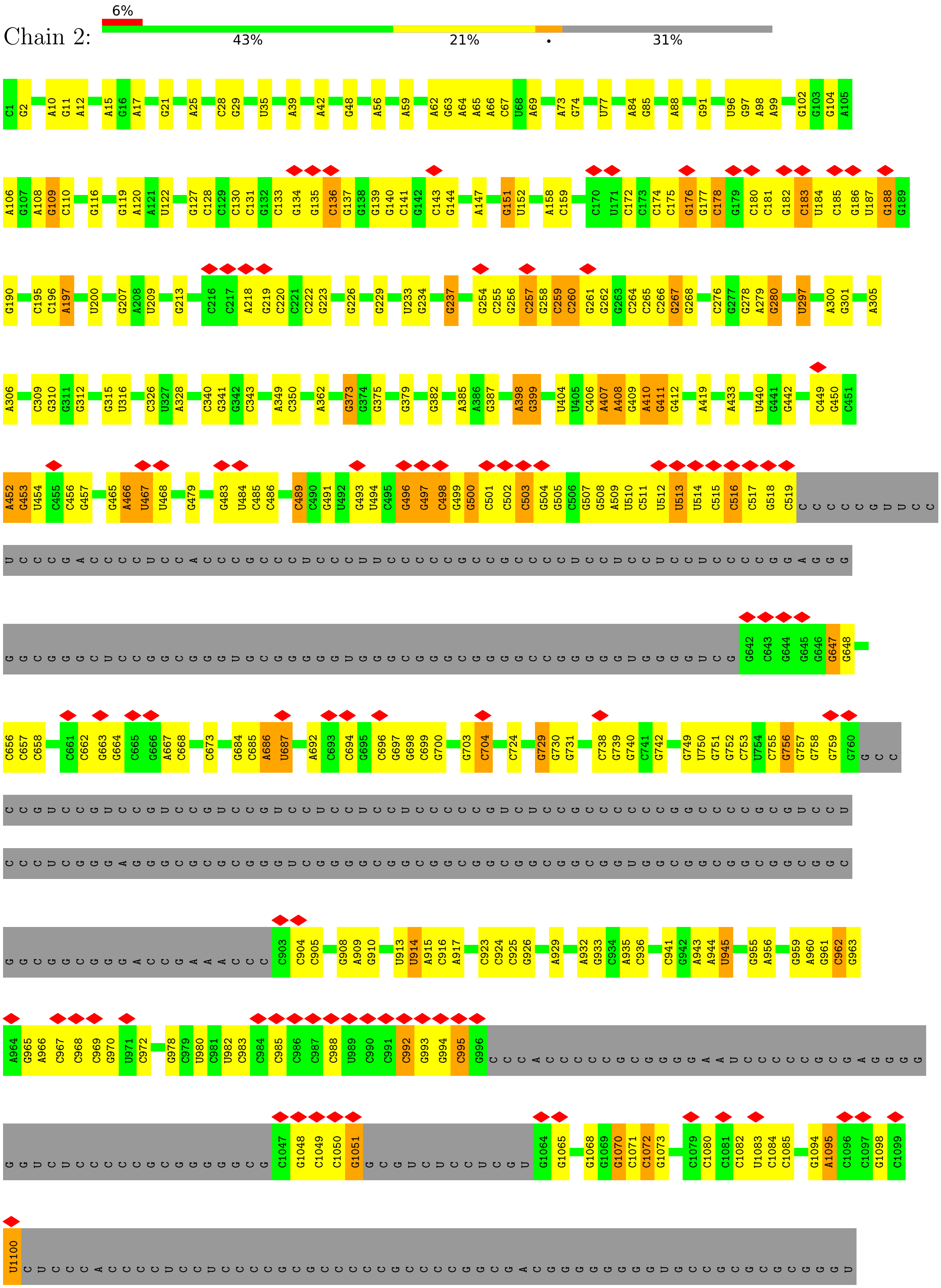
- Molecule 1: Nucleolar GTP-binding protein 2

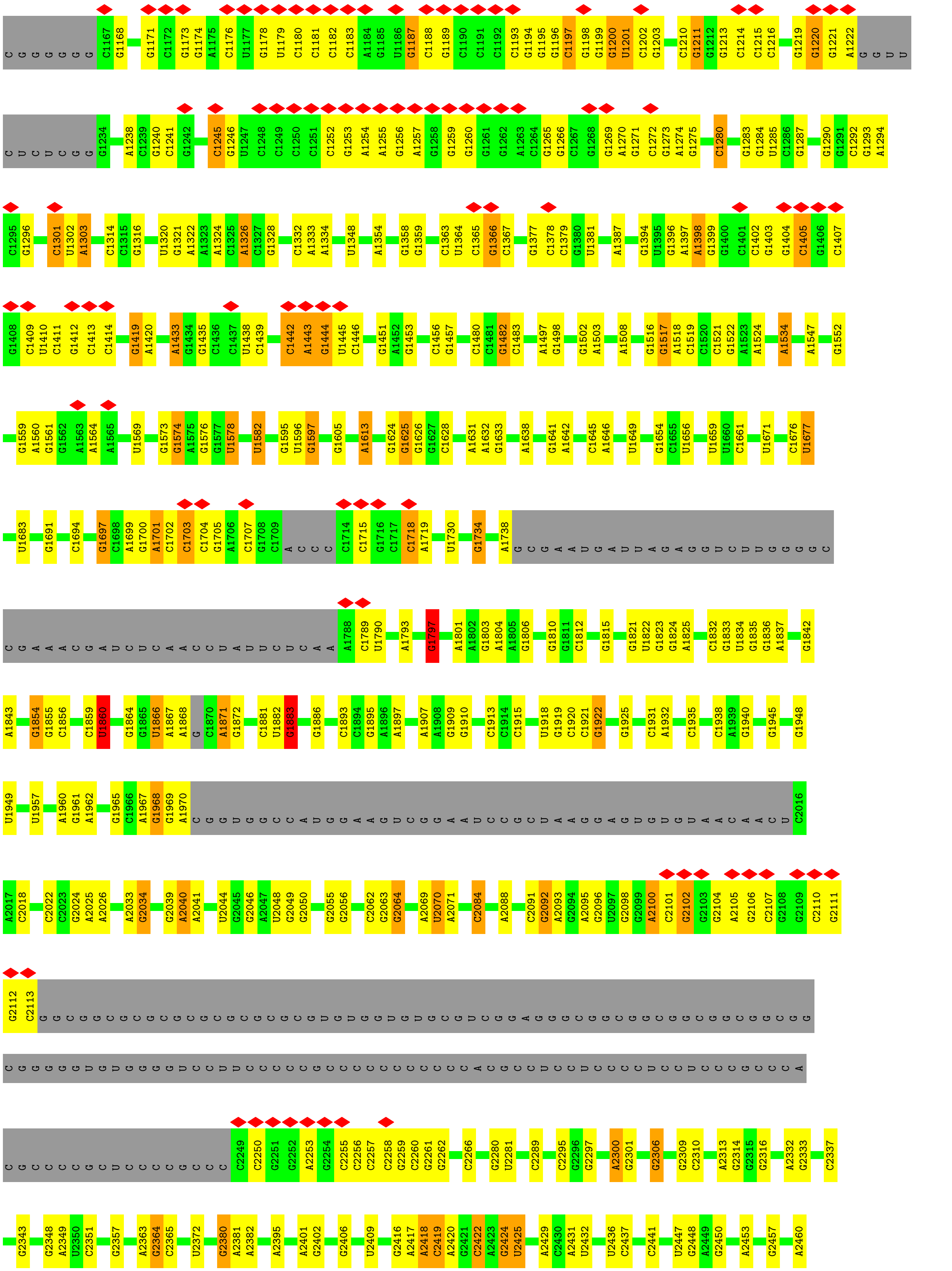
Chain 1: 



- Molecule 2: 28S rRNA

Chain 2:




C G G G G G G C1167 G1168 G1171 C1172 G1173 G1174 A1175 C1176 U1177 G1178 U1179 C1180 C1181 C1182 C1183 A1184 G1185 U1186 G1187 C1188 G1189 C1190 C1191 C1192 C1193 G1194 G1195 G1196 C1197 G1198 G1199 G1200 U1201 C1202 G1203 C1210 G1211 G1212 G1213 C1214 C1215 C1216 G1219 G1220 G1221 A1222 G G U U
C U C U C G G G1234 A1238 C1239 G1240 C1241 G1242 C1245 G1246 U1247 C1248 C1249 C1250 C1251 C1252 G1253 A1254 A1255 G1256 A1257 G1258 G1259 G1260 G1261 G1262 A1263 C1264 G1265 G1266 C1267 G1268 G1269 A1270 G1271 C1272 G1273 A1274 G1275 C1280 G1283 G1284 U1285 C1286 G1287 G1290 G1291 C1292 G1293 A1294
C1295 G1296 C1301 U1302 A1303 C1314 C1315 G1316 U1320 G1321 A1322 A1323 A1324 C1325 A1326 C1327 G1328 C1332 A1333 A1334 U1348 A1354 G1358 G1359 C1363 U1364 C1365 G1366 C1367 G1377 C1378 C1379 G1380 U1381 A1387 G1394 U1395 G1396 A1397 A1398 G1399 G1400 C1401 C1402 G1403 G1404 C1405 G1406 C1407
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C G A A C G A U C U C A A C C U A U U C U C A A A1788 C1789 U1790 A1793 G1797 A1801 A1802 G1803 A1804 A1805 G1806 G1810 G1811 C1812 G1815 G1821 U1822 G1823 G1824 A1825 C1832 G1833 U1834 G1835 G1836 A1837 G1842
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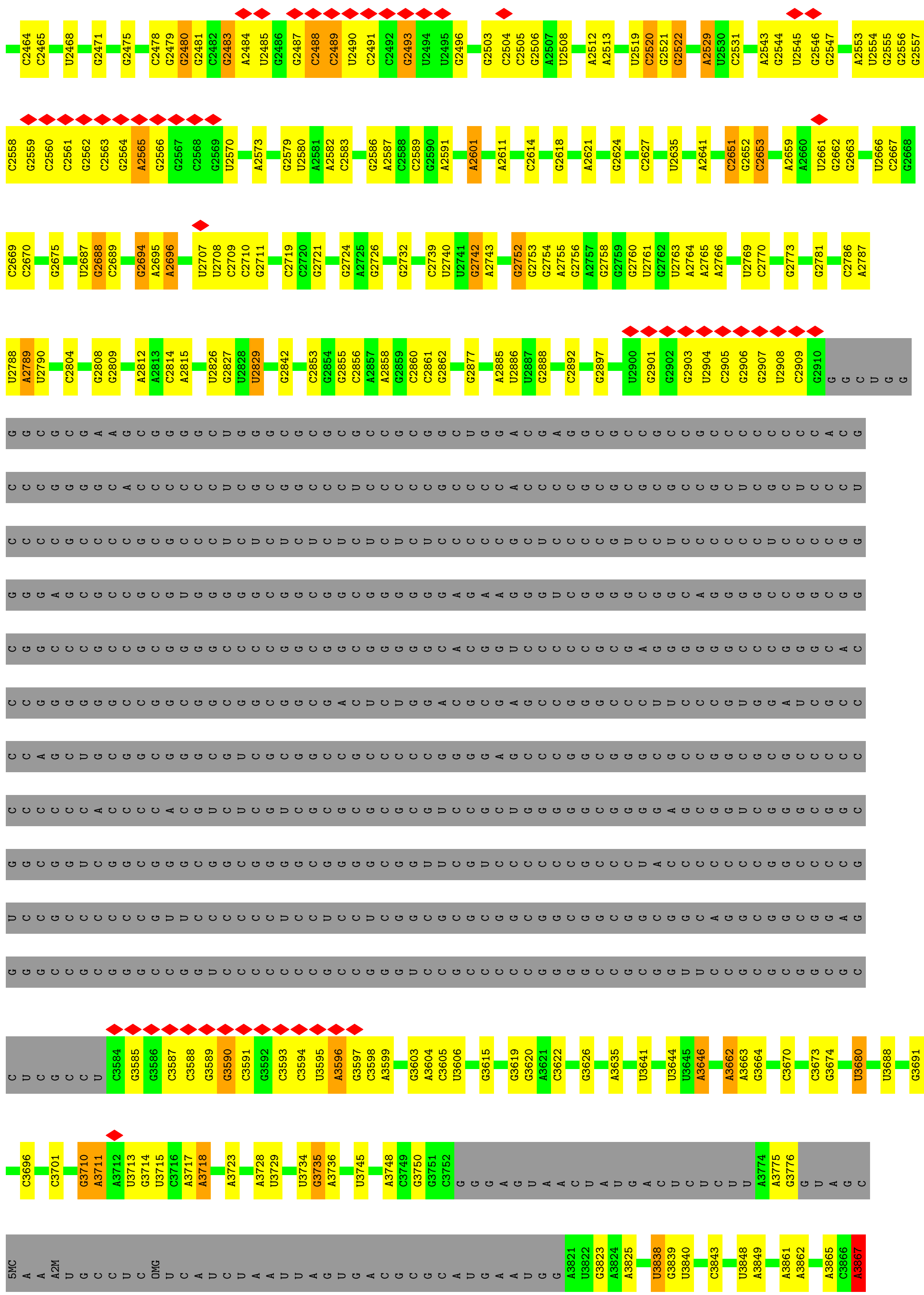
U1949 U1957 A1960 G1961 A1962 G1965 C1966 A1967 G1968 G1969 A1970 C G G U G G C C A U G G A A G U C G G A A U C C G C U A A G G A G U G U G U A A C A A C U C2016
A2017 C2018 C2022 C2023 G2024 A2025 A2026 A2033 G2034 G2039 A2040 A2041 U2044 G2045 G2046 A2047 U2048 G2049 G2050 G2055 G2056 C2062 G2063 G2064 A2069 U2070 A2071 C2084 A2088 C2091 G2092 A2093 G2094 A2095 G2096 U2097 G2098 G2099 A2100 C2101 G2102 G2103 G2104 A2105 G2106 C2107 G2108 G2109 C2110 G2111
G2112 C2113 G G C G G C G C G C G C G C G C G C G C G U G U G G U G U G C G U C G G A G G G C G G C G G C G G C G G C G G C G G
C G G G G G U G U G G G G U C C C U U C C C C C G C C C C C C C C C C C A C G C C U C C U C C C C U C C U C C C G C C C A
C G C C C C G C U C C C C G C C C C2249 C2250 G2251 G2252 A2253 G2254 C2255 C2256 C2257 G2258 G2259 C2260 G2261 G2262 C2266 G2280 U2281 C2289 C2295 G2296 G2297 A2300 G2301 G2306 G2309 C2310 A2313 G2314 G2315 G2316 A2332 G2333 C2337
G2343 G2348 A2349 U2350 C2351 G2357 A2363 G2364 C2365 U2372 G2380 A2381 A2382 A2395 A2401 G2402 G2406 U2409 G2416 A2417 A2418 C2419 A2420 G2421 C2422 A2423 G2424 U2425 A2429 C2430 A2431 U2432 U2436 C2437 C2441 U2447 G2448 A2449 G2450 A2453 G2457 A2460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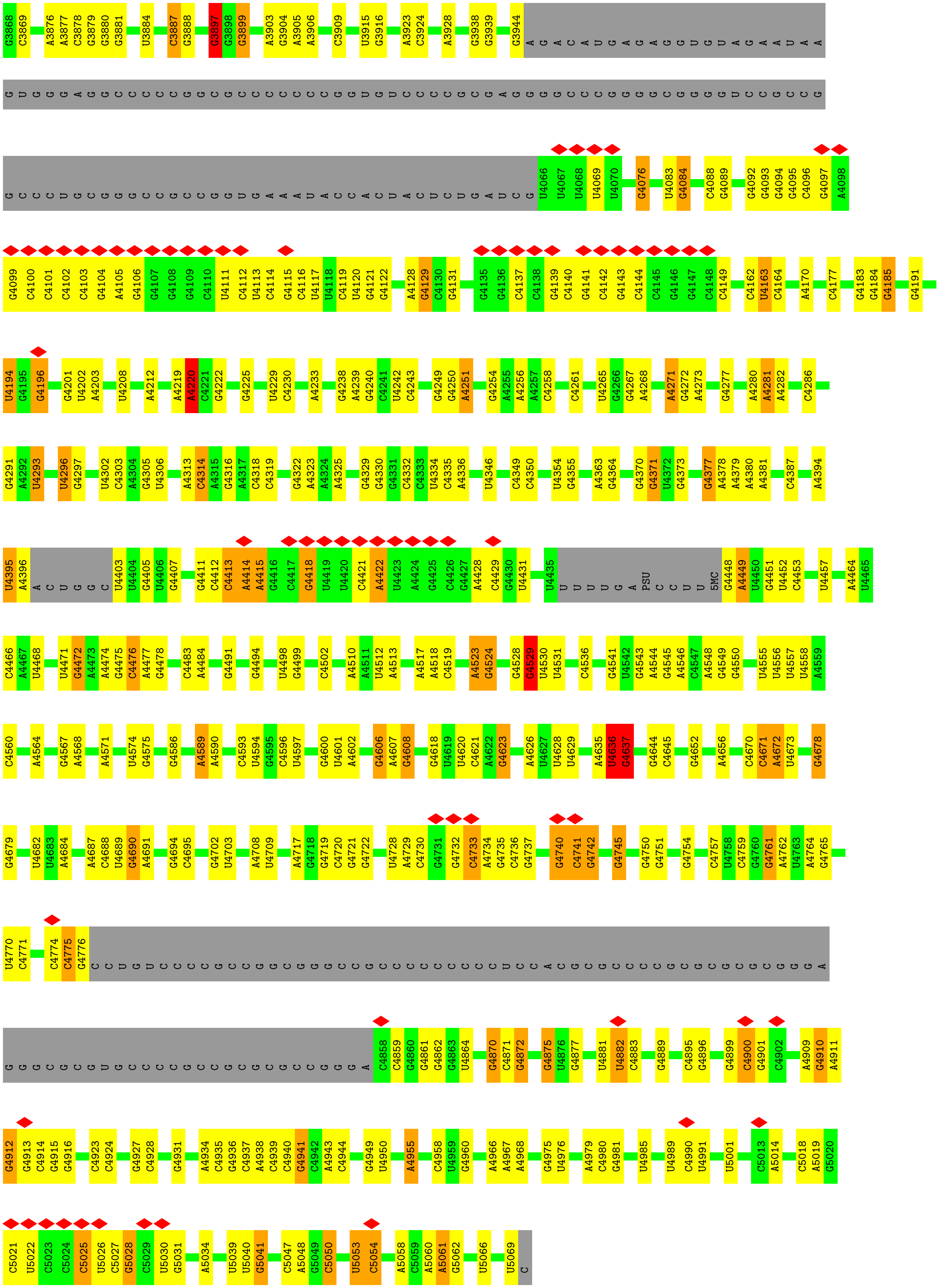
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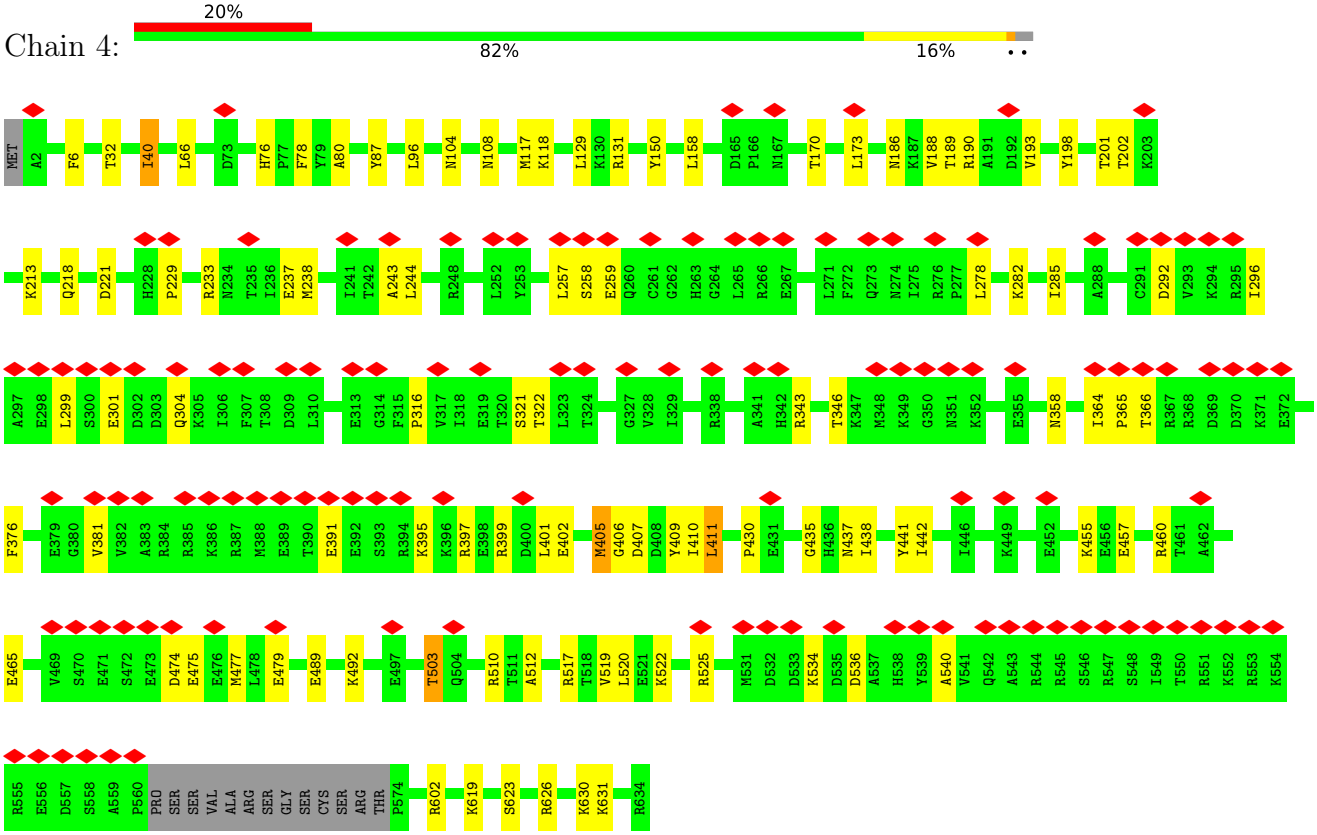
- Molecule 3: Nucleolar GTP-binding protein 1

Chain 4:



- Molecule 4: 5S rRNA

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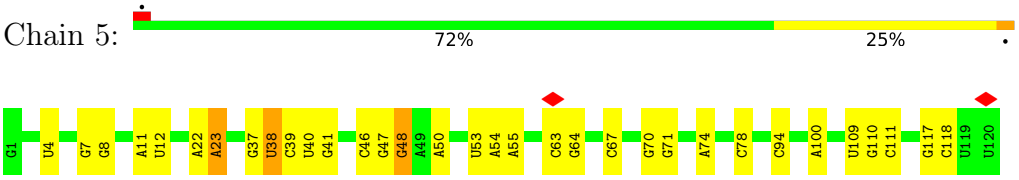
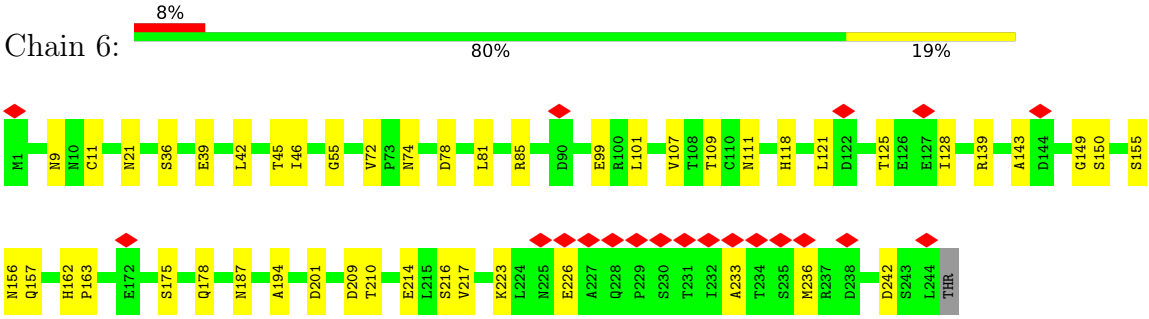


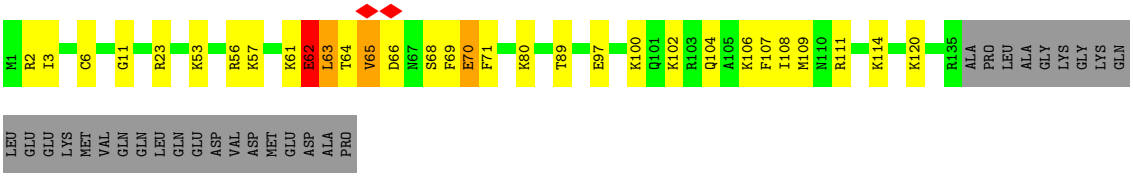
- Molecule 5: Eukaryotic translation initiation factor 6

Chain 6:



- Molecule 6: Probable ribosome biogenesis protein RLP24

Chain 7:



• Molecule 7: 28S rRNA

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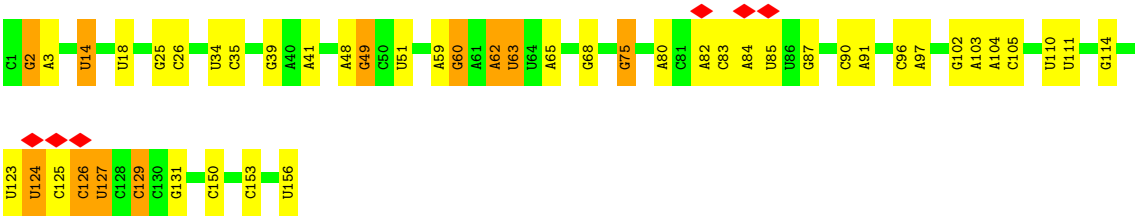
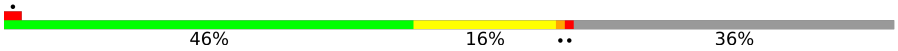
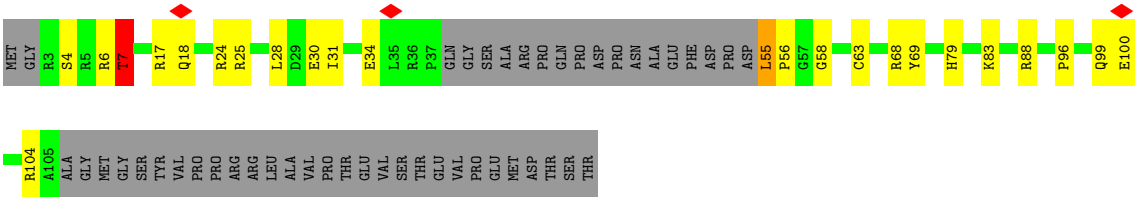


• Molecule 8: Zinc finger protein 593

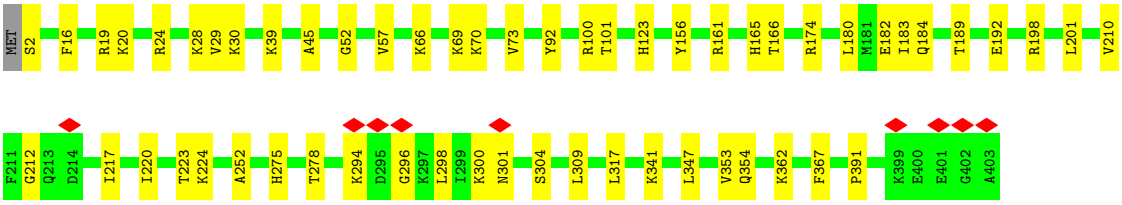
Chain 9:





• Molecule 9: 60S ribosomal protein L3

Chain B:



• Molecule 10: 60S ribosomal protein L29

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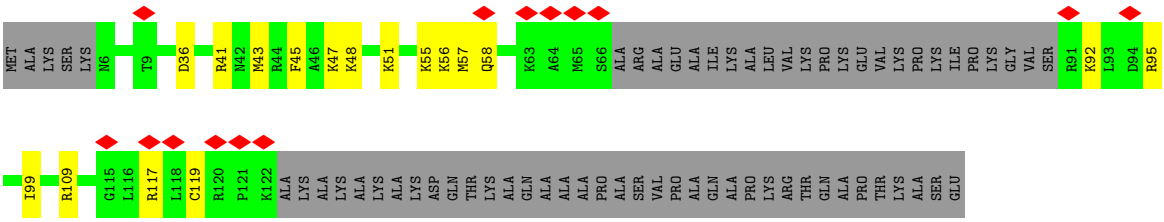
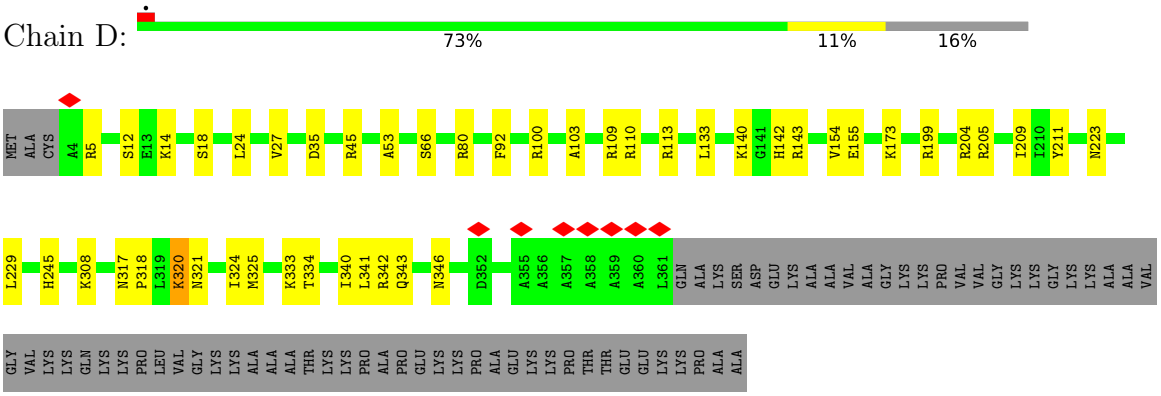


- Molecule 11: 60S ribosomal protein L4

Chain D:



- Molecule 12: 60S ribosomal protein L30

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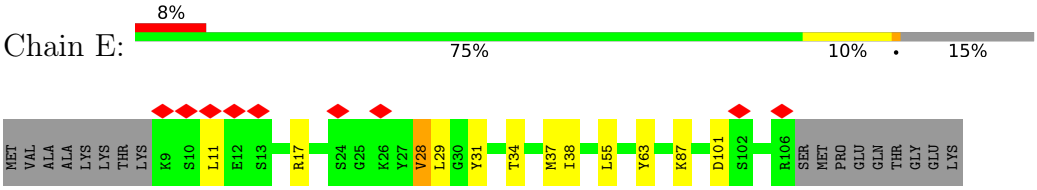
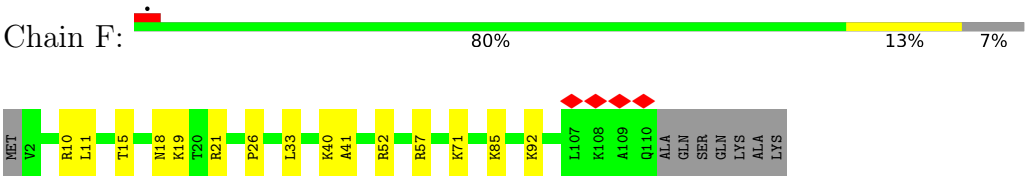


- Molecule 13: 60S ribosomal protein L34

Chain F:



- Molecule 14: 60S ribosomal protein L7a

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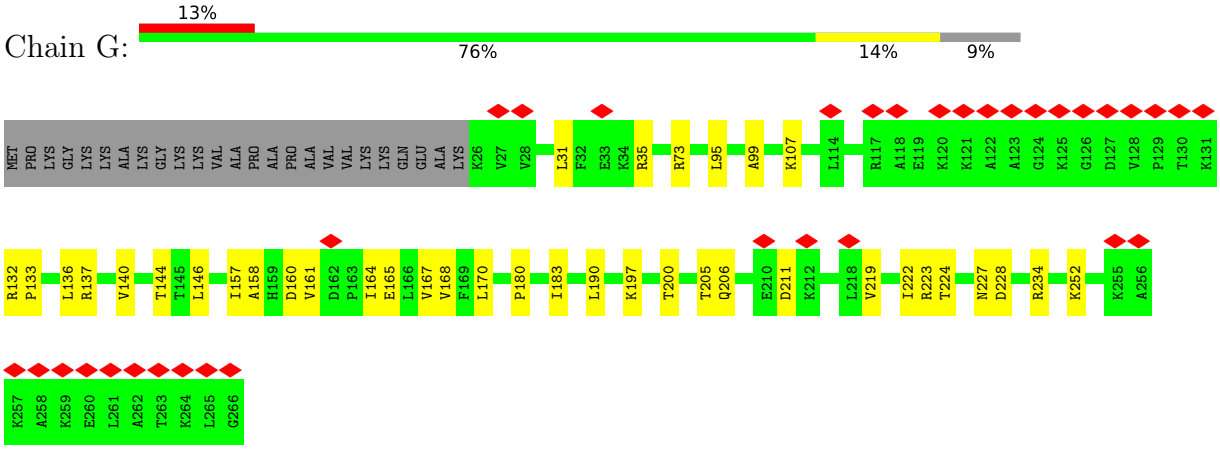

- Molecule 15: 60S ribosomal protein L35

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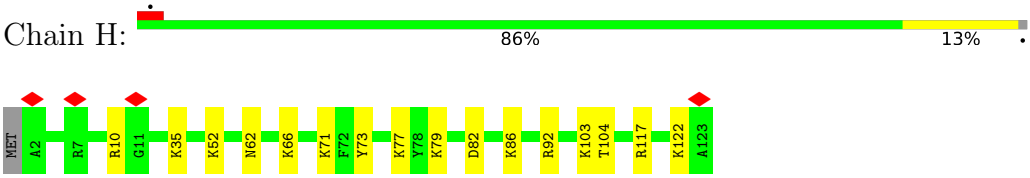

• Molecule 16: 60S ribosomal protein L9

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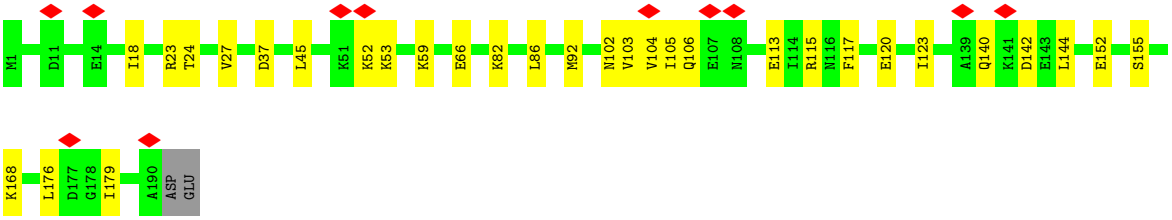
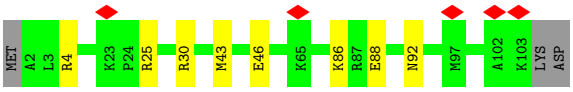


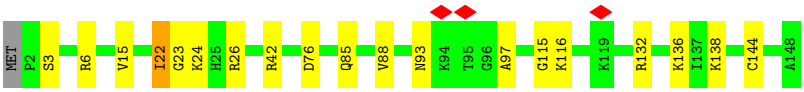
• Molecule 17: 60S ribosomal protein L36

Chain K:



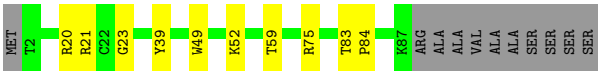
• Molecule 18: 60S ribosomal protein L27a

Chain L:



• Molecule 19: 60S ribosomal protein L37

Chain M:



• Molecule 20: 60S ribosomal protein L11

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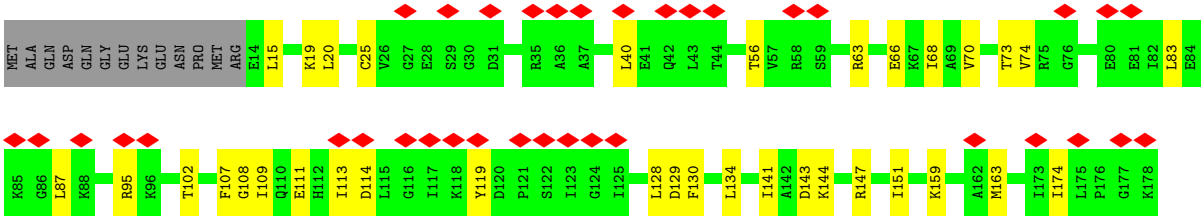
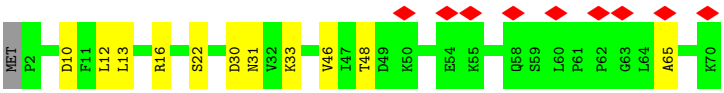


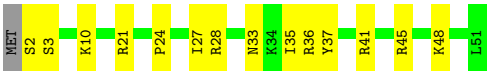
• Molecule 21: 60S ribosomal protein L38

Chain O:



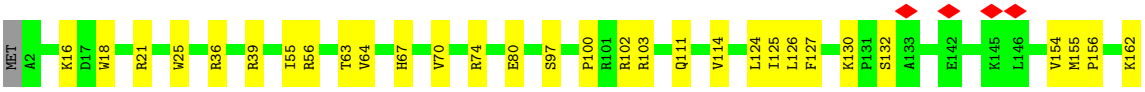
• Molecule 22: 60S ribosomal protein L39

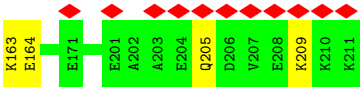
Chain P:



• Molecule 23: 60S ribosomal protein L13

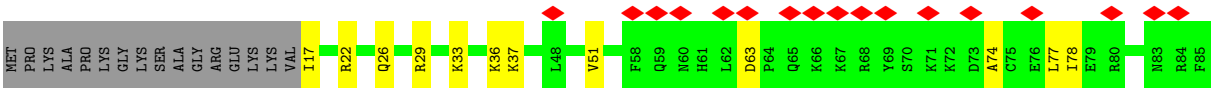
Chain Q:

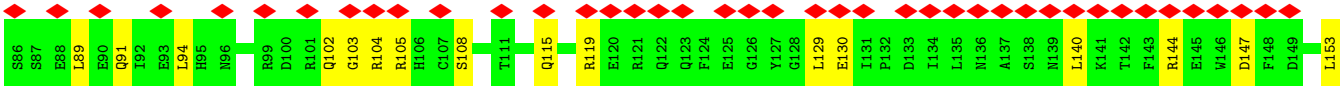


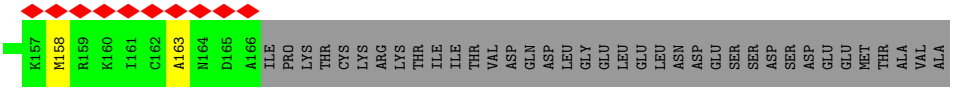


• Molecule 24: Translation machinery-associated protein 16

Chain R:

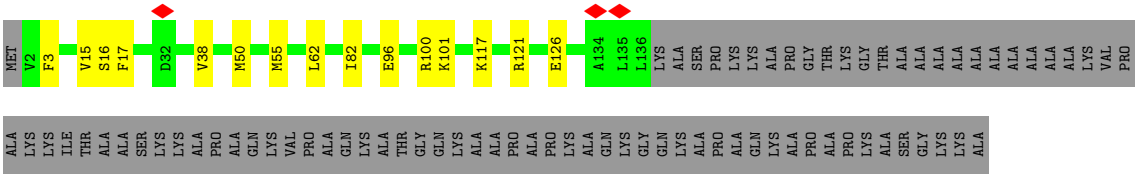






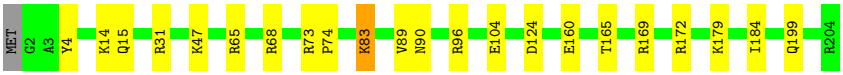
• Molecule 25: 60S ribosomal protein L14

Chain S:



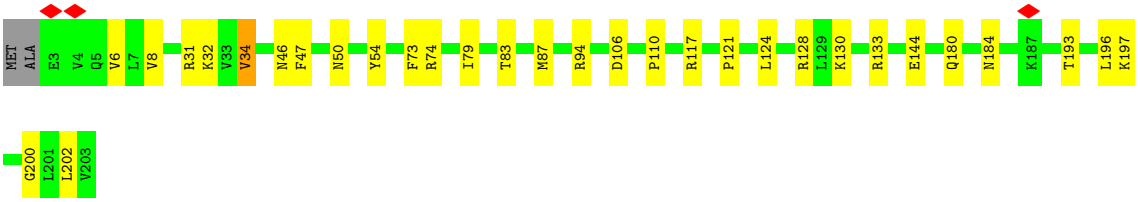
• Molecule 26: 60S ribosomal protein L15

Chain U:



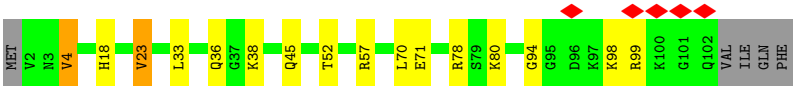
• Molecule 27: 60S ribosomal protein L13a

Chain V:



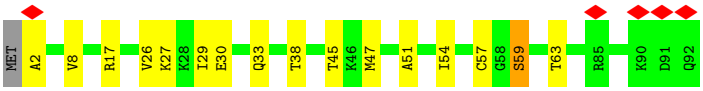
• Molecule 28: 60S ribosomal protein L36a

Chain W:



• Molecule 29: 60S ribosomal protein L37a

Chain X:



• Molecule 30: 60S ribosomal protein L17

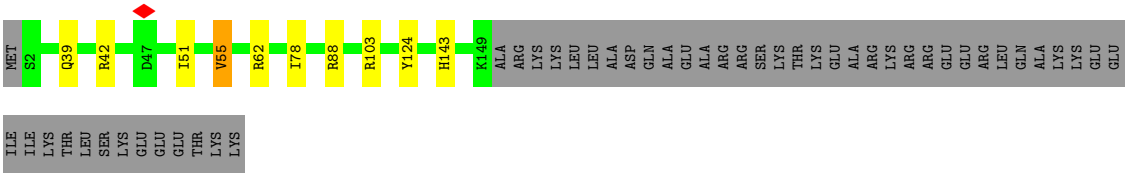
Chain Y:

• Molecule 31: 60S ribosomal protein L18

Chain Z:

• Molecule 32: 60S ribosomal protein L19

Chain a:



• Molecule 33: 60S ribosomal protein L18a

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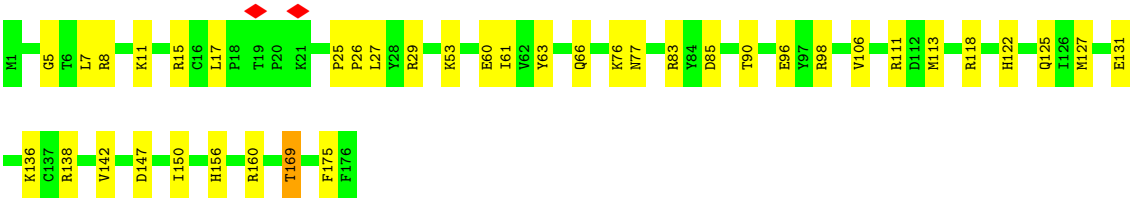
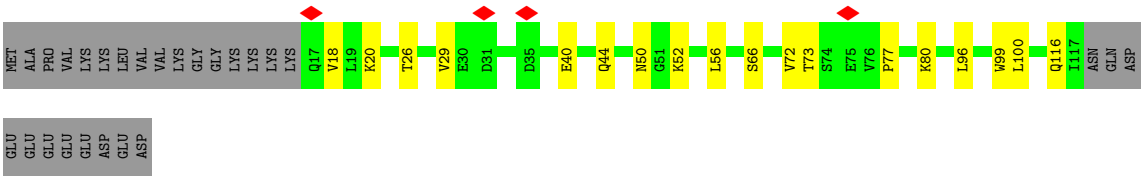


• Molecule 34: 60S ribosomal protein L21

Chain c:

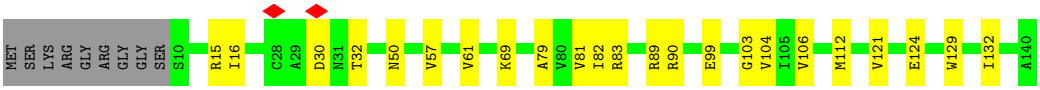
• Molecule 35: 60S ribosomal protein L22

Chain d:



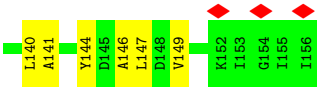
• Molecule 36: 60S ribosomal protein L23

Chain e:



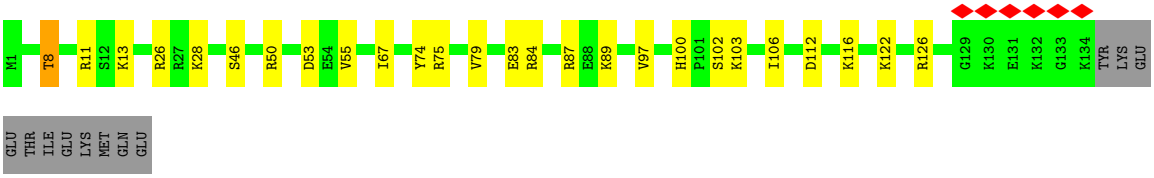
• Molecule 37: 60S ribosomal protein L23a

Chain g:



- Molecule 38: 60S ribosomal protein L26

Chain h:

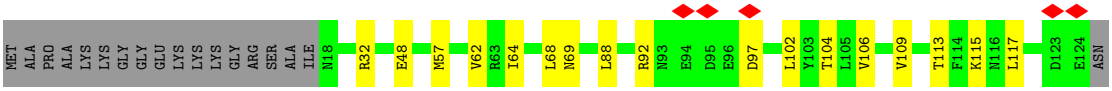


- Molecule 39: 60S ribosomal protein L27

Chain i:

- Molecule 40: 60S ribosomal protein L31

Chain j:

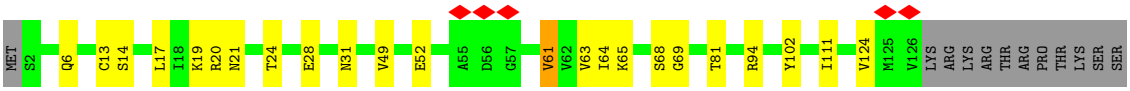


- Molecule 41: 60S ribosomal protein L32

Chain k:

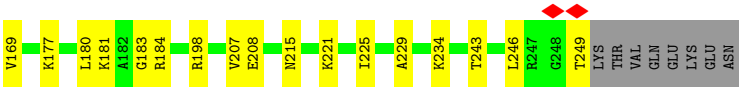
- Molecule 42: 60S ribosomal protein L28

Chain l:

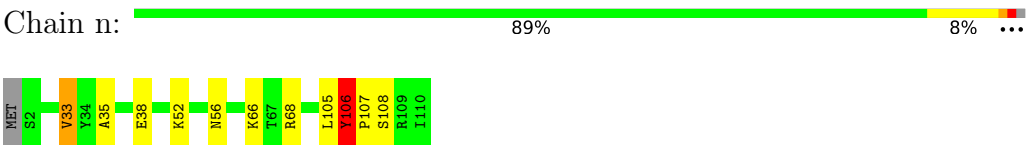


- Molecule 43: 60S ribosomal protein L8

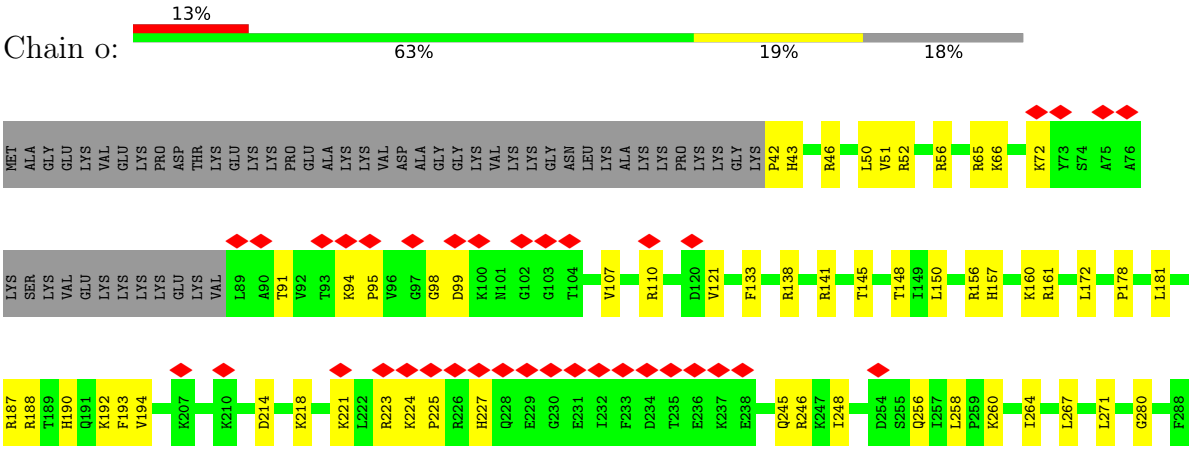
Chain m:



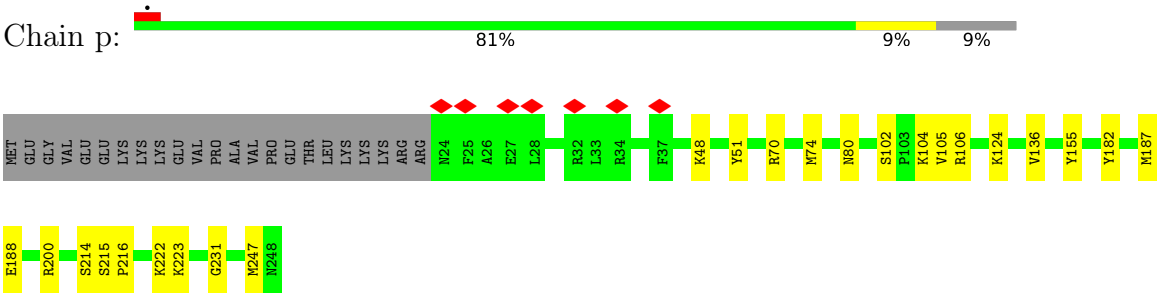
• Molecule 44: 60S ribosomal protein L35a



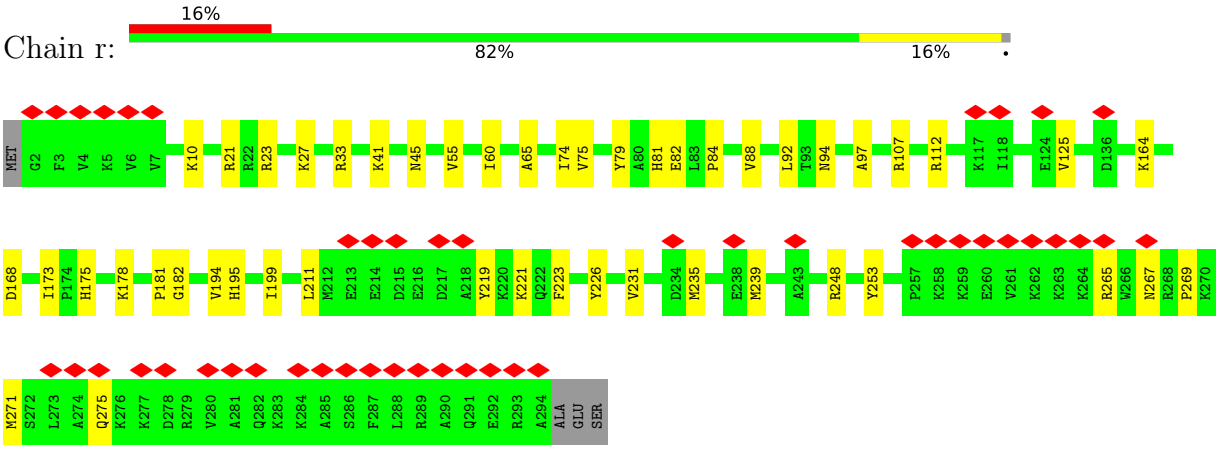
• Molecule 45: 60S ribosomal protein L6



• Molecule 46: 60S ribosomal protein L7

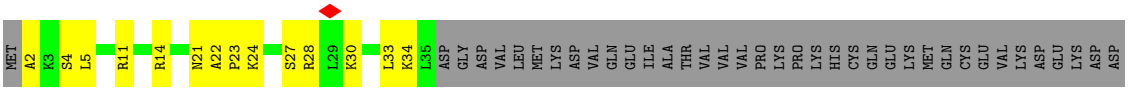


• Molecule 47: 60S ribosomal protein L5



• Molecule 48: Protein LLP homolog

Chain z:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	10277	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	64	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.377	Depositor
Minimum map value	-0.158	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.012	Depositor
Recommended contour level	0.065	Depositor
Map size (Å)	507.84, 507.84, 507.84	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.058, 1.058, 1.058	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: B9H, B8T, E6G, MG, 7MG, 1MA, OMC, BGH, P7G, B9B, B8H, P4U, MHG, OMU, UR3, PSU, E7G, B8K, 2MG, B8Q, B8W, M7A, OMG, A2M, 5MC, 6MZ, 5MU, I4U

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	1	0.21	0/148	0.36	0/196
2	2	0.39	1/81090 (0.0%)	0.47	2/126417 (0.0%)
3	4	0.33	0/5177	0.75	8/6942 (0.1%)
4	5	0.35	0/2858	0.44	0/4455
5	6	0.36	0/1877	0.65	1/2554 (0.0%)
6	7	0.52	0/1181	0.88	5/1563 (0.3%)
7	8	0.42	0/3679	0.42	0/5732
8	9	0.38	0/723	0.79	3/961 (0.3%)
9	B	0.42	0/3315	0.65	0/4435
10	C	0.31	0/777	0.62	0/1026
11	D	0.44	0/2907	0.68	1/3905 (0.0%)
12	E	0.31	0/774	0.52	0/1038
13	F	0.41	0/878	0.63	0/1170
14	G	0.36	0/1971	0.64	0/2651
15	H	0.36	0/1023	0.55	0/1351
16	I	0.35	0/1537	0.64	0/2066
17	K	0.30	0/843	0.56	0/1115
18	L	0.44	0/1191	0.57	0/1591
19	M	0.45	0/720	0.65	0/952
20	N	0.31	0/1341	0.69	2/1793 (0.1%)
21	O	0.34	0/575	0.57	0/761
22	P	0.45	0/454	0.64	0/599
23	Q	0.39	0/1732	0.67	0/2315
24	R	0.28	0/1293	0.70	0/1725
25	S	0.36	0/1133	0.58	0/1516
26	U	0.44	0/1746	0.60	0/2338
27	V	0.41	0/1682	0.61	1/2250 (0.0%)
28	W	0.35	0/840	0.63	0/1107
29	X	0.39	0/718	0.58	0/953
30	Y	0.42	0/1268	0.62	1/1701 (0.1%)
31	Z	0.40	0/1537	0.61	0/2052

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
32	a	0.39	0/1255	0.60	1/1662 (0.1%)
33	b	0.39	0/1501	0.54	0/2013
34	c	0.37	0/1291	0.58	0/1725
35	d	0.36	0/839	0.72	0/1126
36	e	0.40	0/993	0.64	0/1332
37	g	0.36	0/984	0.52	0/1323
38	h	0.40	0/1132	0.65	0/1504
39	i	0.35	0/1130	0.60	0/1507
40	j	0.40	0/903	0.64	0/1216
41	k	0.46	0/1071	0.60	0/1429
42	l	0.40	0/1017	0.63	0/1364
43	m	0.43	0/1936	0.70	1/2596 (0.0%)
44	n	0.46	0/895	0.71	3/1198 (0.3%)
45	o	0.36	0/1935	0.66	1/2596 (0.0%)
46	p	0.41	0/1916	0.61	0/2553
47	r	0.32	0/2428	0.60	0/3252
48	z	0.41	0/286	0.59	0/372
All	All	0.39	1/148500 (0.0%)	0.54	30/217998 (0.0%)

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
3	4	0	4
9	B	0	2
23	Q	0	1
24	R	0	1
43	m	0	1
44	n	0	1
45	o	0	1
All	All	0	11

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	2	1534	A2M	O3'-P	5.38	1.61	1.56

The worst 5 of 30 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
44	n	106	TYR	N-CA-C	7.25	125.83	109.81
20	N	119	TYR	CA-C-N	7.16	139.68	122.36
20	N	119	TYR	C-N-CA	7.16	139.68	122.36
44	n	105	LEU	CA-C-N	7.00	138.89	121.80
44	n	105	LEU	C-N-CA	7.00	138.89	121.80

There are no chirality outliers.

5 of 11 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
3	4	198	TYR	Peptide
3	4	365	PRO	Peptide
3	4	40	ILE	Peptide
3	4	503	THR	Peptide
9	B	16	PHE	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	1	148	0	135	1	0
2	2	74611	0	37473	390	0
3	4	5093	0	5239	77	0
4	5	2558	0	1296	12	0
5	6	1852	0	1828	34	0
6	7	1159	0	1224	39	0
7	8	3315	0	1685	22	0
8	9	711	0	724	26	0
9	B	3244	0	3389	54	0
10	C	764	0	822	12	0
11	D	2853	0	3028	36	0
12	E	764	0	804	6	0
13	F	868	0	963	13	0
14	G	1935	0	2087	24	0
15	H	1015	0	1148	16	0
16	I	1518	0	1601	21	0
17	K	832	0	917	7	0
18	L	1162	0	1213	15	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
19	M	705	0	741	8	0
20	N	1319	0	1358	23	0
21	O	569	0	637	6	0
22	P	444	0	483	11	0
23	Q	1701	0	1818	23	0
24	R	1272	0	1291	21	0
25	S	1111	0	1174	10	0
26	U	1701	0	1749	19	0
27	V	1650	0	1794	21	0
28	W	827	0	895	13	0
29	X	708	0	760	11	0
30	Y	1242	0	1268	16	0
31	Z	1513	0	1628	13	0
32	a	1239	0	1362	8	0
33	b	1461	0	1502	32	0
34	c	1264	0	1337	17	0
35	d	825	0	850	12	0
36	e	979	0	1039	17	0
37	g	967	0	1040	11	0
38	h	1115	0	1205	17	0
39	i	1107	0	1182	16	0
40	j	888	0	930	8	0
41	k	1053	0	1147	7	0
42	l	1002	0	1068	14	0
43	m	1898	0	1993	33	0
44	n	876	0	912	7	0
45	o	1897	0	2046	39	0
46	p	1878	0	2009	18	0
47	r	2382	0	2410	32	0
48	z	284	0	333	30	0
49	2	229	0	0	0	0
49	4	1	0	0	0	0
49	5	3	0	0	0	0
49	8	5	0	0	0	0
49	9	1	0	0	0	0
49	B	2	0	0	0	0
49	D	1	0	0	0	0
49	F	1	0	0	0	0
49	L	1	0	0	0	0
49	M	1	0	0	0	0
49	R	1	0	0	0	0
49	k	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
49	m	1	0	0	0	0
49	n	1	0	0	0	0
49	p	1	0	0	0	0
50	2	13	0	0	0	0
50	k	1	0	0	0	0
50	o	1	0	0	0	0
50	p	1	0	0	0	0
All	All	140545	0	103537	1029	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 4.

The worst 5 of 1029 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)
2:2:1860:B8H:C5	2:2:1860:B8H:C4	1.81	1.59
2:2:4296:B8H:C5	2:2:4296:B8H:C4	1.80	1.55
9:B:39:LYS:HE2	48:z:30:LYS:NZ	1.50	1.24
2:2:2380:B8W:O4'	2:2:2380:B8W:C1'	1.65	1.23
2:2:4690:B8K:O4'	2:2:4690:B8K:C4'	1.67	1.20

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	1	17/731 (2%)	17 (100%)	0	0	100 100
3	4	616/634 (97%)	535 (87%)	78 (13%)	3 (0%)	25 58
5	6	242/245 (99%)	224 (93%)	18 (7%)	0	100 100
6	7	133/163 (82%)	124 (93%)	7 (5%)	2 (2%)	8 35

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
8	9	82/134 (61%)	71 (87%)	10 (12%)	1 (1%)	11	40
9	B	401/403 (100%)	368 (92%)	33 (8%)	0	100	100
10	C	89/159 (56%)	85 (96%)	4 (4%)	0	100	100
11	D	356/427 (83%)	330 (93%)	26 (7%)	0	100	100
12	E	96/115 (84%)	89 (93%)	7 (7%)	0	100	100
13	F	107/117 (92%)	105 (98%)	2 (2%)	0	100	100
14	G	240/266 (90%)	221 (92%)	19 (8%)	0	100	100
15	H	120/123 (98%)	113 (94%)	7 (6%)	0	100	100
16	I	188/192 (98%)	167 (89%)	21 (11%)	0	100	100
17	K	100/105 (95%)	95 (95%)	5 (5%)	0	100	100
18	L	145/148 (98%)	134 (92%)	10 (7%)	1 (1%)	19	51
19	M	84/97 (87%)	80 (95%)	4 (5%)	0	100	100
20	N	163/178 (92%)	144 (88%)	19 (12%)	0	100	100
21	O	67/70 (96%)	64 (96%)	3 (4%)	0	100	100
22	P	48/51 (94%)	46 (96%)	2 (4%)	0	100	100
23	Q	208/211 (99%)	190 (91%)	18 (9%)	0	100	100
24	R	148/203 (73%)	137 (93%)	11 (7%)	0	100	100
25	S	133/215 (62%)	122 (92%)	11 (8%)	0	100	100
26	U	201/204 (98%)	189 (94%)	11 (6%)	1 (0%)	25	58
27	V	199/203 (98%)	193 (97%)	6 (3%)	0	100	100
28	W	99/106 (93%)	89 (90%)	10 (10%)	0	100	100
29	X	89/92 (97%)	83 (93%)	6 (7%)	0	100	100
30	Y	151/184 (82%)	140 (93%)	11 (7%)	0	100	100
31	Z	185/188 (98%)	176 (95%)	9 (5%)	0	100	100
32	a	146/196 (74%)	138 (94%)	8 (6%)	0	100	100
33	b	174/176 (99%)	166 (95%)	8 (5%)	0	100	100
34	c	153/160 (96%)	144 (94%)	9 (6%)	0	100	100
35	d	99/128 (77%)	88 (89%)	11 (11%)	0	100	100
36	e	129/140 (92%)	118 (92%)	11 (8%)	0	100	100
37	g	116/156 (74%)	109 (94%)	7 (6%)	0	100	100
38	h	132/145 (91%)	130 (98%)	2 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
39	i	133/136 (98%)	122 (92%)	11 (8%)	0	100	100
40	j	105/125 (84%)	97 (92%)	8 (8%)	0	100	100
41	k	126/135 (93%)	115 (91%)	11 (9%)	0	100	100
42	l	123/137 (90%)	111 (90%)	12 (10%)	0	100	100
43	m	246/257 (96%)	216 (88%)	29 (12%)	1 (0%)	30	62
44	n	107/110 (97%)	97 (91%)	8 (8%)	2 (2%)	6	31
45	o	231/288 (80%)	210 (91%)	21 (9%)	0	100	100
46	p	224/248 (90%)	210 (94%)	14 (6%)	0	100	100
47	r	291/297 (98%)	269 (92%)	22 (8%)	0	100	100
48	z	32/129 (25%)	30 (94%)	2 (6%)	0	100	100
All	All	7274/8927 (82%)	6701 (92%)	562 (8%)	11 (0%)	45	73

5 of 11 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
6	7	66	ASP
6	7	70	GLU
44	n	106	TYR
3	4	301	GLU
8	9	99	GLN

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	1	17/654 (3%)	17 (100%)	0	100	100
3	4	562/574 (98%)	557 (99%)	5 (1%)	75	87
5	6	212/213 (100%)	212 (100%)	0	100	100
6	7	126/149 (85%)	122 (97%)	4 (3%)	34	62
8	9	74/114 (65%)	72 (97%)	2 (3%)	40	66
9	B	349/349 (100%)	348 (100%)	1 (0%)	91	95

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
10	C	78/126 (62%)	78 (100%)	0	100	100
11	D	298/348 (86%)	295 (99%)	3 (1%)	73	85
12	E	83/97 (86%)	81 (98%)	2 (2%)	44	68
13	F	94/100 (94%)	94 (100%)	0	100	100
14	G	204/223 (92%)	204 (100%)	0	100	100
15	H	109/110 (99%)	108 (99%)	1 (1%)	75	87
16	I	169/171 (99%)	167 (99%)	2 (1%)	67	83
17	K	86/89 (97%)	86 (100%)	0	100	100
18	L	120/121 (99%)	119 (99%)	1 (1%)	79	88
19	M	73/80 (91%)	73 (100%)	0	100	100
20	N	138/149 (93%)	137 (99%)	1 (1%)	81	90
21	O	64/65 (98%)	64 (100%)	0	100	100
22	P	47/48 (98%)	47 (100%)	0	100	100
23	Q	176/177 (99%)	174 (99%)	2 (1%)	70	84
24	R	138/184 (75%)	138 (100%)	0	100	100
25	S	115/161 (71%)	114 (99%)	1 (1%)	75	87
26	U	171/172 (99%)	170 (99%)	1 (1%)	84	91
27	V	173/174 (99%)	172 (99%)	1 (1%)	84	91
28	W	89/94 (95%)	87 (98%)	2 (2%)	47	71
29	X	74/75 (99%)	72 (97%)	2 (3%)	40	66
30	Y	134/163 (82%)	133 (99%)	1 (1%)	81	90
31	Z	164/165 (99%)	164 (100%)	0	100	100
32	a	133/175 (76%)	132 (99%)	1 (1%)	79	88
33	b	157/157 (100%)	156 (99%)	1 (1%)	84	91
34	c	136/140 (97%)	135 (99%)	1 (1%)	81	90
35	d	91/115 (79%)	90 (99%)	1 (1%)	70	84
36	e	101/107 (94%)	100 (99%)	1 (1%)	73	85
37	g	106/133 (80%)	105 (99%)	1 (1%)	75	87
38	h	124/135 (92%)	121 (98%)	3 (2%)	44	68
39	i	117/118 (99%)	116 (99%)	1 (1%)	75	87
40	j	98/110 (89%)	94 (96%)	4 (4%)	26	56

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
41	k	114/121 (94%)	114 (100%)	0	100	100
42	l	109/121 (90%)	106 (97%)	3 (3%)	38	65
43	m	190/199 (96%)	189 (100%)	1 (0%)	86	92
44	n	88/89 (99%)	87 (99%)	1 (1%)	70	84
45	o	208/252 (82%)	207 (100%)	1 (0%)	86	92
46	p	195/215 (91%)	195 (100%)	0	100	100
47	r	246/250 (98%)	245 (100%)	1 (0%)	89	93
48	z	30/115 (26%)	30 (100%)	0	100	100
All	All	6380/7697 (83%)	6327 (99%)	53 (1%)	77	88

5 of 53 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
28	W	23	VAL
35	d	72	VAL
43	m	45	VAL
29	X	59	SER
32	a	55	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 120 such sidechains are listed below:

Mol	Chain	Res	Type
24	R	91	GLN
43	m	187	HIS
30	Y	21	ASN
43	m	132	ASN
47	r	244	HIS

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
2	2	3455/5070 (68%)	899 (26%)	18 (0%)
4	5	119/120 (99%)	20 (16%)	0
7	8	155/156 (99%)	32 (20%)	0
All	All	3729/5346 (69%)	951 (25%)	18 (0%)

5 of 951 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
2	2	2	G
2	2	15	A
2	2	17	A
2	2	21	G
2	2	25	A

5 of 18 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
2	2	4529	B8W
2	2	4913	G
2	2	4694	G
2	2	3596	A
2	2	4498	U

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

92 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	$\#\|Z\| > 2$
2	UR3	2	4530	2	19,22,23	2.77	5 (26%)	26,32,35	1.31	2 (7%)
2	OMC	2	2422	2,49	19,22,23	2.89	8 (42%)	26,31,34	1.06	2 (7%)
2	UR3	2	4597	2	19,22,23	2.69	7 (36%)	26,32,35	1.87	3 (11%)
2	A2M	2	3718	2	18,25,26	4.25	7 (38%)	18,36,39	2.87	3 (16%)
2	2MG	2	4872	2	18,26,27	2.25	7 (38%)	16,38,41	1.62	4 (25%)
2	A2M	2	2363	2,49	18,25,26	4.18	7 (38%)	18,36,39	3.28	3 (16%)
2	OMG	2	2773	2	18,26,27	2.40	8 (44%)	19,38,41	1.58	4 (21%)
2	OMC	2	3909	2	19,22,23	2.91	8 (42%)	26,31,34	1.10	2 (7%)
2	5MC	2	4335	2	18,22,23	3.40	7 (38%)	26,32,35	1.24	2 (7%)
2	PSU	2	4628	2	18,21,22	1.04	1 (5%)	22,30,33	1.75	4 (18%)
2	OMC	2	2861	2	19,22,23	2.84	7 (36%)	26,31,34	0.95	1 (3%)
2	2MG	2	729	2	18,26,27	2.23	7 (38%)	16,38,41	1.47	4 (25%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
2	OMC	2	3869	2	19,22,23	2.84	8 (42%)	26,31,34	1.39	3 (11%)
2	A2M	2	398	2	18,25,26	4.18	6 (33%)	18,36,39	2.96	3 (16%)
2	UR3	2	1866	2	19,22,23	2.88	6 (31%)	26,32,35	1.30	2 (7%)
2	M7A	2	4564	2	20,25,26	1.96	3 (15%)	28,37,40	3.82	7 (25%)
2	2MG	2	1517	2	18,26,27	2.31	7 (38%)	16,38,41	1.56	3 (18%)
2	P7G	2	3880	2	24,28,29	4.73	11 (45%)	27,41,44	1.80	4 (14%)
2	A2M	2	1871	2	18,25,26	4.25	8 (44%)	18,36,39	2.94	3 (16%)
2	B9B	2	237	2	21,28,29	5.68	9 (42%)	23,40,43	2.42	4 (17%)
2	PSU	2	2508	2	18,21,22	1.00	1 (5%)	22,30,33	1.69	3 (13%)
2	E7G	2	1797	2	24,27,28	3.78	11 (45%)	30,40,43	2.18	9 (30%)
2	A2M	2	4571	2	18,25,26	4.25	8 (44%)	18,36,39	2.97	3 (16%)
2	B8W	2	2380	2	18,26,27	6.12	7 (38%)	21,38,41	2.24	6 (28%)
2	B8K	2	3897	2	24,28,29	4.36	15 (62%)	30,42,45	2.49	13 (43%)
2	E7G	2	2297	2	24,27,28	3.65	11 (45%)	30,40,43	2.19	10 (33%)
2	A2M	2	1326	2,49	18,25,26	4.23	7 (38%)	18,36,39	3.19	3 (16%)
2	2MG	2	978	2	18,26,27	2.43	7 (38%)	16,38,41	1.46	3 (18%)
2	PSU	2	1582	2	18,21,22	1.04	1 (5%)	22,30,33	1.65	3 (13%)
2	OMG	2	4637	2	18,26,27	2.37	8 (44%)	19,38,41	1.63	4 (21%)
2	OMU	2	4306	2	19,22,23	2.78	8 (42%)	26,31,34	1.89	5 (19%)
2	PSU	2	3715	2	18,21,22	1.08	1 (5%)	22,30,33	1.67	4 (18%)
2	PSU	2	4636	2	18,21,22	1.14	3 (16%)	22,30,33	1.88	4 (18%)
2	B8T	2	4483	2	19,22,23	3.52	8 (42%)	26,31,34	1.26	4 (15%)
2	OMG	2	4623	2	18,26,27	2.31	8 (44%)	19,38,41	1.54	4 (21%)
2	OMG	2	373	2	18,26,27	2.34	7 (38%)	19,38,41	1.69	5 (26%)
2	OMC	2	4536	2	19,22,23	2.75	7 (36%)	26,31,34	0.92	1 (3%)
2	B8W	2	4529	2	18,26,27	6.22	7 (38%)	21,38,41	2.59	6 (28%)
2	1MA	2	1322	2,49	16,25,26	3.88	4 (25%)	18,37,40	1.67	3 (16%)
7	OMU	8	14	7,2	19,22,23	2.73	7 (36%)	26,31,34	1.75	6 (23%)
2	5MU	2	4083	2	19,22,23	4.69	7 (36%)	28,32,35	3.63	10 (35%)
2	B8H	2	4296	2	19,22,23	6.78	7 (36%)	22,32,35	2.29	5 (22%)
2	A2M	2	3825	2	18,25,26	4.17	7 (38%)	18,36,39	3.01	3 (16%)
2	PSU	2	1677	2	18,21,22	1.13	2 (11%)	22,30,33	1.95	5 (22%)
2	OMU	2	4620	2	19,22,23	2.72	7 (36%)	26,31,34	1.72	5 (19%)
2	A2M	2	3723	2	18,25,26	4.31	7 (38%)	18,36,39	3.07	3 (16%)
2	B9B	2	1574	2	21,28,29	5.64	8 (38%)	23,40,43	2.09	6 (26%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
2	7MG	2	4550	2	22,26,27	3.57	10 (45%)	29,39,42	1.97	9 (31%)
2	1MA	2	4415	2	16,25,26	3.96	4 (25%)	18,37,40	1.69	3 (16%)
2	OMG	2	4494	2	18,26,27	2.40	8 (44%)	19,38,41	1.57	4 (21%)
2	7MG	2	2522	2	22,26,27	3.38	10 (45%)	29,39,42	1.98	9 (31%)
2	I4U	2	1659	2,49	21,24,25	4.70	14 (66%)	27,34,37	1.56	6 (22%)
2	OMG	2	4370	2	18,26,27	2.39	8 (44%)	19,38,41	1.57	5 (26%)
2	OMC	2	3887	2	19,22,23	2.91	8 (42%)	26,31,34	0.96	0
2	OMG	2	2424	2	18,26,27	2.47	8 (44%)	19,38,41	1.63	5 (26%)
2	6MZ	2	4220	2	18,25,26	1.91	3 (16%)	16,36,39	3.55	3 (18%)
2	PSU	2	4403	2	18,21,22	1.02	1 (5%)	22,30,33	1.84	5 (22%)
2	OMG	2	4870	2	18,26,27	2.43	8 (44%)	19,38,41	1.46	4 (21%)
2	OMG	2	1625	2	18,26,27	2.36	8 (44%)	19,38,41	1.52	4 (21%)
2	B9B	2	2754	2	21,28,29	5.59	8 (38%)	23,40,43	2.15	5 (21%)
2	OMG	2	1522	2	18,26,27	2.34	8 (44%)	19,38,41	1.51	4 (21%)
2	I4U	2	4194	2,49	21,24,25	4.89	15 (71%)	27,34,37	1.07	1 (3%)
2	B9H	2	2786	2,49	20,25,26	2.73	5 (25%)	22,35,38	2.13	6 (27%)
2	E6G	2	4355	2	20,27,28	5.86	9 (45%)	22,39,42	2.74	8 (36%)
2	A2M	2	1524	2	18,25,26	4.14	6 (33%)	18,36,39	3.15	4 (22%)
2	B8Q	2	1456	2	17,22,23	2.91	4 (23%)	22,32,35	2.23	6 (27%)
2	B8W	2	4129	2	18,26,27	6.17	6 (33%)	21,38,41	2.32	9 (42%)
2	A2M	2	2401	2	18,25,26	4.16	7 (38%)	18,36,39	3.19	3 (16%)
2	OMG	2	4196	2	18,26,27	2.51	8 (44%)	19,38,41	1.45	4 (21%)
2	P7G	2	1909	2	24,28,29	4.57	11 (45%)	27,41,44	1.68	4 (14%)
2	OMG	2	1316	2,49	18,26,27	2.46	8 (44%)	19,38,41	1.82	5 (26%)
2	PSU	2	1683	2	18,21,22	1.13	2 (11%)	22,30,33	1.80	4 (18%)
2	PSU	2	3729	2	18,21,22	1.07	1 (5%)	22,30,33	1.69	4 (18%)
2	A2M	2	3867	2	18,25,26	4.20	7 (38%)	18,36,39	3.10	4 (22%)
2	B8T	2	4671	2	19,22,23	3.43	8 (42%)	26,31,34	0.90	1 (3%)
2	7MG	2	1605	2	22,26,27	3.38	10 (45%)	29,39,42	1.94	9 (31%)
2	OMG	2	2050	2	18,26,27	2.35	7 (38%)	19,38,41	1.62	4 (21%)
2	P4U	2	1348	2	21,24,25	3.74	8 (38%)	27,33,36	1.17	2 (7%)
2	BGH	2	3899	2	25,29,30	4.40	17 (68%)	31,43,46	2.56	12 (38%)
2	OMC	2	2365	2,49	19,22,23	2.75	8 (42%)	26,31,34	0.77	0
2	B8K	2	4690	2	24,28,29	4.45	16 (66%)	30,42,45	2.65	11 (36%)
2	B8H	2	1860	2	19,22,23	6.76	6 (31%)	22,32,35	2.29	5 (22%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
2	PSU	2	4293	2	18,21,22	1.01	1 (5%)	22,30,33	1.96	4 (18%)
2	OMC	2	3701	2,49	19,22,23	2.82	8 (42%)	26,31,34	0.64	0
2	OMG	2	2364	2	18,26,27	2.35	7 (38%)	19,38,41	1.57	4 (21%)
2	B8W	2	4185	2	18,26,27	6.09	7 (38%)	21,38,41	2.43	7 (33%)
2	A2M	2	1534	2,49	18,25,26	4.08	8 (44%)	18,36,39	3.21	4 (22%)
2	A2M	2	4523	2	18,25,26	4.24	8 (44%)	18,36,39	3.05	4 (22%)
2	OMG	2	1883	2	18,26,27	2.36	7 (38%)	19,38,41	1.65	4 (21%)
2	B8W	2	4472	2	18,26,27	6.07	7 (38%)	21,38,41	2.44	6 (28%)
2	OMC	2	2804	2	19,22,23	2.74	7 (36%)	26,31,34	0.99	1 (3%)
2	MHG	2	4371	2	29,32,33	3.92	12 (41%)	34,46,49	2.25	11 (32%)

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
2	UR3	2	4530	2	-	0/7/25/26	0/2/2/2
2	OMC	2	2422	2,49	-	1/9/27/28	0/2/2/2
2	UR3	2	4597	2	-	0/7/25/26	0/2/2/2
2	A2M	2	3718	2	-	0/5/27/28	0/3/3/3
2	2MG	2	4872	2	-	2/5/27/28	0/3/3/3
2	A2M	2	2363	2,49	-	0/5/27/28	0/3/3/3
2	OMG	2	2773	2	-	2/5/27/28	0/3/3/3
2	OMC	2	3909	2	-	2/9/27/28	0/2/2/2
2	5MC	2	4335	2	-	0/7/25/26	0/2/2/2
2	PSU	2	4628	2	-	0/7/25/26	0/2/2/2
2	OMC	2	2861	2	-	2/9/27/28	0/2/2/2
2	2MG	2	729	2	-	1/5/27/28	0/3/3/3
2	OMC	2	3869	2	-	4/9/27/28	0/2/2/2
2	A2M	2	398	2	-	2/5/27/28	0/3/3/3
2	UR3	2	1866	2	-	1/7/25/26	0/2/2/2
2	M7A	2	4564	2	-	0/7/37/38	0/3/3/3
2	2MG	2	1517	2	-	0/5/27/28	0/3/3/3
2	P7G	2	3880	2	-	4/10/40/41	0/3/3/3
2	A2M	2	1871	2	-	2/5/27/28	0/3/3/3
2	B9B	2	237	2	-	5/7/29/30	0/3/3/3
2	PSU	2	2508	2	-	1/7/25/26	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	E7G	2	1797	2	-	4/9/39/40	0/3/3/3
2	A2M	2	4571	2	-	0/5/27/28	0/3/3/3
2	B8W	2	2380	2	-	0/5/27/28	0/3/3/3
2	B8K	2	3897	2	-	3/11/41/42	0/3/3/3
2	E7G	2	2297	2	-	2/9/39/40	0/3/3/3
2	A2M	2	1326	2,49	-	1/5/27/28	0/3/3/3
2	2MG	2	978	2	-	0/5/27/28	0/3/3/3
2	PSU	2	1582	2	-	2/7/25/26	0/2/2/2
2	OMG	2	4637	2	-	0/5/27/28	0/3/3/3
2	OMU	2	4306	2	-	0/9/27/28	0/2/2/2
2	PSU	2	3715	2	-	0/7/25/26	0/2/2/2
2	PSU	2	4636	2	-	4/7/25/26	0/2/2/2
2	B8T	2	4483	2	-	0/7/27/28	0/2/2/2
2	OMG	2	4623	2	-	0/5/27/28	0/3/3/3
2	OMG	2	373	2	-	1/5/27/28	0/3/3/3
2	OMC	2	4536	2	-	0/9/27/28	0/2/2/2
2	B8W	2	4529	2	-	3/5/27/28	0/3/3/3
2	1MA	2	1322	2,49	-	0/3/25/26	0/3/3/3
7	OMU	8	14	7,2	-	1/9/27/28	0/2/2/2
2	5MU	2	4083	2	-	0/7/25/26	0/2/2/2
2	B8H	2	4296	2	-	0/7/25/26	0/2/2/2
2	A2M	2	3825	2	-	0/5/27/28	0/3/3/3
2	PSU	2	1677	2	-	1/7/25/26	0/2/2/2
2	OMU	2	4620	2	-	0/9/27/28	0/2/2/2
2	A2M	2	3723	2	-	0/5/27/28	0/3/3/3
2	B9B	2	1574	2	-	3/7/29/30	0/3/3/3
2	7MG	2	4550	2	-	2/7/37/38	0/3/3/3
2	1MA	2	4415	2	-	3/3/25/26	0/3/3/3
2	OMG	2	4494	2	-	0/5/27/28	0/3/3/3
2	7MG	2	2522	2	-	0/7/37/38	0/3/3/3
2	I4U	2	1659	2,49	-	2/9/29/30	0/2/2/2
2	OMG	2	4370	2	-	0/5/27/28	0/3/3/3
2	OMC	2	3887	2	-	1/9/27/28	0/2/2/2
2	OMG	2	2424	2	-	2/5/27/28	0/3/3/3
2	6MZ	2	4220	2	-	2/5/27/28	0/3/3/3
2	PSU	2	4403	2	-	2/7/25/26	0/2/2/2
2	OMG	2	4870	2	-	3/5/27/28	0/3/3/3
2	OMG	2	1625	2	-	2/5/27/28	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	B9B	2	2754	2	-	2/7/29/30	0/3/3/3
2	OMG	2	1522	2	-	0/5/27/28	0/3/3/3
2	I4U	2	4194	2,49	-	5/9/29/30	0/2/2/2
2	B9H	2	2786	2,49	-	1/12/47/48	0/2/2/2
2	E6G	2	4355	2	-	2/6/28/29	0/3/3/3
2	A2M	2	1524	2	-	0/5/27/28	0/3/3/3
2	B8Q	2	1456	2	-	1/7/42/43	0/2/2/2
2	B8W	2	4129	2	-	2/5/27/28	0/3/3/3
2	A2M	2	2401	2	-	0/5/27/28	0/3/3/3
2	OMG	2	4196	2	-	0/5/27/28	0/3/3/3
2	P7G	2	1909	2	-	2/10/40/41	0/3/3/3
2	OMG	2	1316	2,49	-	0/5/27/28	0/3/3/3
2	PSU	2	1683	2	-	0/7/25/26	0/2/2/2
2	PSU	2	3729	2	-	2/7/25/26	0/2/2/2
2	A2M	2	3867	2	-	4/5/27/28	0/3/3/3
2	B8T	2	4671	2	-	2/7/27/28	0/2/2/2
2	7MG	2	1605	2	-	0/7/37/38	0/3/3/3
2	OMG	2	2050	2	-	0/5/27/28	0/3/3/3
2	P4U	2	1348	2	-	1/10/29/30	0/2/2/2
2	BGH	2	3899	2	-	1/13/43/44	0/3/3/3
2	OMC	2	2365	2,49	-	0/9/27/28	0/2/2/2
2	B8K	2	4690	2	-	0/11/41/42	0/3/3/3
2	B8H	2	1860	2	-	2/7/25/26	0/2/2/2
2	PSU	2	4293	2	-	2/7/25/26	0/2/2/2
2	OMC	2	3701	2,49	-	4/9/27/28	0/2/2/2
2	OMG	2	2364	2	-	2/5/27/28	0/3/3/3
2	B8W	2	4185	2	-	2/5/27/28	0/3/3/3
2	A2M	2	1534	2,49	-	3/5/27/28	0/3/3/3
2	A2M	2	4523	2	-	2/5/27/28	0/3/3/3
2	OMG	2	1883	2	-	2/5/27/28	0/3/3/3
2	B8W	2	4472	2	-	2/5/27/28	0/3/3/3
2	OMC	2	2804	2	-	0/9/27/28	0/2/2/2
2	MHG	2	4371	2	-	9/16/46/47	0/3/3/3

The worst 5 of 665 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	2	4529	B8W	O4'-C1'	17.99	1.66	1.41

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	2	4472	B8W	O4'-C1'	17.81	1.65	1.41
2	2	4129	B8W	O4'-C1'	17.66	1.65	1.41
2	2	2380	B8W	O4'-C1'	17.43	1.65	1.41
2	2	4185	B8W	O4'-C1'	17.22	1.65	1.41

The worst 5 of 416 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	2	4564	M7A	C5-C6-N6	13.64	147.03	123.74
2	2	4220	6MZ	C1'-N9-C4	-12.78	104.18	126.64
2	2	4083	5MU	C5-C4-N3	11.90	125.47	115.31
2	2	4564	M7A	N6-C6-N1	-11.41	93.35	118.35
2	2	2363	A2M	C5-C6-N6	10.14	135.76	120.35

There are no chirality outliers.

5 of 128 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
7	8	14	OMU	C1'-C2'-O2'-CM2
2	2	237	B9B	C5-C6-O6-C61
2	2	237	B9B	N1-C6-O6-C61
2	2	237	B9B	C3'-C4'-C5'-O5'
2	2	237	B9B	O4'-C4'-C5'-O5'

There are no ring outliers.

26 monomers are involved in 31 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	2	3718	A2M	2	0
2	2	729	2MG	2	0
2	2	1517	2MG	1	0
2	2	1797	E7G	1	0
2	2	2380	B8W	2	0
2	2	3897	B8K	1	0
2	2	4637	OMG	1	0
2	2	4636	PSU	1	0
2	2	4623	OMG	1	0
2	2	373	OMG	1	0
2	2	4529	B8W	2	0
7	8	14	OMU	1	0
2	2	4296	B8H	1	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	2	1574	B9B	1	0
2	2	2522	7MG	1	0
2	2	3887	OMC	1	0
2	2	4220	6MZ	1	0
2	2	4129	B8W	1	0
2	2	3867	A2M	1	0
2	2	3899	BGH	2	0
2	2	4690	B8K	1	0
2	2	1860	B8H	1	0
2	2	2364	OMG	1	0
2	2	4185	B8W	1	0
2	2	1883	OMG	1	0
2	2	4472	B8W	1	0

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 250 ligands modelled in this entry, 250 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

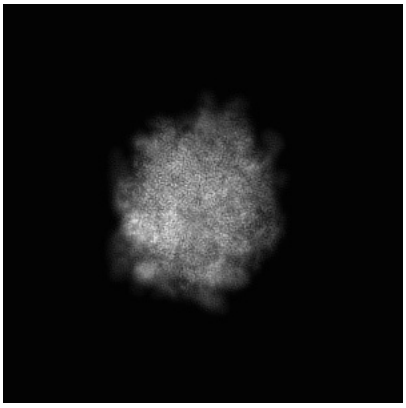
6 Map visualisation (i)

This section contains visualisations of the EMDB entry EMD-0964. These allow visual inspection of the internal detail of the map and identification of artifacts.

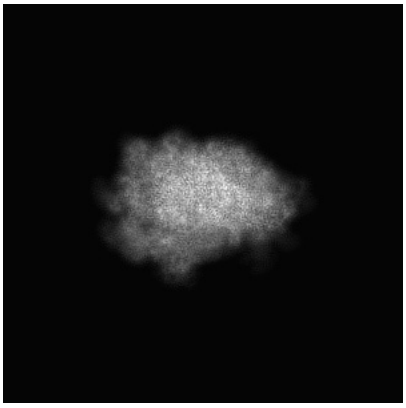
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections (i)

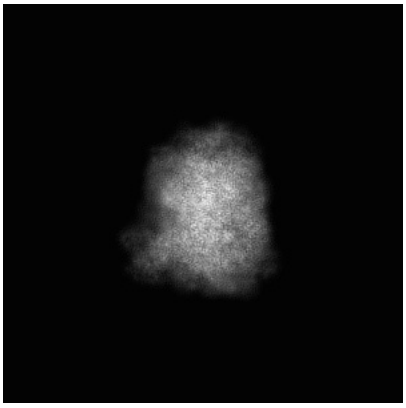
6.1.1 Primary map



X



Y

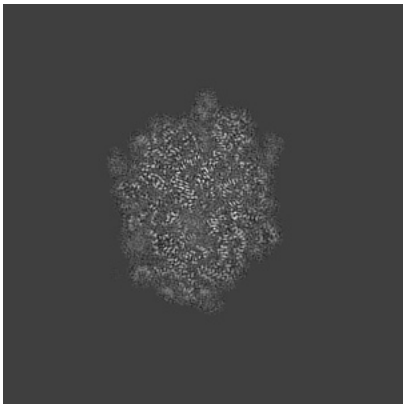


Z

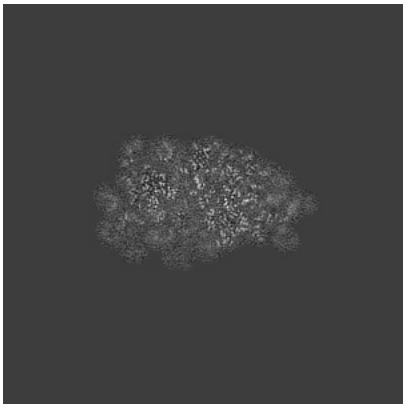
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

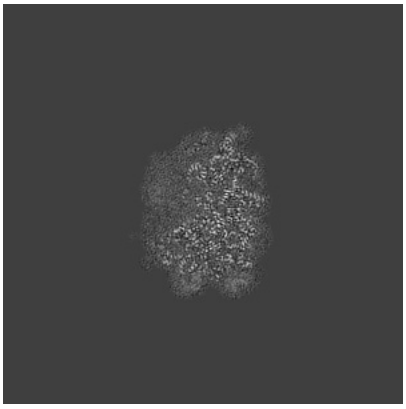
6.2.1 Primary map



X Index: 240



Y Index: 240

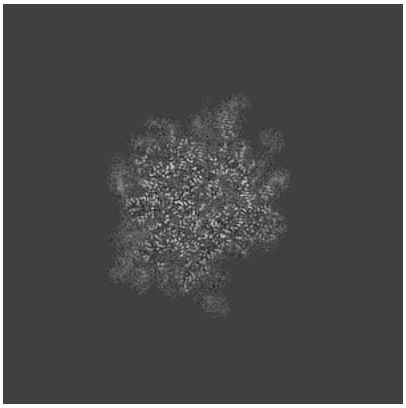


Z Index: 240

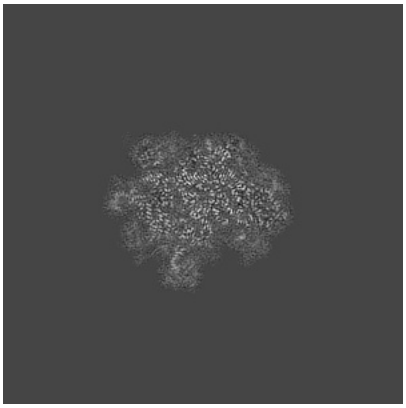
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

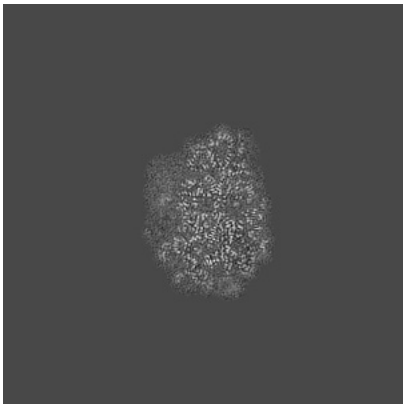
6.3.1 Primary map



X Index: 258



Y Index: 201

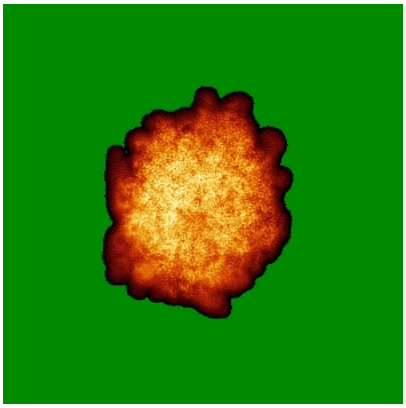


Z Index: 252

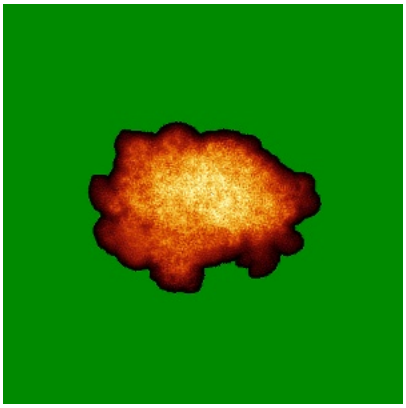
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) (i)

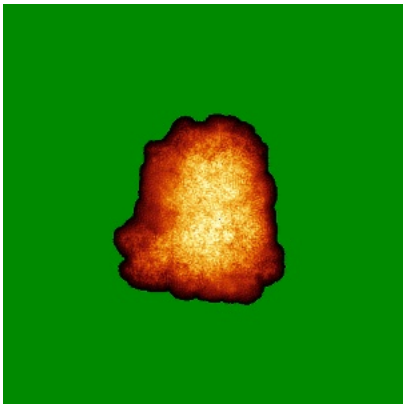
6.4.1 Primary map



X



Y



Z

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

6.5 Orthogonal surface views (i)

6.5.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.065. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

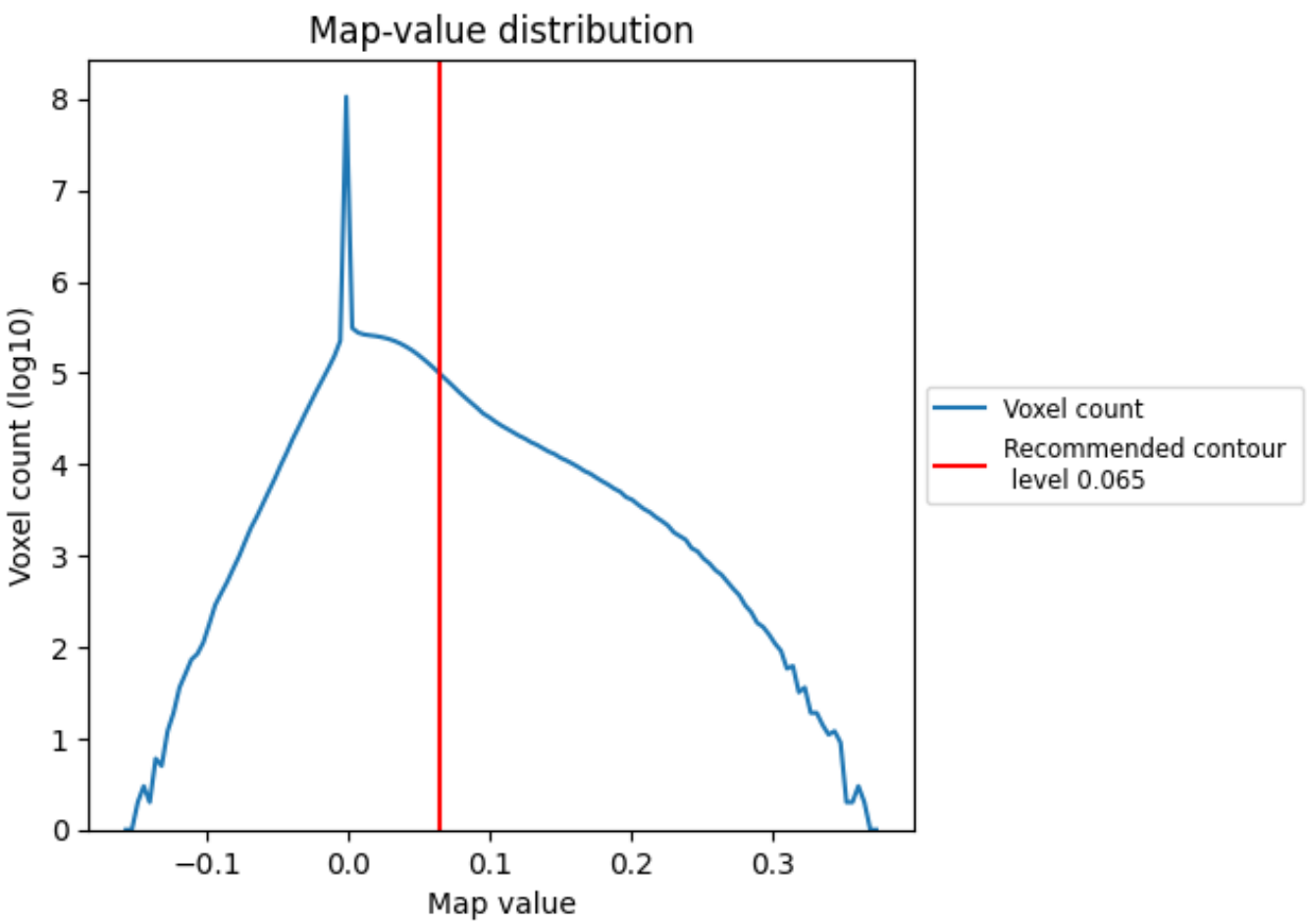
6.6 Mask visualisation (i)

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

7 Map analysis (i)

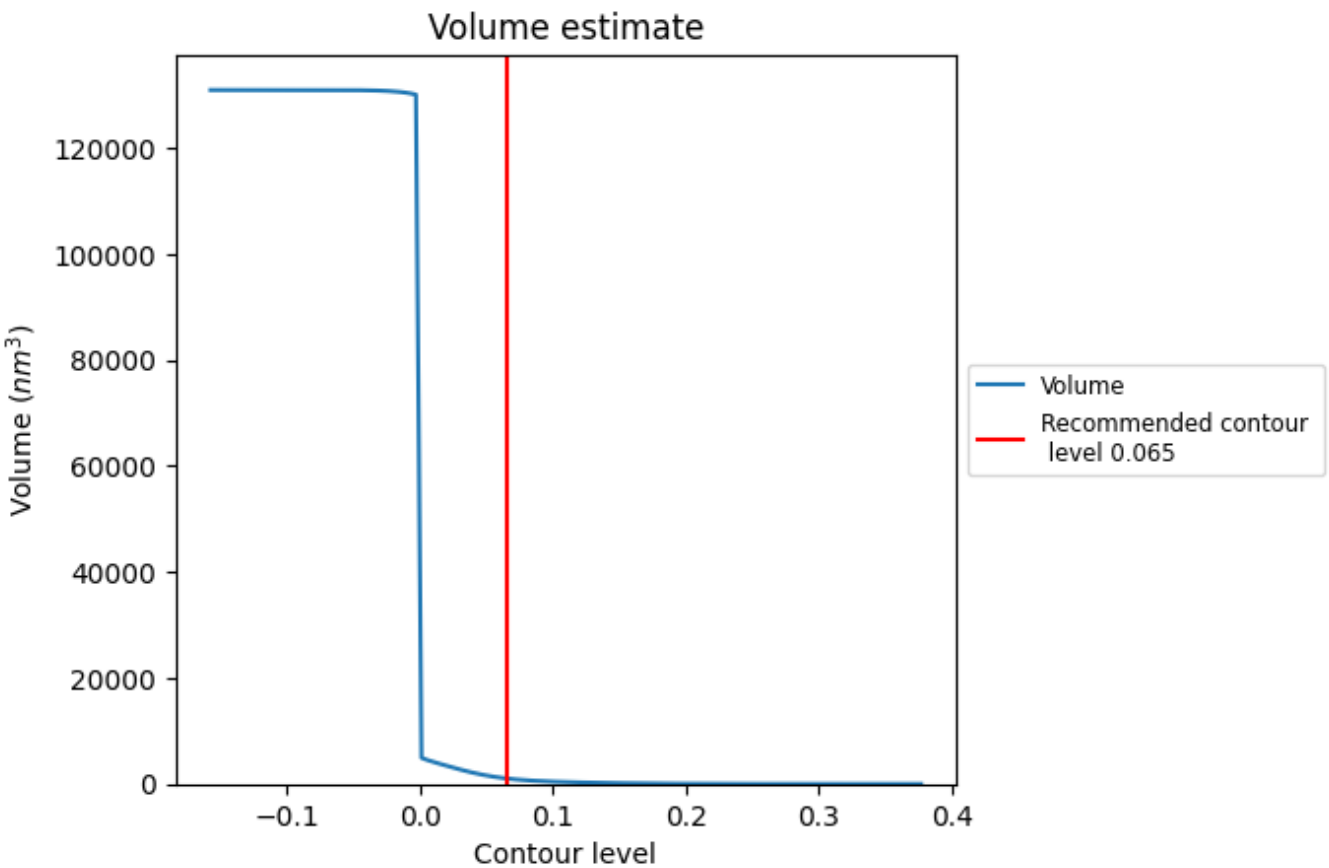
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution (i)



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

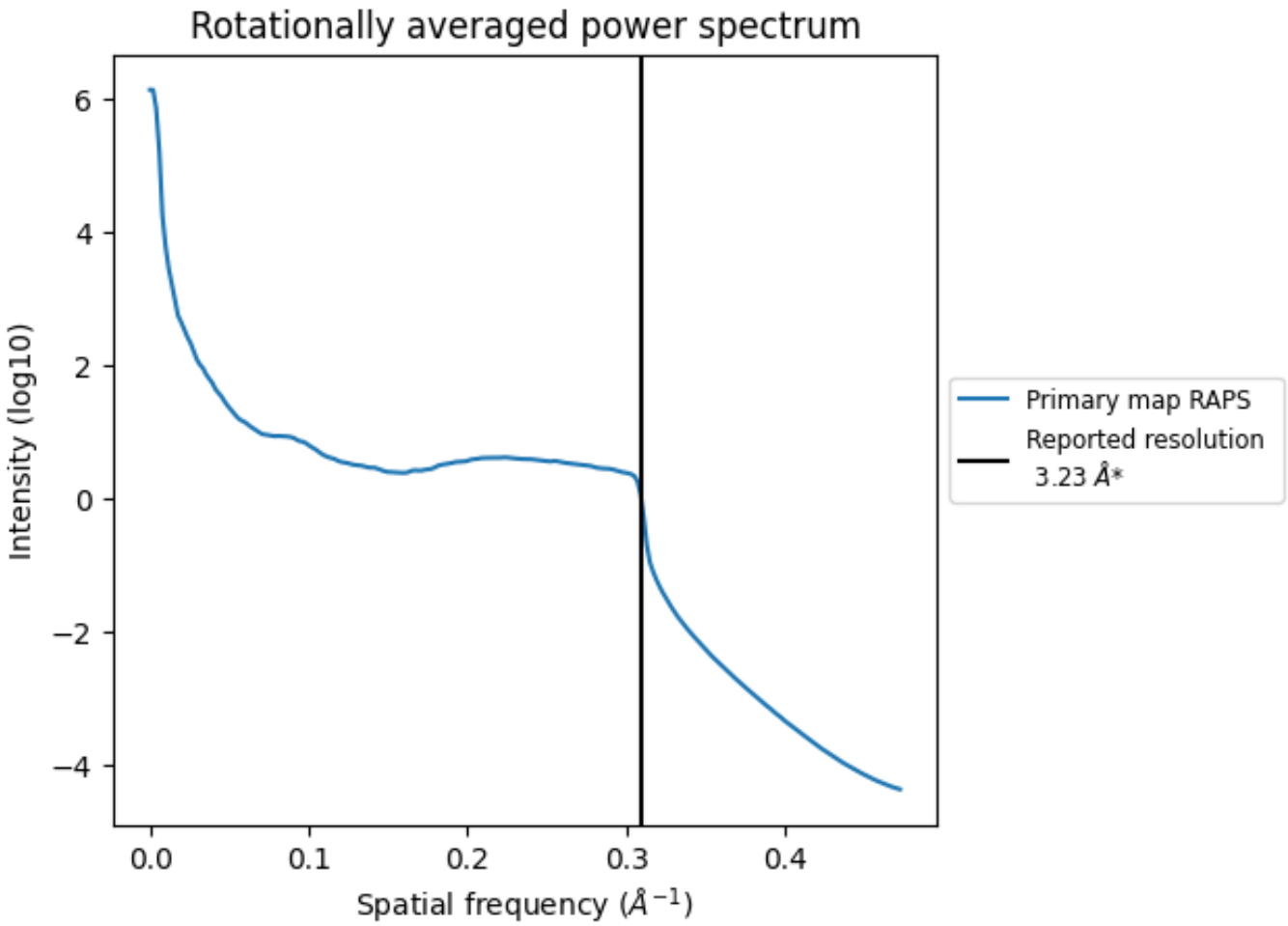
7.2 Volume estimate (i)



The volume at the recommended contour level is 1045 nm^3; this corresponds to an approximate mass of 944 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 0.310 Å^{-1}

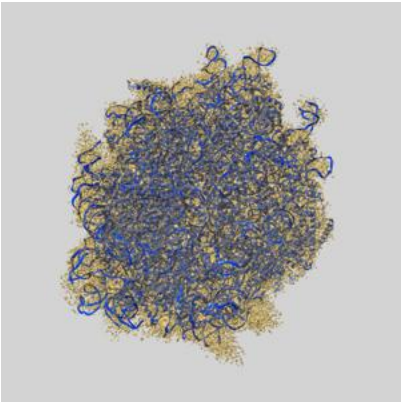
8 Fourier-Shell correlation (i)

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

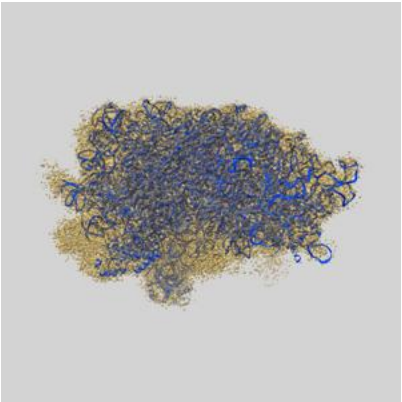
9 Map-model fit (i)

This section contains information regarding the fit between EMDB map EMD-0964 and PDB model 6LSS. Per-residue inclusion information can be found in section 3 on page 13.

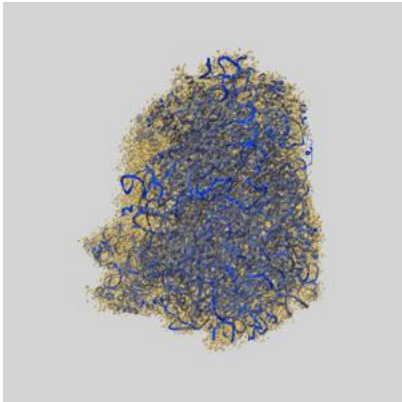
9.1 Map-model overlay (i)



X



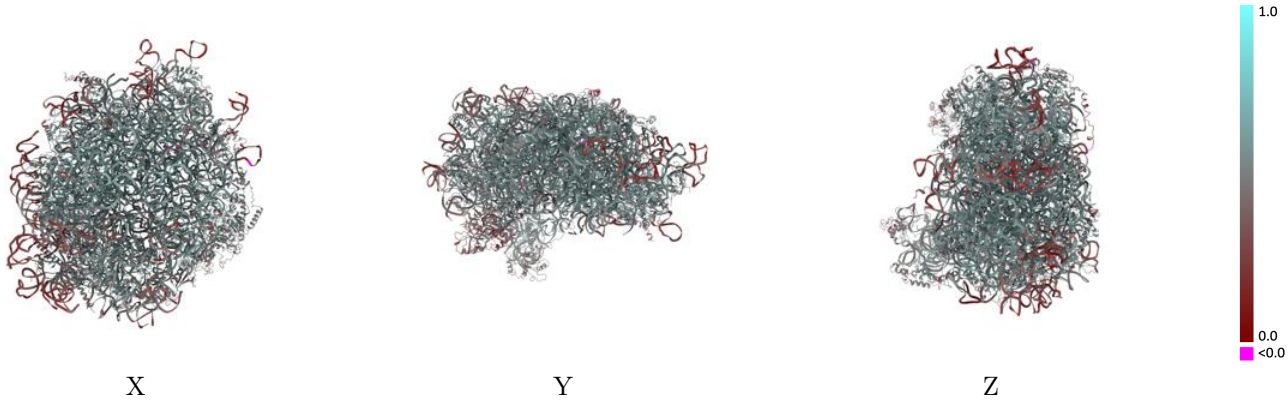
Y



Z

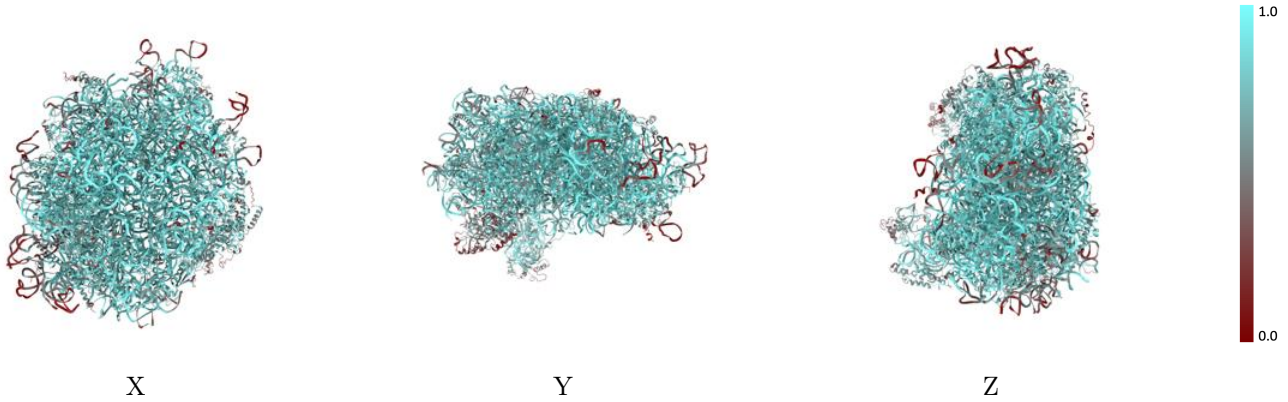
The images above show the 3D surface view of the map at the recommended contour level 0.065 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model (i)



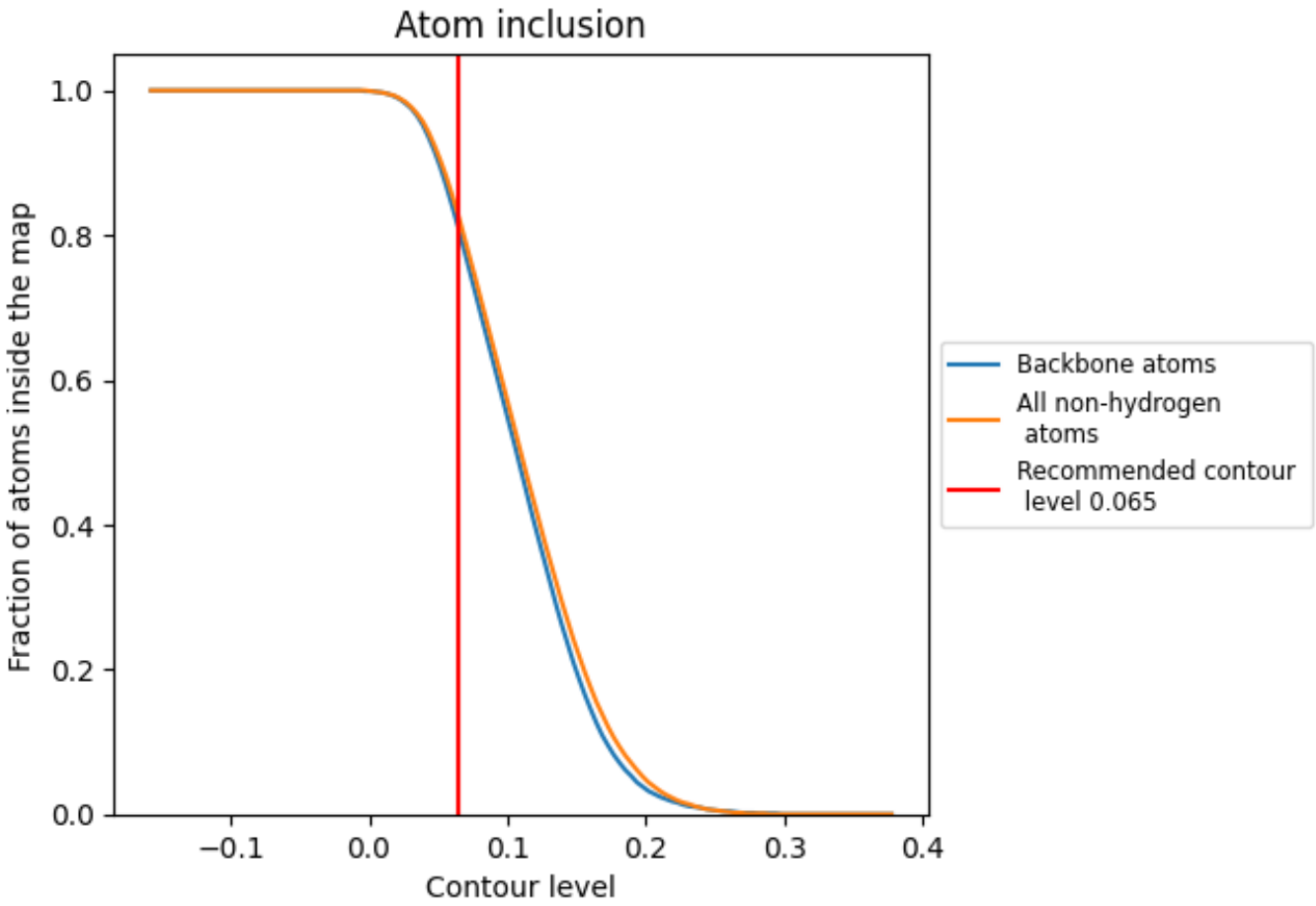
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

9.3 Atom inclusion mapped to coordinate model (i)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.065).

9.4 Atom inclusion (i)



At the recommended contour level, 81% of all backbone atoms, 82% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (0.065) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8240	0.5150
1	0.2250	0.3490
2	0.8480	0.5010
4	0.6350	0.4600
5	0.9100	0.5160
6	0.7040	0.5070
7	0.7970	0.5370
8	0.9110	0.5400
9	0.7750	0.5180
B	0.8620	0.5620
C	0.7330	0.4790
D	0.8830	0.5660
E	0.7150	0.5260
F	0.8560	0.5530
G	0.7140	0.5090
H	0.8140	0.5490
I	0.7600	0.5200
K	0.7830	0.5200
L	0.8970	0.5790
M	0.9440	0.5800
N	0.5780	0.4230
O	0.6800	0.5060
P	0.9170	0.5750
Q	0.7950	0.5280
R	0.4480	0.3980
S	0.8330	0.5430
U	0.9310	0.5890
V	0.8710	0.5640
W	0.8190	0.5370
X	0.8240	0.5460
Y	0.8960	0.5710
Z	0.8960	0.5800
a	0.8370	0.5550
b	0.8760	0.5710
c	0.8610	0.5510

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Chain	Atom inclusion	Q-score
d	0.7340	0.5120
e	0.8380	0.5350
g	0.8310	0.5480
h	0.8250	0.5530
i	0.7730	0.5370
j	0.8160	0.5480
k	0.8930	0.5780
l	0.8540	0.5610
m	0.8810	0.5670
n	0.9040	0.5820
o	0.7010	0.4950
p	0.8580	0.5540
r	0.6740	0.4820
z	0.7400	0.5190