



wwPDB EM Validation Summary Report ⓘ

Jul 7, 2024 – 10:53 pm BST

PDB ID : 7OYB
EMDB ID : EMD-13112
Title : Cryo-EM structure of the 6 hpf zebrafish embryo 80S ribosome
Authors : Leesch, F.; Lorenzo-Orts, L.; Grishkovskaya, I.; Kandolf, S.; Belacic, K.; Meinhart, A.; Haselbach, D.; Pauli, A.
Deposited on : 2021-06-24
Resolution : 2.40 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 ⓘ 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:

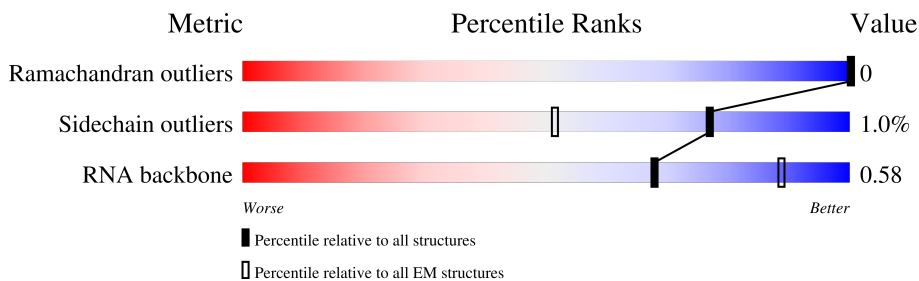
EMDB validation analysis : 0.0.1.dev92
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.37.1

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 2.40 Å.

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



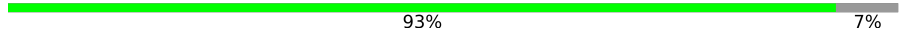

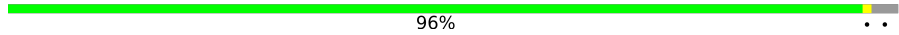


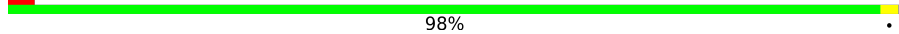



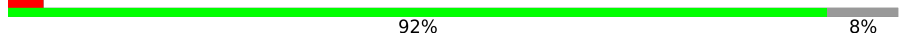
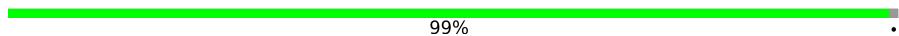
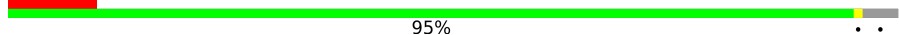
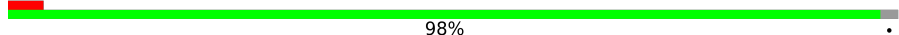
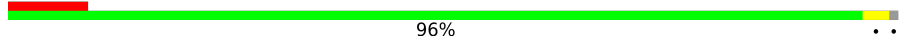



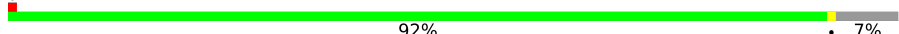

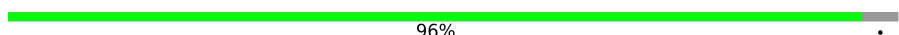
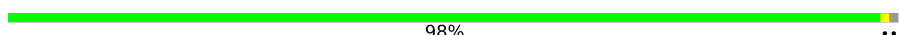
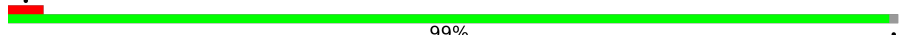
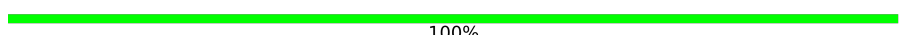


| Metric | Whole archive (#Entries) | EM structures (#Entries) |
|-----------------------|--------------------------|--------------------------|
| Ramachandran outliers | 154571 | 4023 |
| Sidechain outliers | 154315 | 3826 |
| RNA backbone | 4643 | 859 |

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 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 | 22 | 1939 | |
| 2 | 51 | 4269 | |
| 3 | 71 | 120 | |
| 4 | 81 | 158 | |
| 5 | A1 | 257 | |
| 6 | A2 | 308 | |
| 7 | B1 | 403 | |
| 8 | B2 | 267 | |


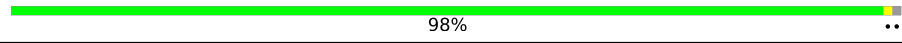


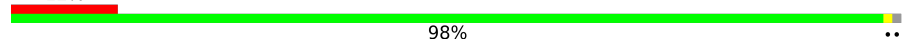
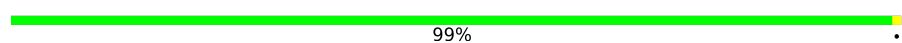

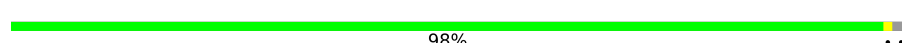
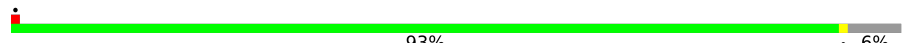


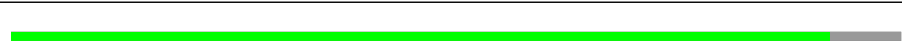



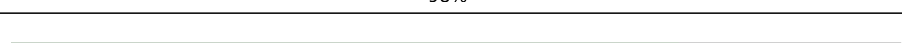
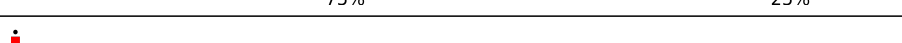
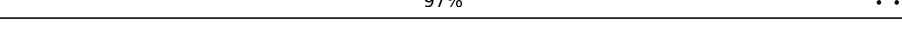

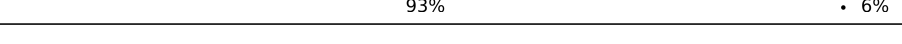
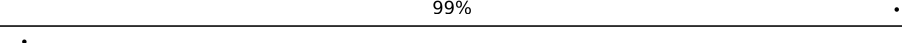
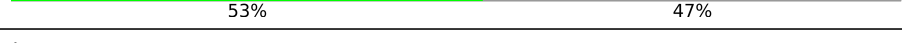
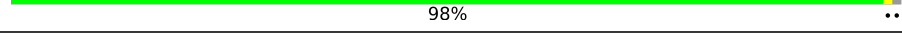


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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|---|
| 9 | C1 | 375 |  93% 7% |
| 10 | C2 | 280 |  74% 24% |
| 11 | D1 | 296 |  96% |
| 12 | D2 | 245 |  6% 90% 10% |
| 13 | E1 | 265 |  77% 22% |
| 14 | E2 | 263 |  98% |
| 15 | F1 | 246 |  89% 10% |
| 16 | F2 | 204 |  90% 10% |
| 17 | G1 | 266 |  77% 22% |
| 18 | G2 | 249 |  92% 8% |
| 19 | H1 | 192 |  99% |
| 20 | H2 | 194 |  10% 95% |
| 21 | I1 | 215 |  98% |
| 22 | I2 | 208 |  9% 96% |
| 23 | J1 | 178 |  93% 6% |
| 24 | J2 | 194 |  93% 7% |
| 25 | K2 | 166 |  55% 44% |
| 26 | L1 | 211 |  92% 7% |
| 27 | L2 | 159 |  5% 82% 16% |
| 28 | M1 | 139 |  96% |
| 29 | N1 | 204 |  98% |
| 30 | N2 | 151 |  99% |
| 31 | O1 | 205 |  100% |
| 32 | O2 | 151 |  82% 17% |
| 33 | P1 | 184 |  82% 17% |




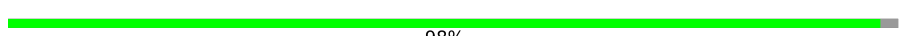




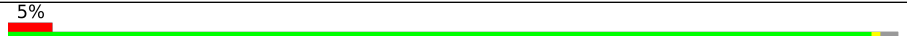

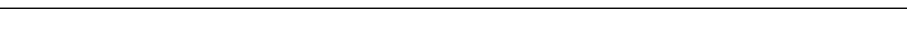
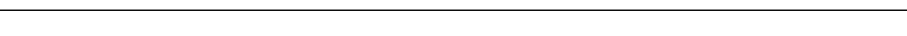
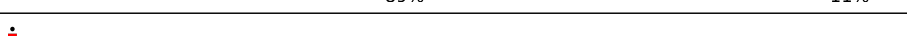
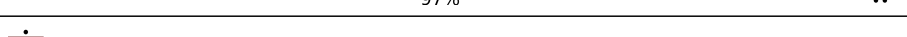
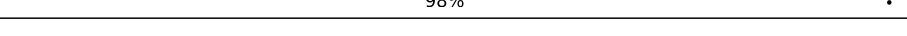
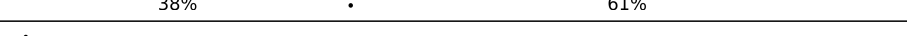
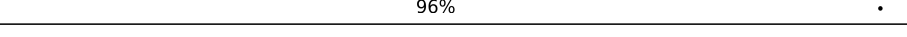
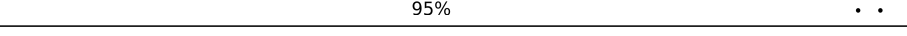
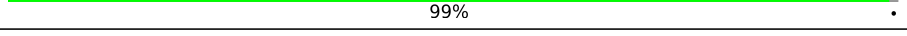
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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|--|
| 34 | P2 | 145 |  79% 20% |
| 35 | Q1 | 182 |  98% |
| 36 | Q2 | 146 |  90% 8% |
| 37 | R1 | 196 |  84% 15% |
| 38 | R2 | 134 |  12% 98% |
| 39 | S1 | 176 |  99% |
| 40 | S2 | 152 |  89% 11% |
| 41 | T1 | 160 |  98% |
| 42 | T2 | 146 |  93% 6% |
| 43 | U1 | 141 |  67% 31% |
| 44 | U2 | 119 |  82% 18% |
| 45 | V1 | 140 |  92% 8% |
| 46 | V2 | 81 |  99% |
| 47 | W1 | 157 |  38% 62% |
| 48 | W2 | 130 |  98% |
| 49 | X1 | 155 |  75% 25% |
| 50 | X2 | 143 |  97% |
| 51 | Y1 | 145 |  83% 16% |
| 52 | Y2 | 132 |  5% 93% 6% |
| 53 | Z1 | 136 |  99% |
| 54 | Z2 | 124 |  53% 47% |
| 55 | a1 | 148 |  98% |
| 56 | a2 | 115 |  84% 15% |
| 57 | b1 | 64 |  75% 23% |
| 58 | b2 | 84 |  96% |

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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|---|
| 59 | c1 | 117 |  78% 21% |
| 60 | c2 | 69 |  87% 12% 6% |
| 61 | d1 | 123 |  86% 13% |
| 62 | d2 | 56 |  98% |
| 63 | e1 | 135 |  93% 7% |
| 64 | e2 | 133 |  37% 62% |
| 65 | f1 | 110 |  97% |
| 66 | g1 | 117 |  88% 11% |
| 67 | g2 | 317 |  97% 5% |
| 68 | h1 | 123 |  96% |
| 69 | i1 | 105 |  92% 7% |
| 70 | j1 | 97 |  89% 11% |
| 71 | k1 | 70 |  97% |
| 72 | l1 | 50 |  98% |
| 73 | m1 | 128 |  38% 61% |
| 74 | n1 | 25 |  96% |
| 75 | o1 | 106 |  95% |
| 76 | p1 | 92 |  99% |
| 77 | r1 | 138 |  85% 14% |

2 Entry composition [i](#)

There are 79 unique types of molecules in this entry. The entry contains 194863 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 18S rRNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-------|------|-------|------|---------|-------|
| | | | Total | C | N | O | P | | |
| 1 | 22 | 1502 | 32102 | 14330 | 5809 | 10462 | 1501 | 0 | 0 |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-------|-------|-------|------|---------|-------|
| | | | Total | C | N | O | P | | |
| 2 | 51 | 3263 | 69917 | 31143 | 12776 | 22736 | 3262 | 0 | 0 |

- Molecule 3 is a RNA chain called 5S rRNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|-----|---------|-------|
| | | | Total | C | N | O | P | | |
| 3 | 71 | 120 | 2563 | 1145 | 465 | 834 | 119 | 0 | 0 |

- Molecule 4 is a RNA chain called 5.8S rRNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|------|-----|---------|-------|
| | | | Total | C | N | O | P | | |
| 4 | 81 | 150 | 3199 | 1427 | 574 | 1048 | 150 | 0 | 0 |

- Molecule 5 is a protein called 60S ribosomal protein L8.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 5 | A1 | 245 | 1879 | 1181 | 381 | 310 | 7 | 0 | 0 |

- Molecule 6 is a protein called 40S ribosomal protein SA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 6 | A2 | 210 | 1665 | 1061 | 290 | 305 | 9 | 0 | 0 |

- Molecule 7 is a protein called Ribosomal protein L3.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| | | | Total | C | N | O | S | | |
| 7 | B1 | 394 | 3181 | 2021 | 600 | 544 | 16 | 0 | 0 |

- Molecule 8 is a protein called 40S ribosomal protein S3a.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| | | | Total | C | N | O | S | | |
| 8 | B2 | 213 | 1730 | 1097 | 310 | 309 | 14 | 0 | 0 |

- Molecule 9 is a protein called Ribosomal protein L4.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| | | | Total | C | N | O | S | | |
| 9 | C1 | 348 | 2774 | 1741 | 551 | 464 | 18 | 0 | 0 |

- Molecule 10 is a protein called 40S ribosomal protein S2.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 10 | C2 | 213 | 1651 | 1069 | 283 | 290 | 9 | 0 | 0 |

- Molecule 11 is a protein called Ribosomal protein L5b.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| | | | Total | C | N | O | S | | |
| 11 | D1 | 288 | 2337 | 1482 | 429 | 415 | 11 | 0 | 0 |

- Molecule 12 is a protein called DNA-(apurinic or apyrimidinic site) lyase.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 12 | D2 | 221 | 1713 | 1091 | 309 | 306 | 7 | 0 | 0 |

- Molecule 13 is a protein called 60S ribosomal protein L6.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 13 | E1 | 206 | 1671 | 1065 | 327 | 272 | 7 | 0 | 0 |

- Molecule 14 is a protein called 40S ribosomal protein S4, X isoform.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 14 | E2 | 261 | Total | C | N | O | S | 0 | 0 |
| | | | 2070 | 1320 | 385 | 357 | 8 | | |

- Molecule 15 is a protein called Ribosomal protein L7.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 15 | F1 | 222 | Total | C | N | O | S | 0 | 0 |
| | | | 1811 | 1160 | 346 | 298 | 7 | | |

- Molecule 16 is a protein called Ribosomal protein S5.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 16 | F2 | 183 | Total | C | N | O | S | 0 | 0 |
| | | | 1442 | 904 | 268 | 264 | 6 | | |

- Molecule 17 is a protein called 60S ribosomal protein L7a.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 17 | G1 | 207 | Total | C | N | O | S | 0 | 0 |
| | | | 1683 | 1076 | 322 | 281 | 4 | | |

- Molecule 18 is a protein called 40S ribosomal protein S6.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 18 | G2 | 230 | Total | C | N | O | S | 0 | 0 |
| | | | 1864 | 1163 | 375 | 319 | 7 | | |

- Molecule 19 is a protein called 60S ribosomal protein L9.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 19 | H1 | 190 | Total | C | N | O | S | 0 | 0 |
| | | | 1505 | 949 | 279 | 271 | 6 | | |

- Molecule 20 is a protein called 40S ribosomal protein S7.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 20 | H2 | 186 | Total | C | N | O | S | 0 | 0 |
| | | | 1492 | 952 | 276 | 264 | | | |

- Molecule 21 is a protein called 60S ribosomal protein L10.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| | | | Total | C | N | O | S | | |
| 21 | I1 | 211 | 1699 | 1076 | 329 | 279 | 15 | 0 | 0 |

- Molecule 22 is a protein called 40S ribosomal protein S8.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 22 | I2 | 206 | 1666 | 1047 | 329 | 285 | 5 | 0 | 0 |

- Molecule 23 is a protein called 60S ribosomal protein L11.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 23 | J1 | 167 | 1348 | 854 | 254 | 235 | 5 | 0 | 0 |

- Molecule 24 is a protein called 40S ribosomal protein S9.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 24 | J2 | 180 | 1492 | 952 | 295 | 243 | 2 | 0 | 0 |

- Molecule 25 is a protein called Ribosomal protein S10.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 25 | K2 | 93 | 769 | 507 | 131 | 127 | 4 | 0 | 0 |

- Molecule 26 is a protein called 60S ribosomal protein L13.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 26 | L1 | 197 | 1603 | 1003 | 335 | 260 | 5 | 0 | 0 |

- Molecule 27 is a protein called 40S ribosomal protein S11.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 27 | L2 | 133 | 1086 | 686 | 211 | 183 | 6 | 0 | 0 |

- Molecule 28 is a protein called 60S ribosomal protein L14.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 28 | M1 | 134 | Total | C | N | O | S | 0 | 0 |
| | | | 1094 | 702 | 207 | 180 | 5 | | |

- Molecule 29 is a protein called Ribosomal protein L15.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 29 | N1 | 202 | Total | C | N | O | S | 0 | 0 |
| | | | 1689 | 1065 | 352 | 267 | 5 | | |

- Molecule 30 is a protein called 40S ribosomal protein S13.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 30 | N2 | 149 | Total | C | N | O | S | 0 | 0 |
| | | | 1200 | 767 | 230 | 202 | 1 | | |

- Molecule 31 is a protein called 60S ribosomal protein L13a.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 31 | O1 | 204 | Total | C | N | O | S | 0 | 0 |
| | | | 1662 | 1073 | 318 | 266 | 5 | | |

- Molecule 32 is a protein called Ribosomal protein S14.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 32 | O2 | 126 | Total | C | N | O | S | 0 | 0 |
| | | | 943 | 579 | 186 | 172 | 6 | | |

- Molecule 33 is a protein called 60S ribosomal protein L17.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 33 | P1 | 152 | Total | C | N | O | S | 0 | 0 |
| | | | 1235 | 770 | 243 | 213 | 9 | | |

- Molecule 34 is a protein called 40S ribosomal protein S15.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 34 | P2 | 116 | Total | C | N | O | S | 0 | 0 |
| | | | 957 | 608 | 177 | 165 | 7 | | |

- Molecule 35 is a protein called Ribosomal protein L18.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 35 | Q1 | 180 | 1459 | 917 | 302 | 236 | 4 | 0 | 0 |

- Molecule 36 is a protein called Ribosomal protein S16.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 36 | Q2 | 134 | 1052 | 671 | 196 | 182 | 3 | 0 | 0 |

- Molecule 37 is a protein called 60S ribosomal protein L19.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|----|---------|-------|
| | | | Total | C | N | O | S | | |
| 37 | R1 | 166 | 1381 | 856 | 300 | 215 | 10 | 0 | 0 |

- Molecule 38 is a protein called 40S ribosomal protein S17.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 38 | R2 | 132 | 1068 | 670 | 199 | 195 | 4 | 0 | 0 |

- Molecule 39 is a protein called 60S ribosomal protein L18a.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 39 | S1 | 176 | 1457 | 934 | 284 | 230 | 9 | 0 | 0 |

- Molecule 40 is a protein called 40S ribosomal protein S18.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 40 | S2 | 136 | 1129 | 708 | 228 | 192 | 1 | 0 | 0 |

- Molecule 41 is a protein called 60S ribosomal protein L21.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 41 | T1 | 157 | 1283 | 816 | 250 | 213 | 4 | 0 | 0 |

- Molecule 42 is a protein called 40S ribosomal protein S19.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 42 | T2 | 137 | Total | C | N | O | S | 0 | 0 |
| | | | 1058 | 667 | 202 | 185 | 4 | | |

- Molecule 43 is a protein called Ribosomal protein L22.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 43 | U1 | 97 | Total | C | N | O | S | 0 | 0 |
| | | | 792 | 508 | 138 | 144 | 2 | | |

- Molecule 44 is a protein called 40S ribosomal protein S20.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 44 | U2 | 97 | Total | C | N | O | S | 0 | 0 |
| | | | 754 | 473 | 139 | 138 | 4 | | |

- Molecule 45 is a protein called 60S ribosomal protein L23.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 45 | V1 | 129 | Total | C | N | O | S | 0 | 0 |
| | | | 970 | 613 | 182 | 170 | 5 | | |

- Molecule 46 is a protein called 40S ribosomal protein S21.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 46 | V2 | 81 | Total | C | N | O | S | 0 | 0 |
| | | | 623 | 384 | 116 | 119 | 4 | | |

- Molecule 47 is a protein called 60S ribosomal protein L24.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 47 | W1 | 60 | Total | C | N | O | S | 0 | 0 |
| | | | 503 | 323 | 98 | 80 | 2 | | |

- Molecule 48 is a protein called 40S ribosomal protein S15a.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 48 | W2 | 129 | Total | C | N | O | S | 0 | 0 |
| | | | 1034 | 659 | 193 | 176 | 6 | | |

- Molecule 49 is a protein called Ribosomal protein L23a.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 49 | X1 | 117 | Total | C | N | O | S | 0 | 0 |
| | | | 959 | 614 | 179 | 165 | 1 | | |

- Molecule 50 is a protein called 40S ribosomal protein S23.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 50 | X2 | 139 | Total | C | N | O | S | 0 | 0 |
| | | | 1083 | 684 | 215 | 181 | 3 | | |

- Molecule 51 is a protein called ATPase H⁺ transporting V0 subunit e1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 51 | Y1 | 122 | Total | C | N | O | S | 0 | 0 |
| | | | 1024 | 643 | 209 | 169 | 3 | | |

- Molecule 52 is a protein called 40S ribosomal protein S24.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 52 | Y2 | 124 | Total | C | N | O | S | 0 | 0 |
| | | | 1011 | 643 | 193 | 170 | 5 | | |

- Molecule 53 is a protein called 60S ribosomal protein L27.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 53 | Z1 | 135 | Total | C | N | O | S | 0 | 0 |
| | | | 1105 | 714 | 208 | 179 | 4 | | |

- Molecule 54 is a protein called 40S ribosomal protein S25.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---------|-------|
| 54 | Z2 | 66 | Total | C | N | O | 0 | 0 |
| | | | 529 | 343 | 95 | 91 | | |

- Molecule 55 is a protein called 60S ribosomal protein L27a.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 55 | a1 | 147 | Total | C | N | O | S | 0 | 0 |
| | | | 1164 | 740 | 233 | 188 | 3 | | |

- Molecule 56 is a protein called 40S ribosomal protein S26.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 56 | a2 | 98 | Total | C | N | O | S | 0 | 0 |
| | | | 782 | 486 | 161 | 130 | 5 | | |

- Molecule 57 is a protein called 60S ribosomal protein L29.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 57 | b1 | 49 | Total | C | N | O | S | 0 | 0 |
| | | | 419 | 259 | 92 | 67 | 1 | | |

- Molecule 58 is a protein called 40S ribosomal protein S27.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 58 | b2 | 81 | Total | C | N | O | S | 0 | 0 |
| | | | 636 | 398 | 120 | 111 | 7 | | |

- Molecule 59 is a protein called 60S ribosomal protein L30.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 59 | c1 | 93 | Total | C | N | O | S | 0 | 0 |
| | | | 721 | 457 | 127 | 131 | 6 | | |

- Molecule 60 is a protein called 40S ribosomal protein S28.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 60 | c2 | 61 | Total | C | N | O | S | 0 | 0 |
| | | | 475 | 288 | 94 | 91 | 2 | | |

- Molecule 61 is a protein called 60S ribosomal protein L31.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 61 | d1 | 107 | Total | C | N | O | S | 0 | 0 |
| | | | 888 | 558 | 172 | 156 | 2 | | |

- Molecule 62 is a protein called 40S ribosomal protein S29.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 62 | d2 | 55 | Total | C | N | O | S | 0 | 0 |
| | | | 459 | 285 | 94 | 75 | 5 | | |

- Molecule 63 is a protein called Ribosomal protein L32.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 63 | e1 | 125 | 1030 | 649 | 212 | 163 | 6 | 0 | 0 |

- Molecule 64 is a protein called 40S ribosomal protein S30.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---------|-------|
| | | | Total | C | N | O | | |
| 64 | e2 | 50 | 399 | 244 | 88 | 67 | 0 | 0 |

- Molecule 65 is a protein called 60S ribosomal protein L35a.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 65 | f1 | 107 | 861 | 550 | 171 | 137 | 3 | 0 | 0 |

- Molecule 66 is a protein called 60S ribosomal protein L34.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 66 | g1 | 104 | 833 | 519 | 172 | 136 | 6 | 0 | 0 |

- Molecule 67 is a protein called Guanine nucleotide-binding protein subunit beta-2-like 1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| | | | Total | C | N | O | S | | |
| 67 | g2 | 310 | 2394 | 1507 | 418 | 457 | 12 | 0 | 0 |

- Molecule 68 is a protein called 60S ribosomal protein L35.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 68 | h1 | 120 | 991 | 627 | 197 | 165 | 2 | 0 | 0 |

- Molecule 69 is a protein called 60S ribosomal protein L36.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 69 | i1 | 98 | 801 | 502 | 170 | 125 | 4 | 0 | 0 |

- Molecule 70 is a protein called Ribosomal protein L37.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 70 | j1 | 86 | Total | C | N | O | S | 0 | 0 |
| | | | 701 | 430 | 155 | 110 | 6 | | |

- Molecule 71 is a protein called 60S ribosomal protein L38.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|----|---|---------|-------|
| 71 | k1 | 69 | Total | C | N | O | S | 0 | 0 |
| | | | 569 | 366 | 103 | 99 | 1 | | |

- Molecule 72 is a protein called Ribosomal protein L39.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 72 | l1 | 49 | Total | C | N | O | S | 0 | 0 |
| | | | 434 | 275 | 97 | 61 | 1 | | |

- Molecule 73 is a protein called 60S ribosomal protein L40.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 73 | m1 | 50 | Total | C | N | O | S | 0 | 0 |
| | | | 413 | 256 | 87 | 64 | 6 | | |

- Molecule 74 is a protein called Rpl41.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 74 | n1 | 24 | Total | C | N | O | S | 0 | 0 |
| | | | 231 | 140 | 63 | 26 | 2 | | |

- Molecule 75 is a protein called 60S ribosomal protein L36a.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 75 | o1 | 102 | Total | C | N | O | S | 0 | 0 |
| | | | 840 | 526 | 172 | 136 | 6 | | |

- Molecule 76 is a protein called Zgc:171772.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 76 | p1 | 91 | Total | C | N | O | S | 0 | 0 |
| | | | 703 | 444 | 132 | 120 | 7 | | |

- Molecule 77 is a protein called 60S ribosomal protein L28.

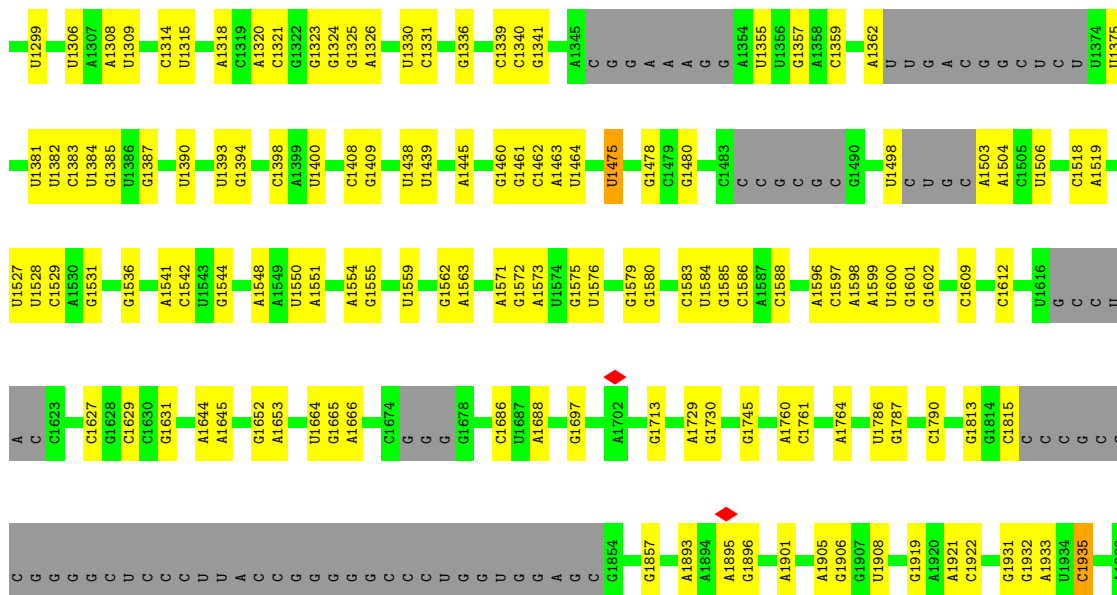
| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 77 | r1 | 118 | Total | C | N | O | S | 0 | 0 |
| | | | 943 | 589 | 193 | 159 | 2 | | |

- Molecule 78 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

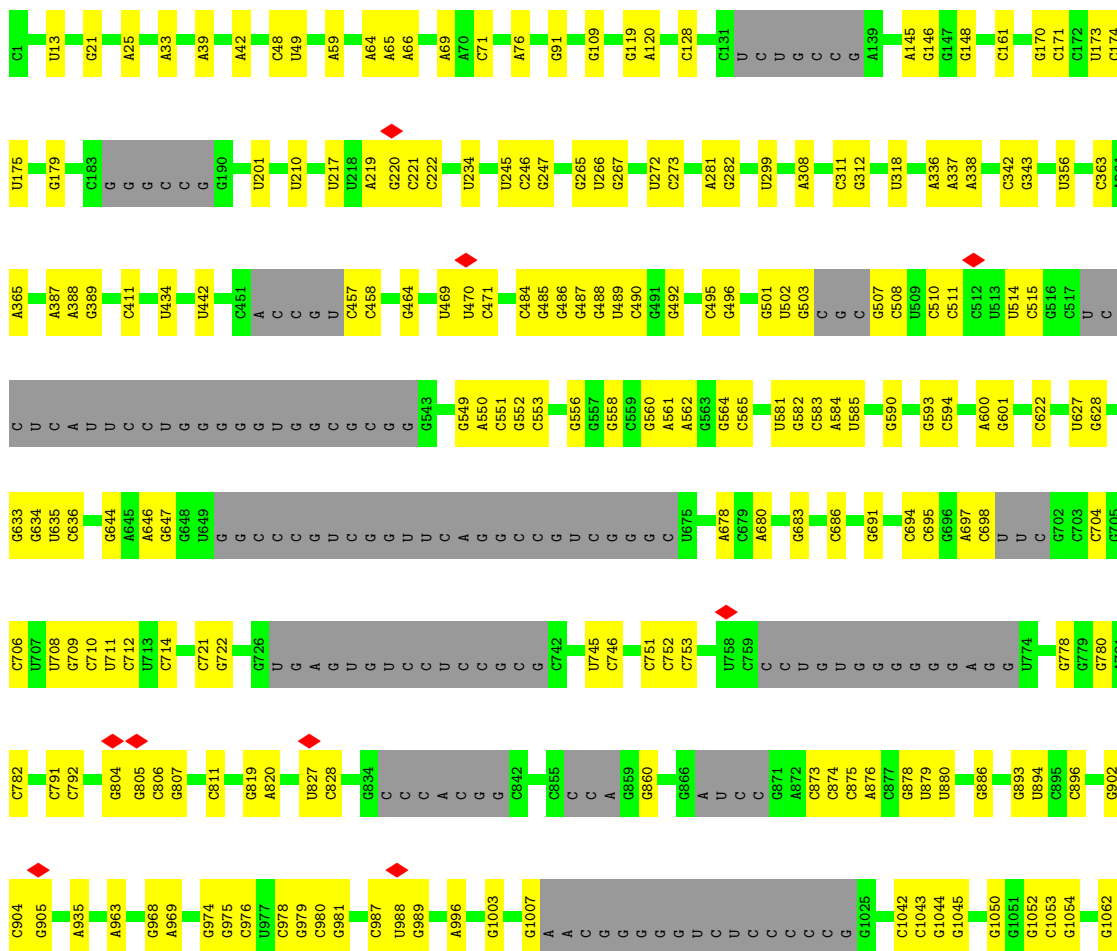
| Mol | Chain | Residues | Atoms | | AltConf |
|-----|-------|----------|-------|-----|---------|
| 78 | 51 | 189 | Total | Mg | 0 |
| | | | 189 | 189 | |
| 78 | 71 | 3 | Total | Mg | 0 |
| | | | 3 | 3 | |
| 78 | 81 | 4 | Total | Mg | 0 |
| | | | 4 | 4 | |
| 78 | A1 | 2 | Total | Mg | 0 |
| | | | 2 | 2 | |
| 78 | B1 | 1 | Total | Mg | 0 |
| | | | 1 | 1 | |
| 78 | V1 | 1 | Total | Mg | 0 |
| | | | 1 | 1 | |
| 78 | b1 | 1 | Total | Mg | 0 |
| | | | 1 | 1 | |
| 78 | e1 | 1 | Total | Mg | 0 |
| | | | 1 | 1 | |
| 78 | m1 | 1 | Total | Mg | 0 |
| | | | 1 | 1 | |

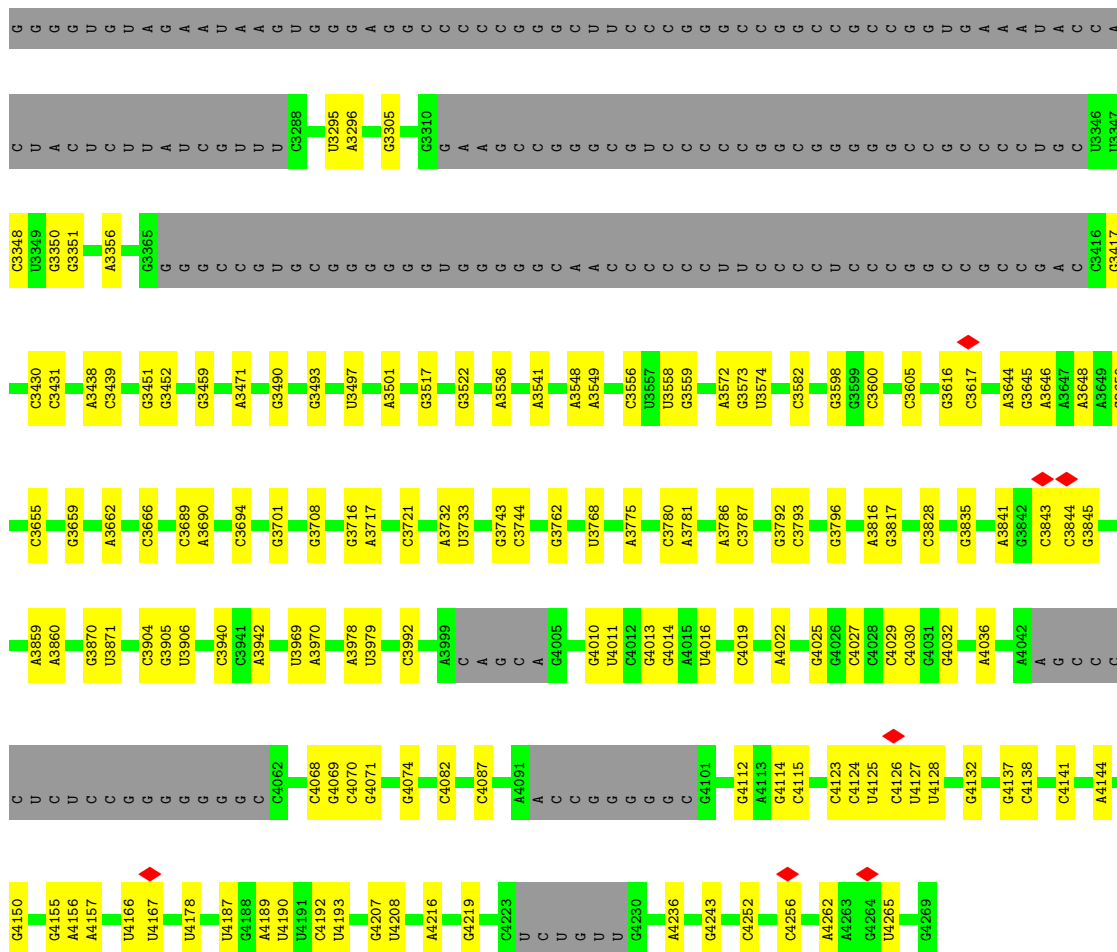
- Molecule 79 is ZINC ION (three-letter code: ZN) (formula: Zn).

| Mol | Chain | Residues | Atoms | | AltConf |
|-----|-------|----------|-------|----|---------|
| 79 | a2 | 1 | Total | Zn | 0 |
| | | | 1 | 1 | |
| 79 | d2 | 1 | Total | Zn | 0 |
| | | | 1 | 1 | |
| 79 | g1 | 1 | Total | Zn | 0 |
| | | | 1 | 1 | |
| 79 | j1 | 1 | Total | Zn | 0 |
| | | | 1 | 1 | |
| 79 | m1 | 1 | Total | Zn | 0 |
| | | | 1 | 1 | |
| 79 | o1 | 1 | Total | Zn | 0 |
| | | | 1 | 1 | |
| 79 | p1 | 1 | Total | Zn | 0 |
| | | | 1 | 1 | |

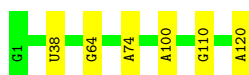


● Molecule 2: 28S rRNA

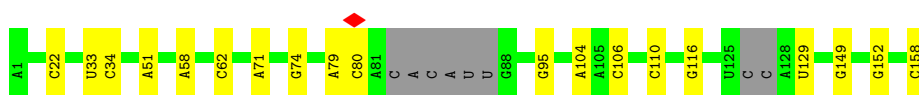
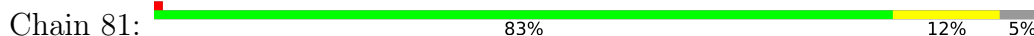




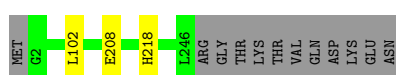
• Molecule 3: 5S rRNA



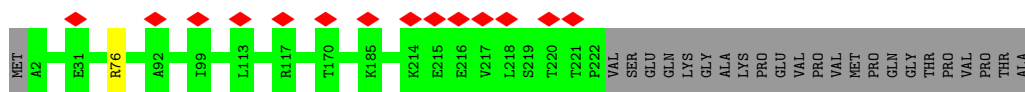
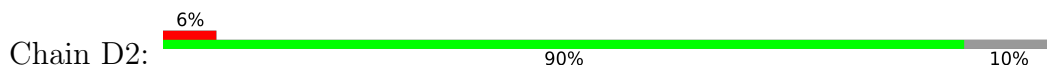
• Molecule 4: 5.8S rRNA



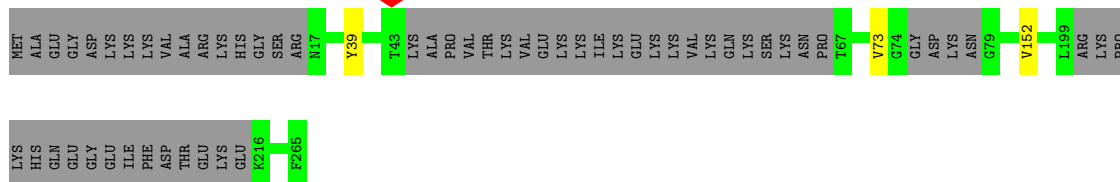
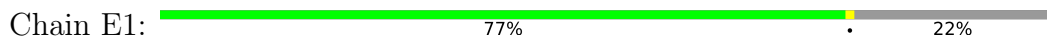
• Molecule 5: 60S ribosomal protein L8



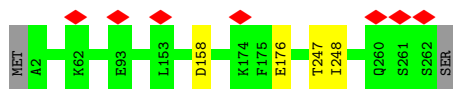
• Molecule 6: 40S ribosomal protein SA



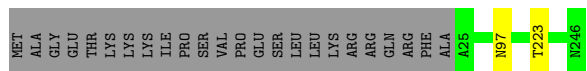
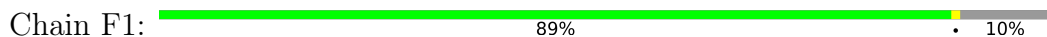
- Molecule 13: 60S ribosomal protein L6



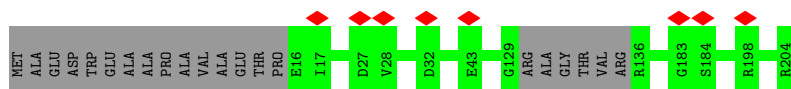
- Molecule 14: 40S ribosomal protein S4, X isoform



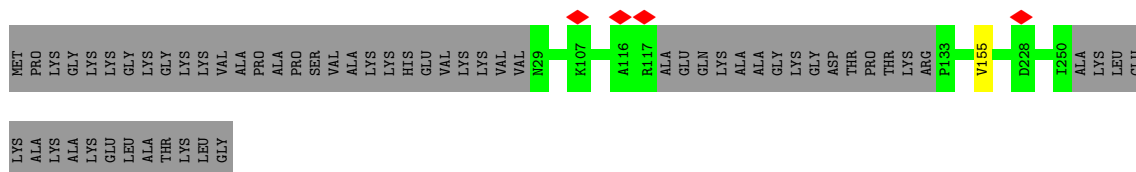
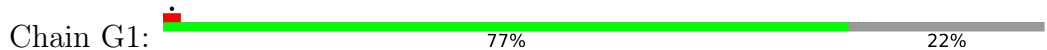
- Molecule 15: Ribosomal protein L7



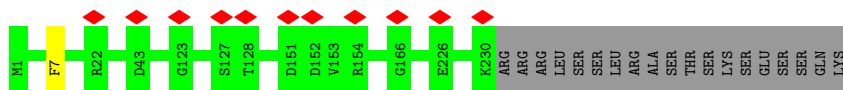
- Molecule 16: Ribosomal protein S5



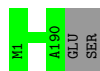
- Molecule 17: 60S ribosomal protein L7a



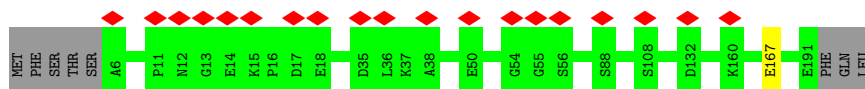
- Molecule 18: 40S ribosomal protein S6



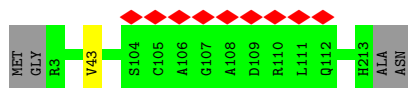
- Molecule 19: 60S ribosomal protein L9



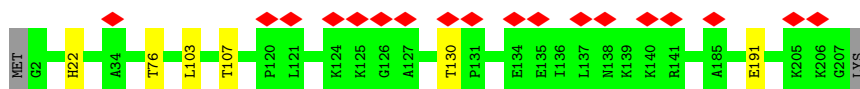
- Molecule 20: 40S ribosomal protein S7



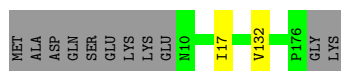
- Molecule 21: 60S ribosomal protein L10



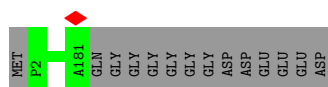
- Molecule 22: 40S ribosomal protein S8



- Molecule 23: 60S ribosomal protein L11

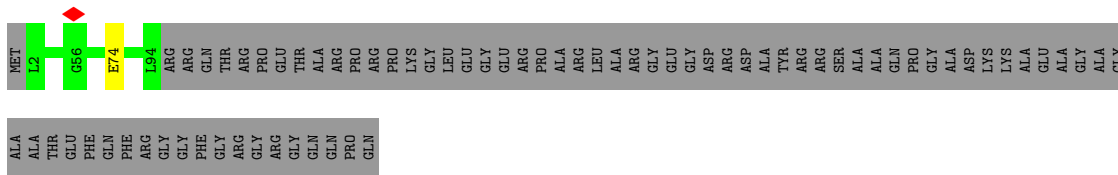


- Molecule 24: 40S ribosomal protein S9

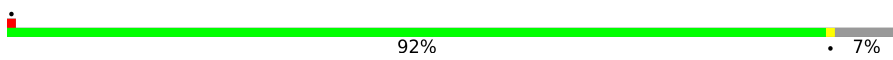


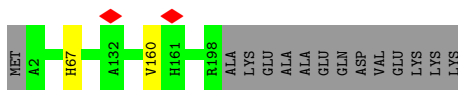
- Molecule 25: Ribosomal protein S10

Chain K2:  55% 44%




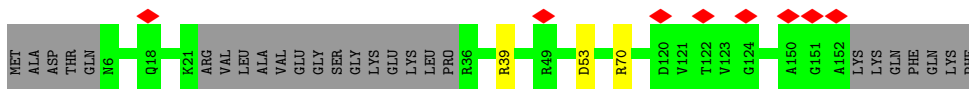
- Molecule 26: 60S ribosomal protein L13

Chain L1:  92% 7%



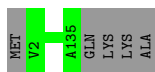
- Molecule 27: 40S ribosomal protein S11

Chain L2:  5% 82% 16%



- Molecule 28: 60S ribosomal protein L14

Chain M1:  96%



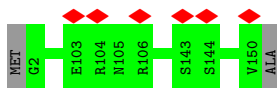
- Molecule 29: Ribosomal protein L15

Chain N1:  98%



- Molecule 30: 40S ribosomal protein S13

Chain N2:  99%

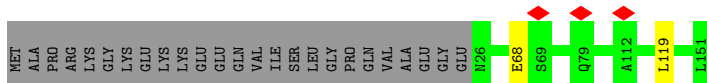
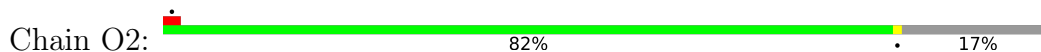


- Molecule 31: 60S ribosomal protein L13a

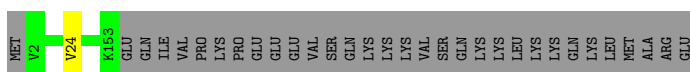
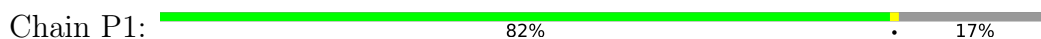
Chain O1:  100%



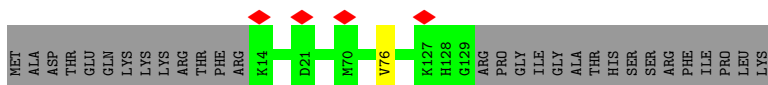
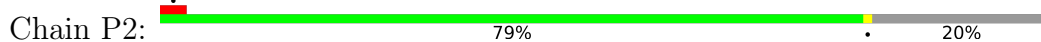
- Molecule 32: Ribosomal protein S14



- Molecule 33: 60S ribosomal protein L17



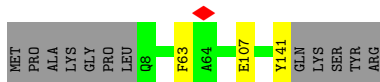
- Molecule 34: 40S ribosomal protein S15



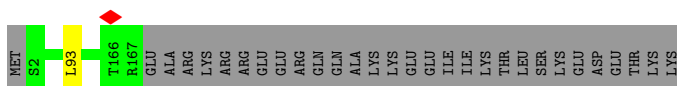
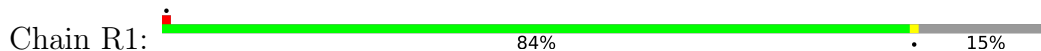
- Molecule 35: Ribosomal protein L18



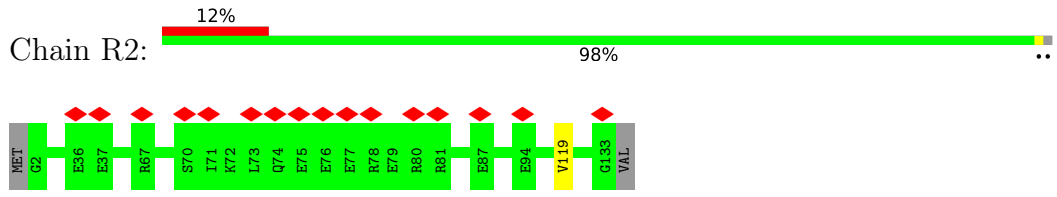
- Molecule 36: Ribosomal protein S16



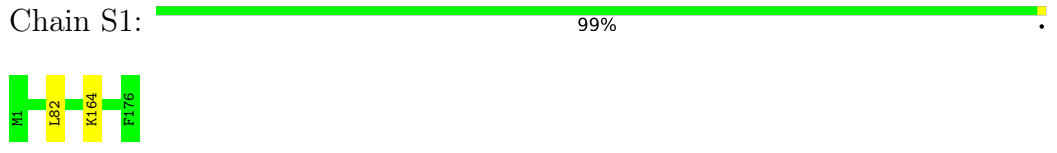
- Molecule 37: 60S ribosomal protein L19



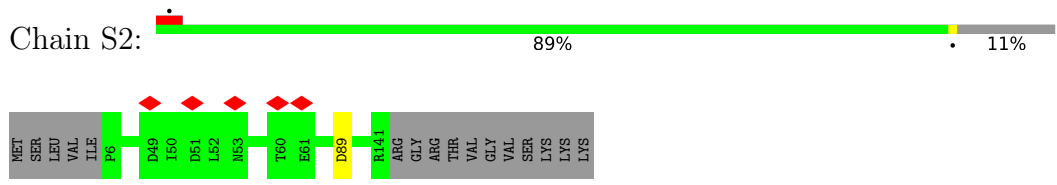
- Molecule 38: 40S ribosomal protein S17



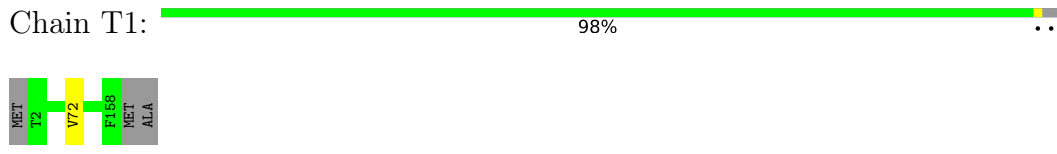
• Molecule 39: 60S ribosomal protein L18a



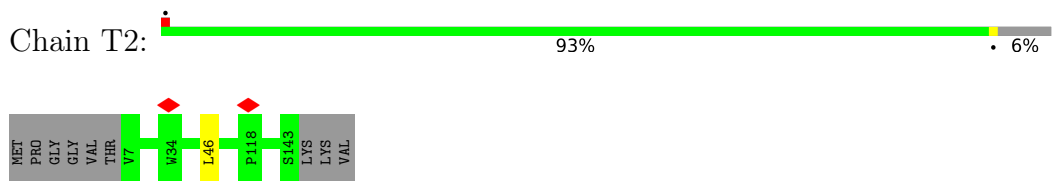
• Molecule 40: 40S ribosomal protein S18



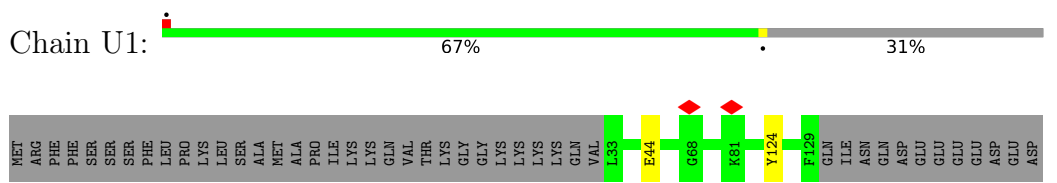
• Molecule 41: 60S ribosomal protein L21



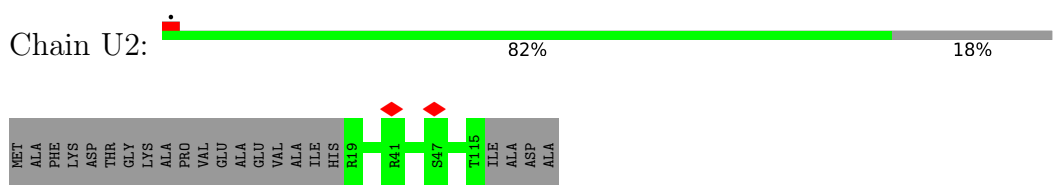
• Molecule 42: 40S ribosomal protein S19



• Molecule 43: Ribosomal protein L22

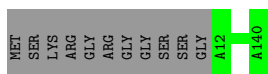


• Molecule 44: 40S ribosomal protein S20



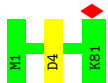
- Molecule 45: 60S ribosomal protein L23

Chain V1:  92% 8%



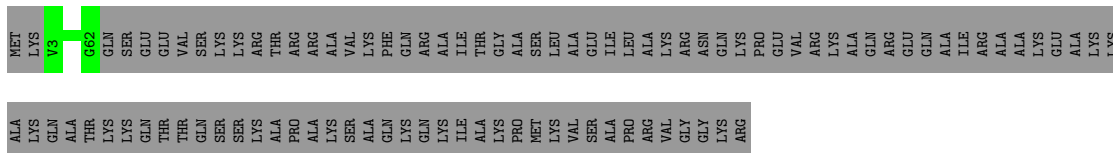
- Molecule 46: 40S ribosomal protein S21

Chain V2:  99%



- Molecule 47: 60S ribosomal protein L24

Chain W1:  38% 62%




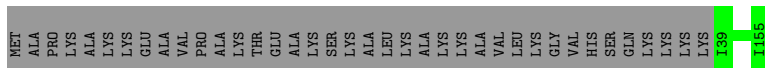
- Molecule 48: 40S ribosomal protein S15a

Chain W2:  98%



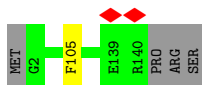
- Molecule 49: Ribosomal protein L23a

Chain X1:  75% 25%




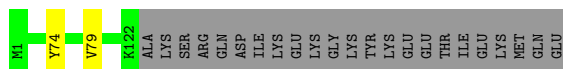
- Molecule 50: 40S ribosomal protein S23

Chain X2:  97%



- Molecule 51: ATPase H⁺ transporting V0 subunit e1

Chain Y1:  83% 16%



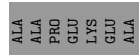
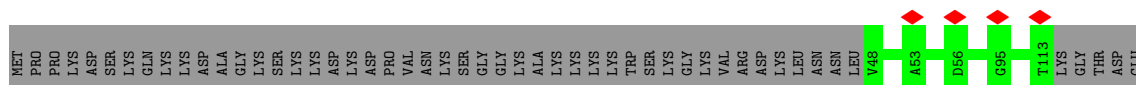
- Molecule 52: 40S ribosomal protein S24



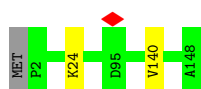
- Molecule 53: 60S ribosomal protein L27



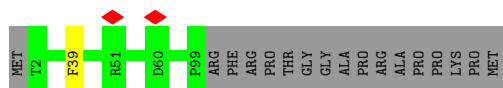
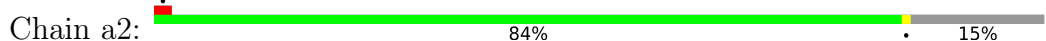
- Molecule 54: 40S ribosomal protein S25



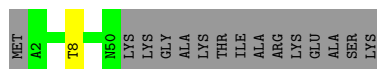
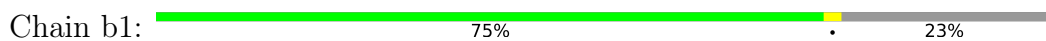
- Molecule 55: 60S ribosomal protein L27a



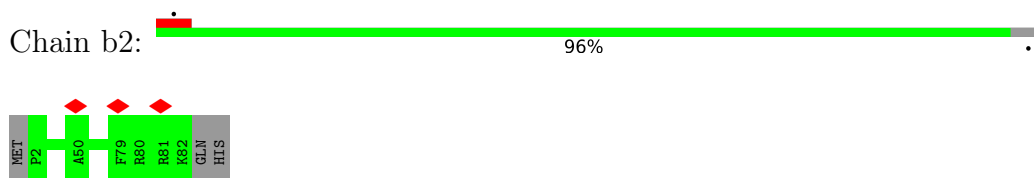
- Molecule 56: 40S ribosomal protein S26



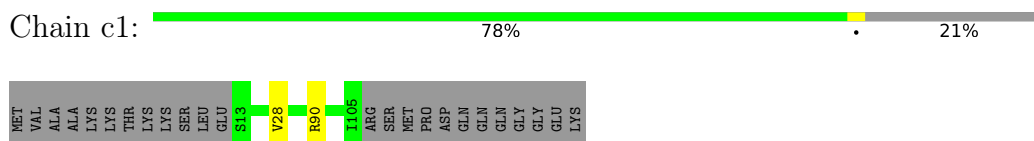
- Molecule 57: 60S ribosomal protein L29



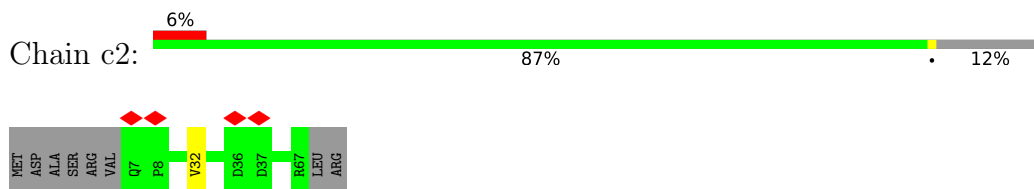
• Molecule 58: 40S ribosomal protein S27



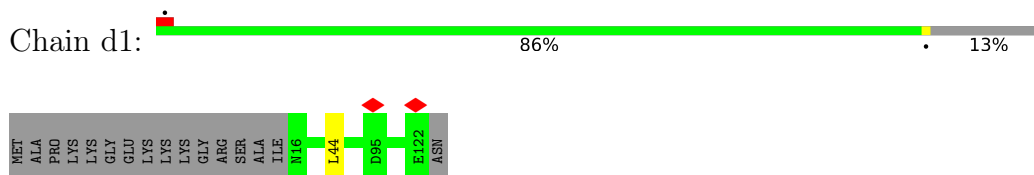
• Molecule 59: 60S ribosomal protein L30



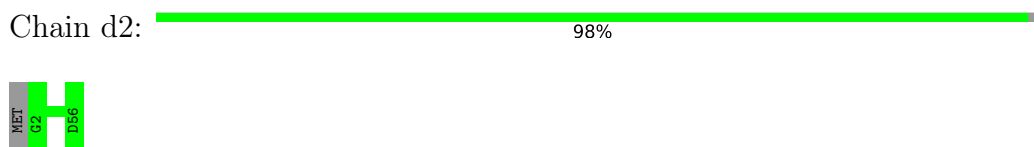
• Molecule 60: 40S ribosomal protein S28



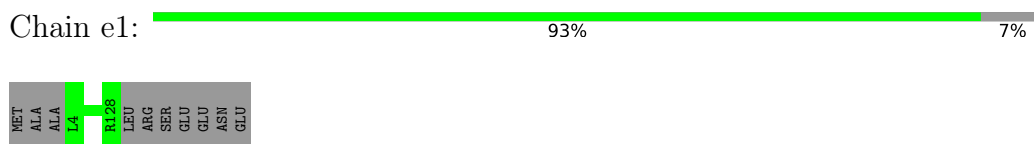
• Molecule 61: 60S ribosomal protein L31



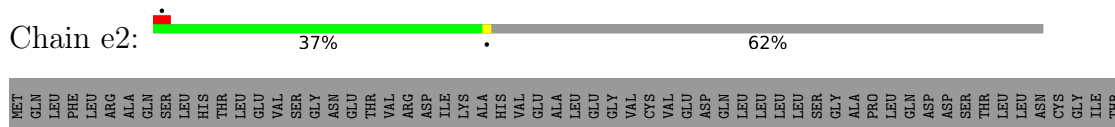
• Molecule 62: 40S ribosomal protein S29

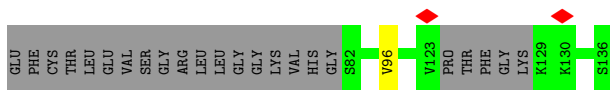


• Molecule 63: Ribosomal protein L32



• Molecule 64: 40S ribosomal protein S30





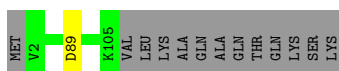
- Molecule 65: 60S ribosomal protein L35a

Chain f1: 97%



- Molecule 66: 60S ribosomal protein L34

Chain g1: 88% 11%



- Molecule 67: Guanine nucleotide-binding protein subunit beta-2-like 1

Chain g2: 5% 97%



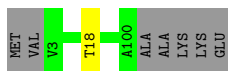
- Molecule 68: 60S ribosomal protein L35

Chain h1: 96%



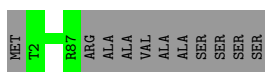
- Molecule 69: 60S ribosomal protein L36

Chain i1: 92% 7%

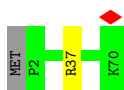


- Molecule 70: Ribosomal protein L37

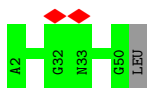
Chain j1: 89% 11%



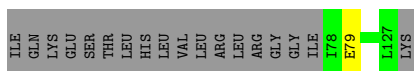
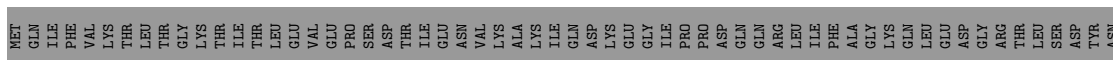
- Molecule 71: 60S ribosomal protein L38



- Molecule 72: Ribosomal protein L39



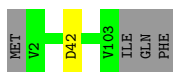
- Molecule 73: 60S ribosomal protein L40



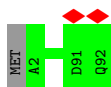
- Molecule 74: Rpl41



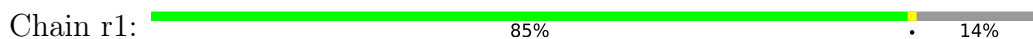
- Molecule 75: 60S ribosomal protein L36a



- Molecule 76: Zgc:171772



- Molecule 77: 60S ribosomal protein L28



14%

| | | | | | | | | | | | | | | | | | | | | | | |
|-----|-----|----|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| MET | ALA | S3 | L44 | S120 | SER | GLN | LYS | PRO | VAL | VAL | VAL | ARG | LYS | LYS | ARG | SER | ARG | ALA | PRO | LYS | SER | SER |
|-----|-----|----|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

4 Experimental information

| Property | Value | Source |
|--------------------------------------|---|-----------|
| EM reconstruction method | SINGLE PARTICLE | Depositor |
| Imposed symmetry | POINT, C1 | Depositor |
| Number of particles used | 775288 | 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 ($e^-/\text{\AA}^2$) | 48.3 | Depositor |
| Minimum defocus (nm) | Not provided | |
| Maximum defocus (nm) | Not provided | |
| Magnification | Not provided | |
| Image detector | FEI FALCON III (4k x 4k) | Depositor |
| Maximum map value | 10.815 | Depositor |
| Minimum map value | -0.721 | Depositor |
| Average map value | 0.068 | Depositor |
| Map value standard deviation | 0.247 | Depositor |
| Recommended contour level | 0.7 | Depositor |
| Map size (Å) | 508.8, 508.8, 508.8 | wwPDB |
| Map dimensions | 480, 480, 480 | wwPDB |
| Map angles (°) | 90.0, 90.0, 90.0 | wwPDB |
| Pixel spacing (Å) | 1.06, 1.06, 1.06 | 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: MG, ZN

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 | 22 | 0.16 | 0/35898 | 0.69 | 14/55926 (0.0%) |
| 2 | 51 | 0.24 | 0/78190 | 0.71 | 8/121918 (0.0%) |
| 3 | 71 | 0.22 | 0/2867 | 0.66 | 0/4469 |
| 4 | 81 | 0.23 | 0/3573 | 0.69 | 0/5563 |
| 5 | A1 | 0.25 | 0/1918 | 0.42 | 0/2569 |
| 6 | A2 | 0.24 | 0/1703 | 0.39 | 0/2313 |
| 7 | B1 | 0.25 | 0/3251 | 0.42 | 0/4351 |
| 8 | B2 | 0.23 | 0/1757 | 0.41 | 0/2353 |
| 9 | C1 | 0.24 | 0/2828 | 0.39 | 0/3797 |
| 10 | C2 | 0.24 | 0/1687 | 0.40 | 0/2281 |
| 11 | D1 | 0.25 | 0/2380 | 0.39 | 0/3185 |
| 12 | D2 | 0.24 | 0/1740 | 0.42 | 0/2342 |
| 13 | E1 | 0.25 | 0/1697 | 0.41 | 0/2264 |
| 14 | E2 | 0.24 | 0/2110 | 0.42 | 0/2839 |
| 15 | F1 | 0.25 | 0/1842 | 0.38 | 0/2460 |
| 16 | F2 | 0.23 | 0/1462 | 0.38 | 0/1966 |
| 17 | G1 | 0.24 | 0/1717 | 0.39 | 0/2316 |
| 18 | G2 | 0.23 | 0/1887 | 0.41 | 0/2515 |
| 19 | H1 | 0.24 | 0/1523 | 0.43 | 0/2048 |
| 20 | H2 | 0.23 | 0/1515 | 0.41 | 0/2033 |
| 21 | I1 | 0.26 | 0/1738 | 0.41 | 0/2325 |
| 22 | I2 | 0.23 | 0/1695 | 0.42 | 0/2267 |
| 23 | J1 | 0.24 | 0/1371 | 0.41 | 0/1833 |
| 24 | J2 | 0.23 | 0/1517 | 0.37 | 0/2028 |
| 25 | K2 | 0.23 | 0/792 | 0.39 | 0/1072 |
| 26 | L1 | 0.24 | 0/1631 | 0.40 | 0/2178 |
| 27 | L2 | 0.23 | 0/1105 | 0.42 | 0/1479 |
| 28 | M1 | 0.25 | 0/1115 | 0.37 | 0/1488 |
| 29 | N1 | 0.24 | 0/1731 | 0.40 | 0/2314 |
| 30 | N2 | 0.22 | 0/1223 | 0.37 | 0/1644 |
| 31 | O1 | 0.24 | 0/1694 | 0.38 | 0/2267 |
| 32 | O2 | 0.24 | 0/955 | 0.43 | 0/1279 |

| Mol | Chain | Bond lengths | | Bond angles | |
|-----|-------|--------------|---------|-------------|---------|
| | | RMSZ | # Z >5 | RMSZ | # Z >5 |
| 33 | P1 | 0.24 | 0/1261 | 0.40 | 0/1691 |
| 34 | P2 | 0.24 | 0/974 | 0.39 | 0/1301 |
| 35 | Q1 | 0.24 | 0/1484 | 0.41 | 0/1985 |
| 36 | Q2 | 0.23 | 0/1068 | 0.40 | 0/1434 |
| 37 | R1 | 0.22 | 0/1397 | 0.36 | 0/1849 |
| 38 | R2 | 0.23 | 0/1082 | 0.37 | 0/1452 |
| 39 | S1 | 0.26 | 0/1496 | 0.40 | 0/2009 |
| 40 | S2 | 0.23 | 0/1147 | 0.39 | 0/1535 |
| 41 | T1 | 0.25 | 0/1312 | 0.40 | 0/1756 |
| 42 | T2 | 0.23 | 0/1076 | 0.37 | 0/1445 |
| 43 | U1 | 0.24 | 0/806 | 0.42 | 0/1081 |
| 44 | U2 | 0.23 | 0/763 | 0.42 | 0/1027 |
| 45 | V1 | 0.26 | 0/984 | 0.43 | 0/1320 |
| 46 | V2 | 0.24 | 0/629 | 0.42 | 0/842 |
| 47 | W1 | 0.26 | 0/516 | 0.39 | 0/688 |
| 48 | W2 | 0.23 | 0/1051 | 0.41 | 0/1406 |
| 49 | X1 | 0.24 | 0/978 | 0.40 | 0/1318 |
| 50 | X2 | 0.24 | 0/1100 | 0.41 | 0/1468 |
| 51 | Y1 | 0.24 | 0/1039 | 0.41 | 0/1383 |
| 52 | Y2 | 0.23 | 0/1027 | 0.42 | 0/1364 |
| 53 | Z1 | 0.25 | 0/1128 | 0.39 | 0/1504 |
| 54 | Z2 | 0.23 | 0/536 | 0.42 | 0/721 |
| 55 | a1 | 0.25 | 0/1196 | 0.41 | 0/1601 |
| 56 | a2 | 0.23 | 0/795 | 0.41 | 0/1066 |
| 57 | b1 | 0.23 | 0/429 | 0.37 | 0/568 |
| 58 | b2 | 0.23 | 0/649 | 0.41 | 0/872 |
| 59 | c1 | 0.25 | 0/731 | 0.39 | 0/981 |
| 60 | c2 | 0.22 | 0/477 | 0.45 | 0/639 |
| 61 | d1 | 0.24 | 0/903 | 0.42 | 0/1217 |
| 62 | d2 | 0.23 | 0/470 | 0.37 | 0/624 |
| 63 | e1 | 0.24 | 0/1048 | 0.40 | 0/1396 |
| 64 | e2 | 0.23 | 0/401 | 0.37 | 0/526 |
| 65 | f1 | 0.26 | 0/880 | 0.42 | 0/1175 |
| 66 | g1 | 0.24 | 0/843 | 0.42 | 0/1123 |
| 67 | g2 | 0.23 | 0/2451 | 0.45 | 0/3343 |
| 68 | h1 | 0.23 | 0/998 | 0.36 | 0/1318 |
| 69 | i1 | 0.23 | 0/812 | 0.36 | 0/1074 |
| 70 | j1 | 0.24 | 0/715 | 0.42 | 0/944 |
| 71 | k1 | 0.25 | 0/575 | 0.39 | 0/761 |
| 72 | l1 | 0.23 | 0/444 | 0.40 | 0/587 |
| 73 | m1 | 0.24 | 0/419 | 0.41 | 0/555 |
| 74 | n1 | 0.20 | 0/232 | 0.33 | 0/295 |
| 75 | o1 | 0.25 | 0/853 | 0.41 | 0/1125 |

| Mol | Chain | Bond lengths | | Bond angles | |
|-----|-------|--------------|----------|-------------|------------------|
| | | RMSZ | # Z >5 | RMSZ | # Z >5 |
| 76 | p1 | 0.25 | 0/713 | 0.41 | 0/945 |
| 77 | r1 | 0.23 | 0/956 | 0.41 | 0/1279 |
| All | All | 0.23 | 0/208956 | 0.60 | 22/306275 (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 |
|-----|-------|---------------------|---------------------|
| 39 | S1 | 0 | 1 |

There are no bond length outliers.

The worst 5 of 22 bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-----------|-------|-------------|----------|
| 1 | 22 | 676 | U | C2-N1-C1' | 7.74 | 126.98 | 117.70 |
| 1 | 22 | 676 | U | N1-C2-O2 | 7.31 | 127.92 | 122.80 |
| 1 | 22 | 676 | U | N3-C2-O2 | -6.83 | 117.42 | 122.20 |
| 1 | 22 | 907 | A | P-O3'-C3' | 6.36 | 127.34 | 119.70 |
| 1 | 22 | 402 | C | C2-N1-C1' | 6.16 | 125.58 | 118.80 |

There are no chirality outliers.

All (1) planarity outliers are listed below:

| Mol | Chain | Res | Type | Group |
|-----|-------|-----|------|---------|
| 39 | S1 | 164 | LYS | Peptide |

5.2 Too-close contacts [i](#)

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

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|-----|-------|---------------|------------|---------|----------|-------------|-----|
| 5 | A1 | 243/257 (95%) | 236 (97%) | 7 (3%) | 0 | 100 | 100 |
| 6 | A2 | 208/308 (68%) | 204 (98%) | 4 (2%) | 0 | 100 | 100 |
| 7 | B1 | 392/403 (97%) | 381 (97%) | 11 (3%) | 0 | 100 | 100 |
| 8 | B2 | 211/267 (79%) | 205 (97%) | 6 (3%) | 0 | 100 | 100 |
| 9 | C1 | 346/375 (92%) | 336 (97%) | 10 (3%) | 0 | 100 | 100 |
| 10 | C2 | 211/280 (75%) | 210 (100%) | 1 (0%) | 0 | 100 | 100 |
| 11 | D1 | 286/296 (97%) | 278 (97%) | 8 (3%) | 0 | 100 | 100 |
| 12 | D2 | 219/245 (89%) | 208 (95%) | 11 (5%) | 0 | 100 | 100 |
| 13 | E1 | 198/265 (75%) | 191 (96%) | 7 (4%) | 0 | 100 | 100 |
| 14 | E2 | 259/263 (98%) | 243 (94%) | 16 (6%) | 0 | 100 | 100 |
| 15 | F1 | 220/246 (89%) | 215 (98%) | 5 (2%) | 0 | 100 | 100 |
| 16 | F2 | 179/204 (88%) | 171 (96%) | 8 (4%) | 0 | 100 | 100 |
| 17 | G1 | 203/266 (76%) | 196 (97%) | 7 (3%) | 0 | 100 | 100 |
| 18 | G2 | 228/249 (92%) | 220 (96%) | 8 (4%) | 0 | 100 | 100 |
| 19 | H1 | 188/192 (98%) | 184 (98%) | 4 (2%) | 0 | 100 | 100 |
| 20 | H2 | 184/194 (95%) | 174 (95%) | 10 (5%) | 0 | 100 | 100 |
| 21 | I1 | 209/215 (97%) | 201 (96%) | 8 (4%) | 0 | 100 | 100 |
| 22 | I2 | 204/208 (98%) | 194 (95%) | 10 (5%) | 0 | 100 | 100 |
| 23 | J1 | 165/178 (93%) | 161 (98%) | 4 (2%) | 0 | 100 | 100 |
| 24 | J2 | 178/194 (92%) | 177 (99%) | 1 (1%) | 0 | 100 | 100 |
| 25 | K2 | 91/166 (55%) | 86 (94%) | 5 (6%) | 0 | 100 | 100 |
| 26 | L1 | 195/211 (92%) | 188 (96%) | 7 (4%) | 0 | 100 | 100 |
| 27 | L2 | 129/159 (81%) | 123 (95%) | 6 (5%) | 0 | 100 | 100 |
| 28 | M1 | 132/139 (95%) | 129 (98%) | 3 (2%) | 0 | 100 | 100 |
| 29 | N1 | 200/204 (98%) | 195 (98%) | 5 (2%) | 0 | 100 | 100 |
| 30 | N2 | 147/151 (97%) | 145 (99%) | 2 (1%) | 0 | 100 | 100 |
| 31 | O1 | 202/205 (98%) | 199 (98%) | 3 (2%) | 0 | 100 | 100 |
| 32 | O2 | 124/151 (82%) | 120 (97%) | 4 (3%) | 0 | 100 | 100 |
| 33 | P1 | 150/184 (82%) | 143 (95%) | 7 (5%) | 0 | 100 | 100 |
| 34 | P2 | 114/145 (79%) | 111 (97%) | 3 (3%) | 0 | 100 | 100 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|-----|-------|---------------|-----------|---------|----------|-------------|-----|
| 35 | Q1 | 178/182 (98%) | 171 (96%) | 7 (4%) | 0 | 100 | 100 |
| 36 | Q2 | 132/146 (90%) | 127 (96%) | 5 (4%) | 0 | 100 | 100 |
| 37 | R1 | 164/196 (84%) | 163 (99%) | 1 (1%) | 0 | 100 | 100 |
| 38 | R2 | 130/134 (97%) | 127 (98%) | 3 (2%) | 0 | 100 | 100 |
| 39 | S1 | 174/176 (99%) | 170 (98%) | 4 (2%) | 0 | 100 | 100 |
| 40 | S2 | 134/152 (88%) | 127 (95%) | 7 (5%) | 0 | 100 | 100 |
| 41 | T1 | 155/160 (97%) | 151 (97%) | 4 (3%) | 0 | 100 | 100 |
| 42 | T2 | 135/146 (92%) | 127 (94%) | 8 (6%) | 0 | 100 | 100 |
| 43 | U1 | 95/141 (67%) | 90 (95%) | 5 (5%) | 0 | 100 | 100 |
| 44 | U2 | 95/119 (80%) | 93 (98%) | 2 (2%) | 0 | 100 | 100 |
| 45 | V1 | 127/140 (91%) | 125 (98%) | 2 (2%) | 0 | 100 | 100 |
| 46 | V2 | 79/81 (98%) | 78 (99%) | 1 (1%) | 0 | 100 | 100 |
| 47 | W1 | 58/157 (37%) | 57 (98%) | 1 (2%) | 0 | 100 | 100 |
| 48 | W2 | 127/130 (98%) | 121 (95%) | 6 (5%) | 0 | 100 | 100 |
| 49 | X1 | 115/155 (74%) | 112 (97%) | 3 (3%) | 0 | 100 | 100 |
| 50 | X2 | 137/143 (96%) | 132 (96%) | 5 (4%) | 0 | 100 | 100 |
| 51 | Y1 | 120/145 (83%) | 116 (97%) | 4 (3%) | 0 | 100 | 100 |
| 52 | Y2 | 122/132 (92%) | 115 (94%) | 7 (6%) | 0 | 100 | 100 |
| 53 | Z1 | 133/136 (98%) | 129 (97%) | 4 (3%) | 0 | 100 | 100 |
| 54 | Z2 | 64/124 (52%) | 61 (95%) | 3 (5%) | 0 | 100 | 100 |
| 55 | a1 | 145/148 (98%) | 135 (93%) | 10 (7%) | 0 | 100 | 100 |
| 56 | a2 | 96/115 (84%) | 95 (99%) | 1 (1%) | 0 | 100 | 100 |
| 57 | b1 | 47/64 (73%) | 44 (94%) | 3 (6%) | 0 | 100 | 100 |
| 58 | b2 | 79/84 (94%) | 75 (95%) | 4 (5%) | 0 | 100 | 100 |
| 59 | c1 | 91/117 (78%) | 90 (99%) | 1 (1%) | 0 | 100 | 100 |
| 60 | c2 | 59/69 (86%) | 58 (98%) | 1 (2%) | 0 | 100 | 100 |
| 61 | d1 | 105/123 (85%) | 102 (97%) | 3 (3%) | 0 | 100 | 100 |
| 62 | d2 | 53/56 (95%) | 53 (100%) | 0 | 0 | 100 | 100 |
| 63 | e1 | 123/135 (91%) | 121 (98%) | 2 (2%) | 0 | 100 | 100 |
| 64 | e2 | 46/133 (35%) | 45 (98%) | 1 (2%) | 0 | 100 | 100 |
| 65 | f1 | 105/110 (96%) | 104 (99%) | 1 (1%) | 0 | 100 | 100 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|-----|-------|-------------------|-------------|----------|----------|-------------|-----|
| 66 | g1 | 102/117 (87%) | 99 (97%) | 3 (3%) | 0 | 100 | 100 |
| 67 | g2 | 308/317 (97%) | 291 (94%) | 17 (6%) | 0 | 100 | 100 |
| 68 | h1 | 118/123 (96%) | 114 (97%) | 4 (3%) | 0 | 100 | 100 |
| 69 | i1 | 96/105 (91%) | 94 (98%) | 2 (2%) | 0 | 100 | 100 |
| 70 | j1 | 84/97 (87%) | 84 (100%) | 0 | 0 | 100 | 100 |
| 71 | k1 | 67/70 (96%) | 67 (100%) | 0 | 0 | 100 | 100 |
| 72 | l1 | 47/50 (94%) | 46 (98%) | 1 (2%) | 0 | 100 | 100 |
| 73 | m1 | 48/128 (38%) | 48 (100%) | 0 | 0 | 100 | 100 |
| 74 | n1 | 22/25 (88%) | 22 (100%) | 0 | 0 | 100 | 100 |
| 75 | o1 | 100/106 (94%) | 96 (96%) | 4 (4%) | 0 | 100 | 100 |
| 76 | p1 | 89/92 (97%) | 88 (99%) | 1 (1%) | 0 | 100 | 100 |
| 77 | r1 | 116/138 (84%) | 114 (98%) | 2 (2%) | 0 | 100 | 100 |
| All | All | 10635/12237 (87%) | 10301 (97%) | 334 (3%) | 0 | 100 | 100 |

There are no Ramachandran outliers to report.

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 | |
|-----|-------|---------------|------------|----------|-------------|-----|
| 5 | A1 | 189/200 (94%) | 186 (98%) | 3 (2%) | 62 | 79 |
| 6 | A2 | 179/250 (72%) | 176 (98%) | 3 (2%) | 60 | 78 |
| 7 | B1 | 346/353 (98%) | 346 (100%) | 0 | 100 | 100 |
| 8 | B2 | 194/231 (84%) | 192 (99%) | 2 (1%) | 76 | 88 |
| 9 | C1 | 291/313 (93%) | 290 (100%) | 1 (0%) | 92 | 97 |
| 10 | C2 | 179/220 (81%) | 173 (97%) | 6 (3%) | 37 | 56 |
| 11 | D1 | 244/249 (98%) | 241 (99%) | 3 (1%) | 71 | 85 |
| 12 | D2 | 184/204 (90%) | 183 (100%) | 1 (0%) | 88 | 95 |
| 13 | E1 | 182/234 (78%) | 179 (98%) | 3 (2%) | 62 | 79 |

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| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles | |
|-----|-------|----------------|------------|----------|-------------|-----|
| 14 | E2 | 226/229 (99%) | 222 (98%) | 4 (2%) | 59 | 76 |
| 15 | F1 | 189/210 (90%) | 187 (99%) | 2 (1%) | 73 | 87 |
| 16 | F2 | 154/170 (91%) | 154 (100%) | 0 | 100 | 100 |
| 17 | G1 | 181/224 (81%) | 180 (99%) | 1 (1%) | 86 | 94 |
| 18 | G2 | 201/219 (92%) | 200 (100%) | 1 (0%) | 88 | 95 |
| 19 | H1 | 167/169 (99%) | 167 (100%) | 0 | 100 | 100 |
| 20 | H2 | 165/176 (94%) | 164 (99%) | 1 (1%) | 86 | 94 |
| 21 | I1 | 180/182 (99%) | 179 (99%) | 1 (1%) | 86 | 94 |
| 22 | I2 | 176/181 (97%) | 170 (97%) | 6 (3%) | 37 | 56 |
| 23 | J1 | 141/150 (94%) | 139 (99%) | 2 (1%) | 67 | 82 |
| 24 | J2 | 160/168 (95%) | 160 (100%) | 0 | 100 | 100 |
| 25 | K2 | 82/132 (62%) | 81 (99%) | 1 (1%) | 71 | 85 |
| 26 | L1 | 167/178 (94%) | 165 (99%) | 2 (1%) | 71 | 85 |
| 27 | L2 | 119/141 (84%) | 116 (98%) | 3 (2%) | 47 | 67 |
| 28 | M1 | 113/117 (97%) | 113 (100%) | 0 | 100 | 100 |
| 29 | N1 | 171/172 (99%) | 168 (98%) | 3 (2%) | 59 | 76 |
| 30 | N2 | 129/130 (99%) | 129 (100%) | 0 | 100 | 100 |
| 31 | O1 | 175/176 (99%) | 175 (100%) | 0 | 100 | 100 |
| 32 | O2 | 98/119 (82%) | 96 (98%) | 2 (2%) | 55 | 74 |
| 33 | P1 | 134/165 (81%) | 133 (99%) | 1 (1%) | 84 | 92 |
| 34 | P2 | 105/130 (81%) | 104 (99%) | 1 (1%) | 76 | 88 |
| 35 | Q1 | 158/160 (99%) | 156 (99%) | 2 (1%) | 69 | 84 |
| 36 | Q2 | 108/119 (91%) | 105 (97%) | 3 (3%) | 43 | 63 |
| 37 | R1 | 145/173 (84%) | 144 (99%) | 1 (1%) | 84 | 92 |
| 38 | R2 | 119/121 (98%) | 118 (99%) | 1 (1%) | 81 | 91 |
| 39 | S1 | 155/155 (100%) | 154 (99%) | 1 (1%) | 86 | 94 |
| 40 | S2 | 118/132 (89%) | 117 (99%) | 1 (1%) | 81 | 91 |
| 41 | T1 | 138/140 (99%) | 137 (99%) | 1 (1%) | 84 | 92 |
| 42 | T2 | 110/117 (94%) | 109 (99%) | 1 (1%) | 78 | 90 |
| 43 | U1 | 87/127 (68%) | 85 (98%) | 2 (2%) | 50 | 70 |
| 44 | U2 | 87/105 (83%) | 87 (100%) | 0 | 100 | 100 |

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| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles | |
|-----|-------|---------------|------------|----------|-------------|-----|
| 45 | V1 | 101/108 (94%) | 101 (100%) | 0 | 100 | 100 |
| 46 | V2 | 65/65 (100%) | 64 (98%) | 1 (2%) | 65 | 80 |
| 47 | W1 | 52/129 (40%) | 52 (100%) | 0 | 100 | 100 |
| 48 | W2 | 112/113 (99%) | 111 (99%) | 1 (1%) | 78 | 90 |
| 49 | X1 | 105/134 (78%) | 105 (100%) | 0 | 100 | 100 |
| 50 | X2 | 111/115 (96%) | 110 (99%) | 1 (1%) | 78 | 90 |
| 51 | Y1 | 115/136 (85%) | 113 (98%) | 2 (2%) | 60 | 78 |
| 52 | Y2 | 108/116 (93%) | 107 (99%) | 1 (1%) | 78 | 90 |
| 53 | Z1 | 115/116 (99%) | 114 (99%) | 1 (1%) | 78 | 90 |
| 54 | Z2 | 57/105 (54%) | 57 (100%) | 0 | 100 | 100 |
| 55 | a1 | 121/122 (99%) | 119 (98%) | 2 (2%) | 60 | 78 |
| 56 | a2 | 86/99 (87%) | 85 (99%) | 1 (1%) | 71 | 85 |
| 57 | b1 | 45/56 (80%) | 44 (98%) | 1 (2%) | 52 | 71 |
| 58 | b2 | 73/76 (96%) | 73 (100%) | 0 | 100 | 100 |
| 59 | c1 | 78/98 (80%) | 76 (97%) | 2 (3%) | 46 | 66 |
| 60 | c2 | 53/61 (87%) | 52 (98%) | 1 (2%) | 57 | 75 |
| 61 | d1 | 98/110 (89%) | 97 (99%) | 1 (1%) | 76 | 88 |
| 62 | d2 | 48/49 (98%) | 48 (100%) | 0 | 100 | 100 |
| 63 | e1 | 113/121 (93%) | 113 (100%) | 0 | 100 | 100 |
| 64 | e2 | 41/112 (37%) | 40 (98%) | 1 (2%) | 49 | 68 |
| 65 | f1 | 86/88 (98%) | 86 (100%) | 0 | 100 | 100 |
| 66 | g1 | 91/102 (89%) | 90 (99%) | 1 (1%) | 73 | 87 |
| 67 | g2 | 263/274 (96%) | 260 (99%) | 3 (1%) | 73 | 87 |
| 68 | h1 | 108/110 (98%) | 106 (98%) | 2 (2%) | 57 | 75 |
| 69 | i1 | 83/88 (94%) | 82 (99%) | 1 (1%) | 71 | 85 |
| 70 | j1 | 73/80 (91%) | 73 (100%) | 0 | 100 | 100 |
| 71 | k1 | 64/65 (98%) | 63 (98%) | 1 (2%) | 62 | 79 |
| 72 | l1 | 45/46 (98%) | 45 (100%) | 0 | 100 | 100 |
| 73 | m1 | 46/116 (40%) | 45 (98%) | 1 (2%) | 52 | 71 |
| 74 | n1 | 23/24 (96%) | 23 (100%) | 0 | 100 | 100 |
| 75 | o1 | 91/95 (96%) | 90 (99%) | 1 (1%) | 73 | 87 |

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| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles | |
|-----|-------|------------------|------------|----------|-------------|-----|
| 76 | p1 | 74/75 (99%) | 74 (100%) | 0 | 100 | 100 |
| 77 | r1 | 102/120 (85%) | 101 (99%) | 1 (1%) | 76 | 88 |
| All | All | 9292/10465 (89%) | 9199 (99%) | 93 (1%) | 77 | 88 |

5 of 93 residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 36 | Q2 | 141 | TYR |
| 52 | Y2 | 14 | THR |
| 38 | R2 | 119 | VAL |
| 43 | U1 | 124 | TYR |
| 56 | a2 | 39 | PHE |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 124 such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 25 | K2 | 77 | GLN |
| 62 | d2 | 4 | GLN |
| 34 | P2 | 32 | GLN |
| 61 | d1 | 98 | ASN |
| 73 | m1 | 84 | GLN |

5.3.3 RNA [i](#)

| Mol | Chain | Analysed | Backbone Outliers | Pucker Outliers |
|-----|-------|-----------------|-------------------|-----------------|
| 1 | 22 | 1483/1939 (76%) | 290 (19%) | 10 (0%) |
| 2 | 51 | 3236/4269 (75%) | 570 (17%) | 37 (1%) |
| 3 | 71 | 119/120 (99%) | 6 (5%) | 0 |
| 4 | 81 | 147/158 (93%) | 19 (12%) | 0 |
| All | All | 4985/6486 (76%) | 885 (17%) | 47 (0%) |

5 of 885 RNA backbone outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | 22 | 3 | C |
| 1 | 22 | 4 | C |
| 1 | 22 | 33 | G |
| 1 | 22 | 41 | G |
| 1 | 22 | 46 | A |

5 of 47 RNA pucker outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|------|------|
| 2 | 51 | 1052 | G |
| 2 | 51 | 1977 | A |
| 2 | 51 | 1079 | U |
| 2 | 51 | 1651 | C |
| 2 | 51 | 2858 | C |

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 210 ligands modelled in this entry, 210 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.

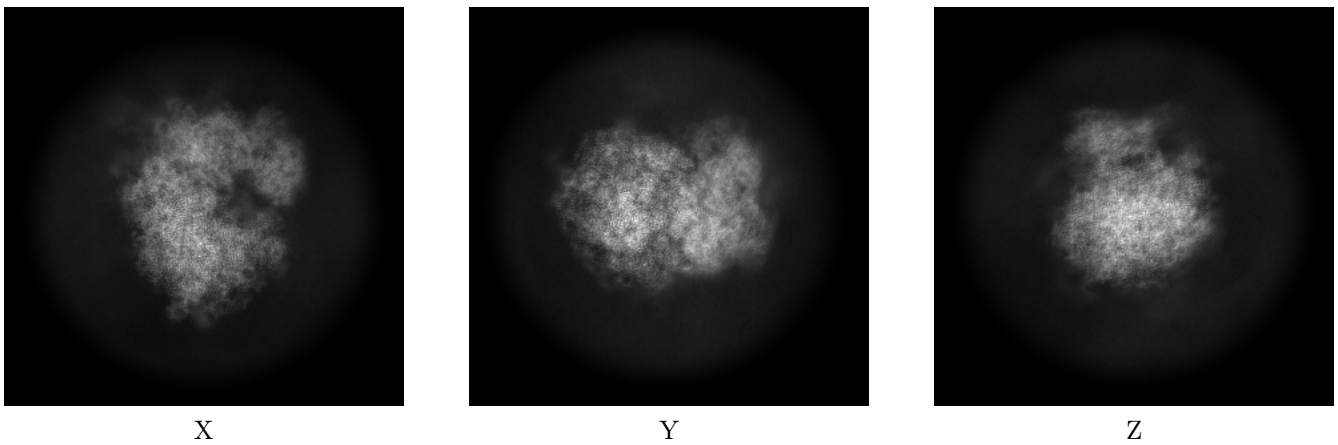
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-13112. 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](#)

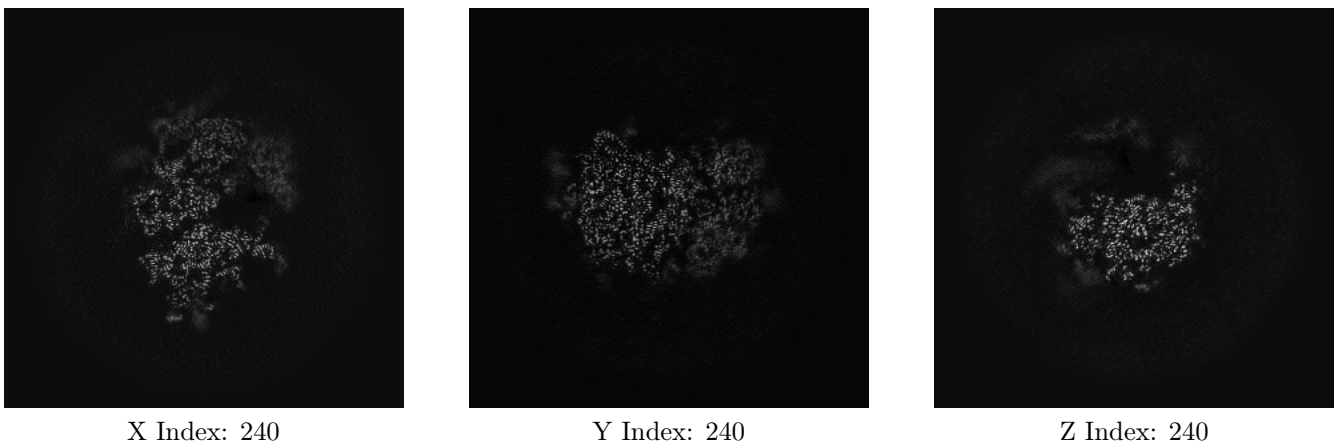
6.1.1 Primary map



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

6.2 Central slices [i](#)

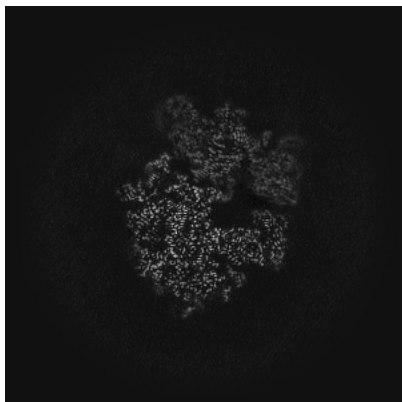
6.2.1 Primary map



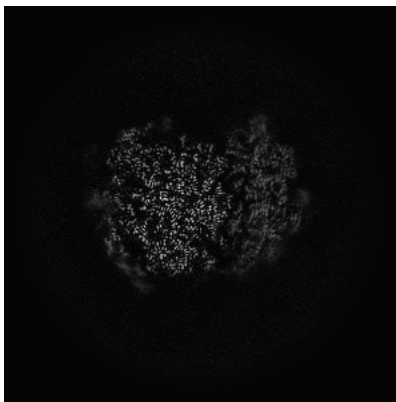
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

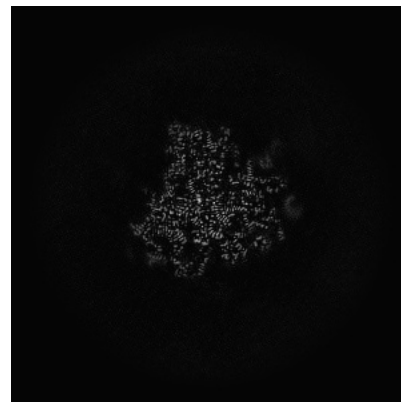
6.3.1 Primary map



X Index: 221



Y Index: 228

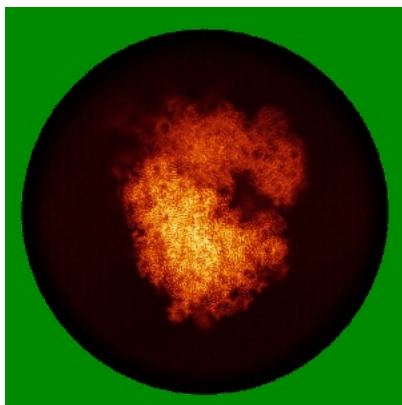


Z Index: 195

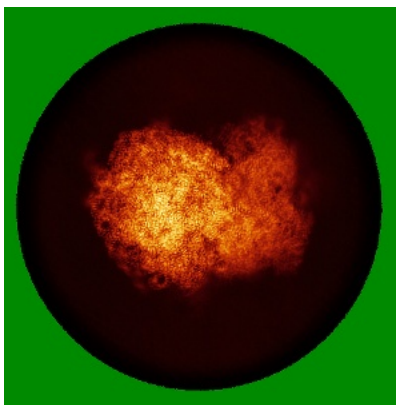
The images above show the largest variance slices of the map in three orthogonal directions.

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

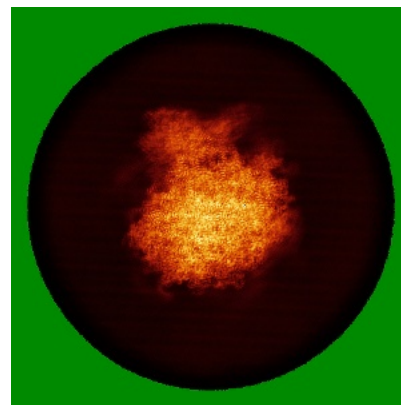
6.4.1 Primary map



X



Y

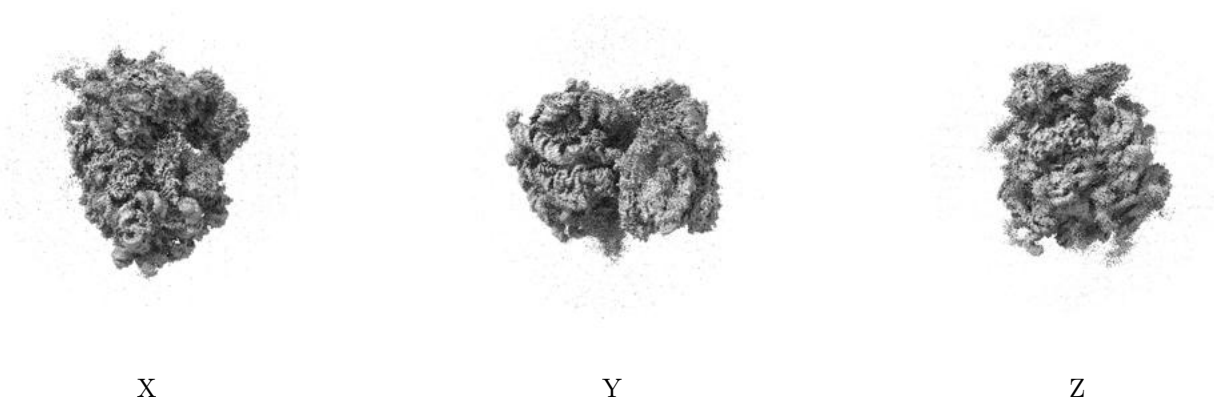


Z

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



The images above show the 3D surface view of the map at the recommended contour level 0.7. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

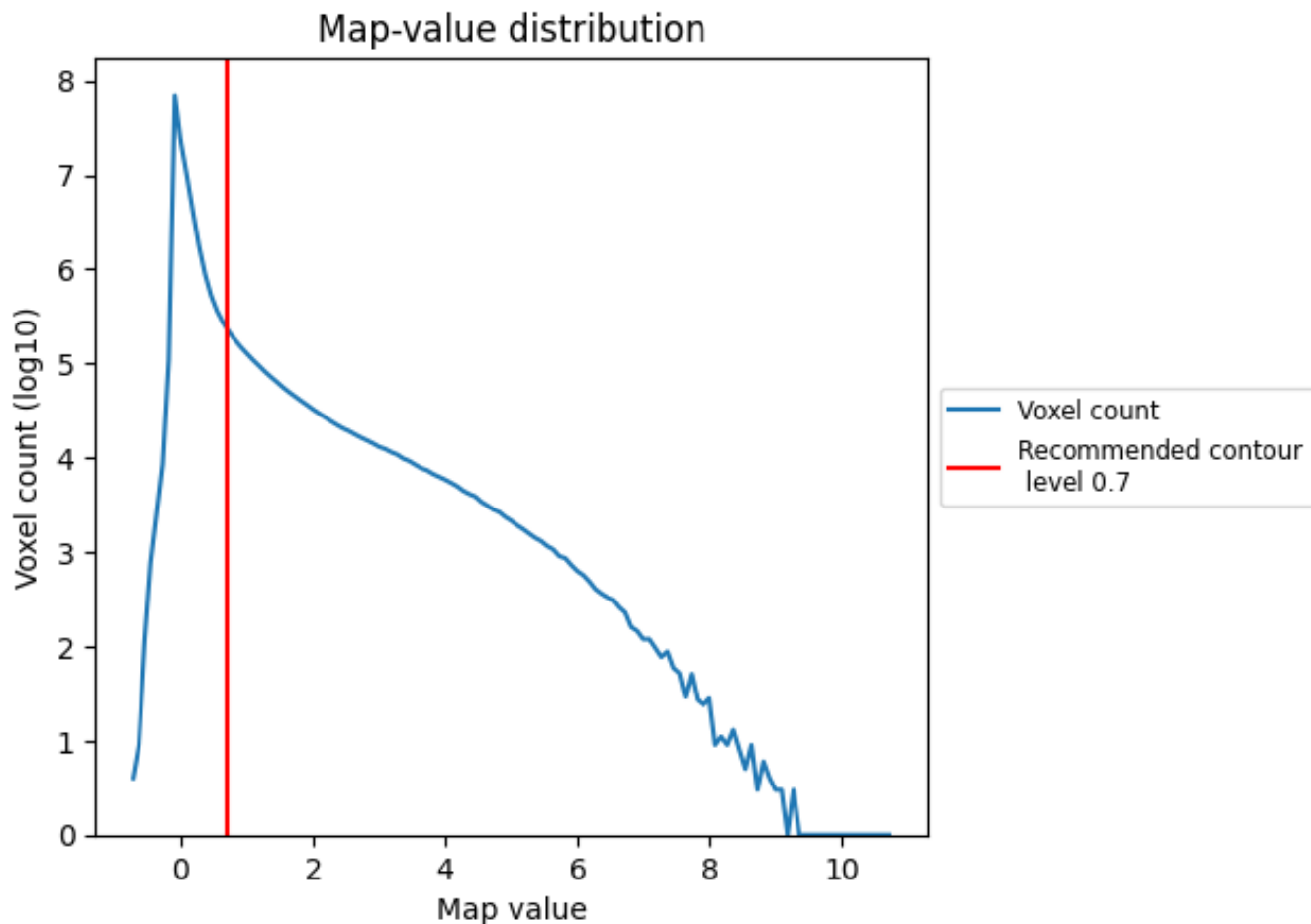
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

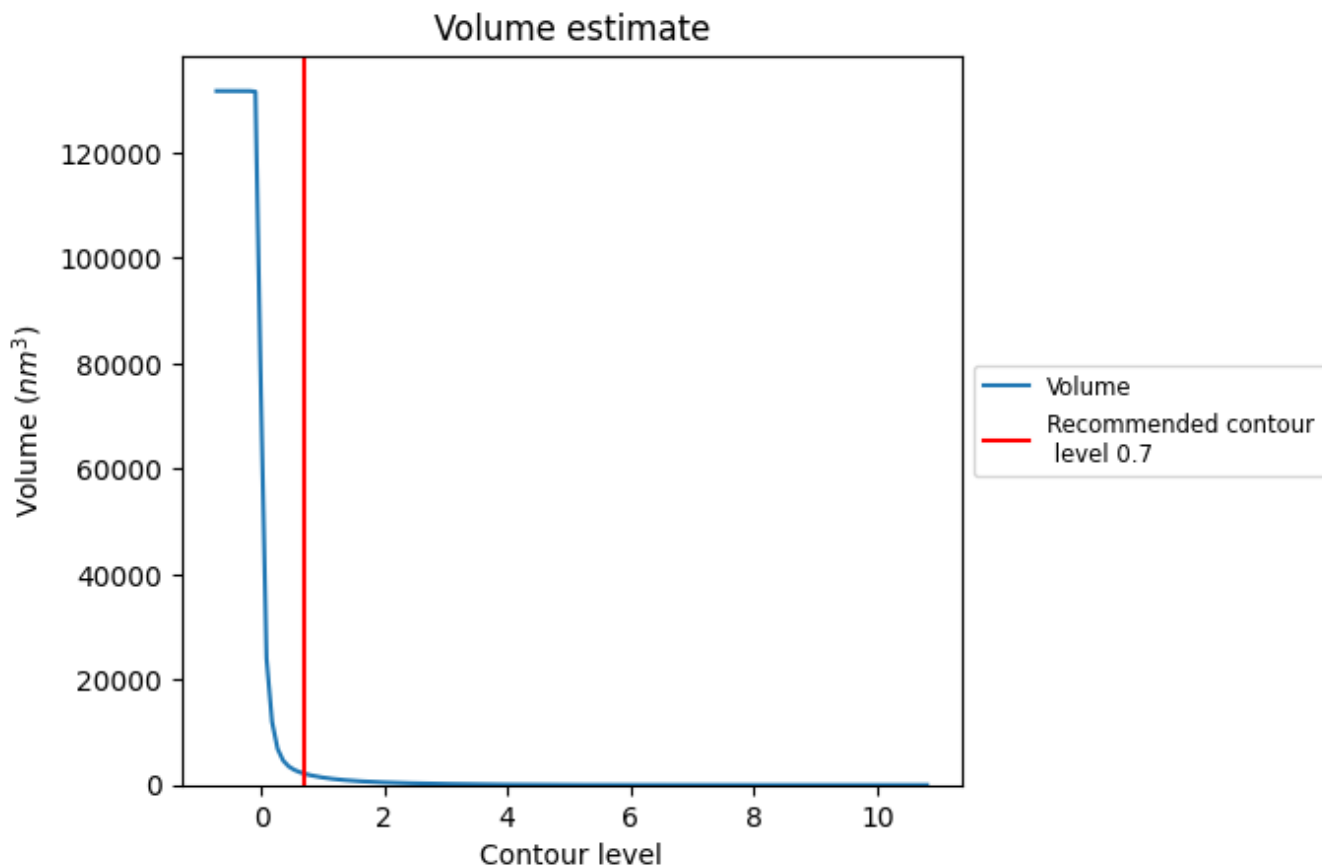
This section contains the results of statistical analysis of the map.

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.

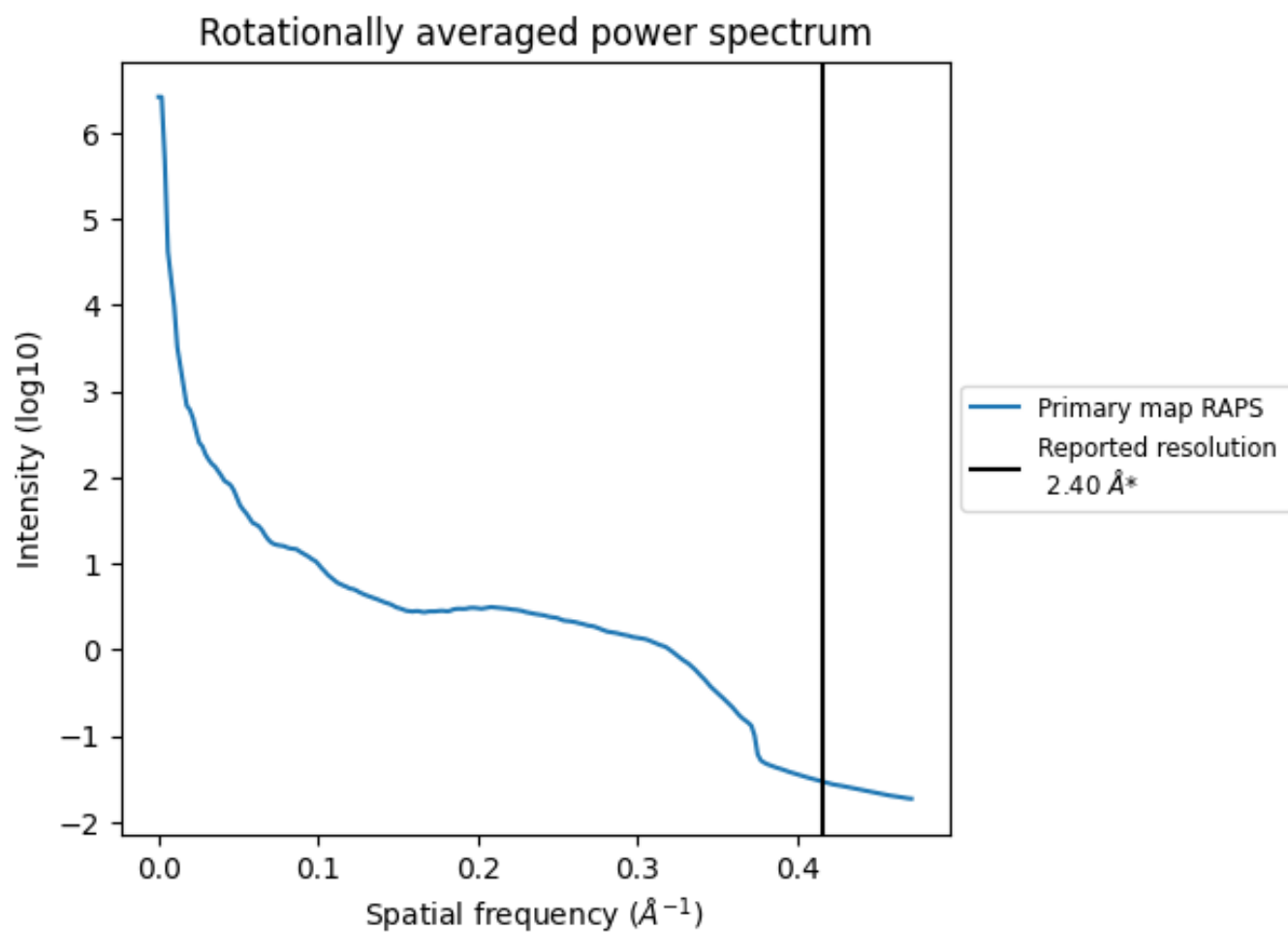
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 2168 nm^3 ; this corresponds to an approximate mass of 1959 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 0.417 Å⁻¹

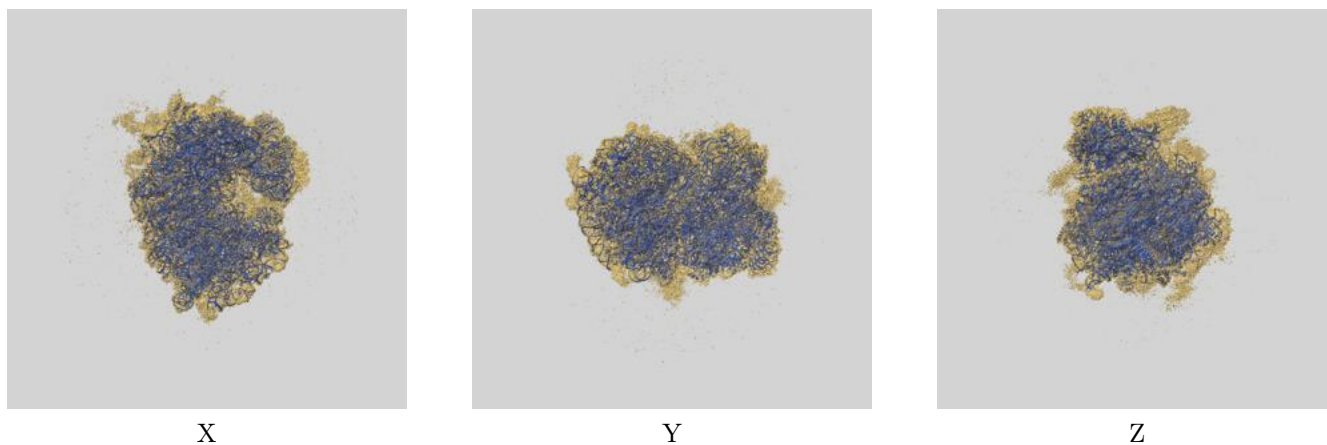
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

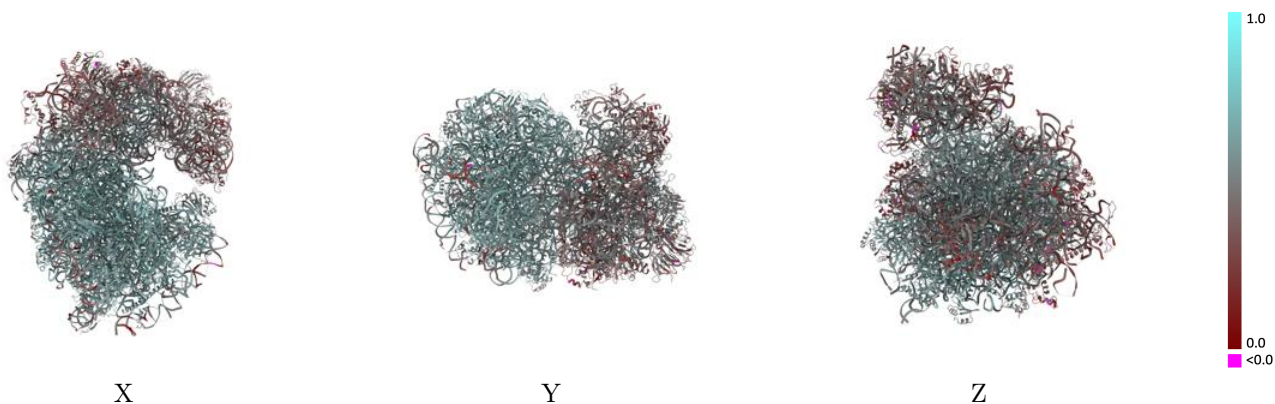
This section contains information regarding the fit between EMDB map EMD-13112 and PDB model 7OYB. Per-residue inclusion information can be found in section 3 on page 18.

9.1 Map-model overlay [i](#)



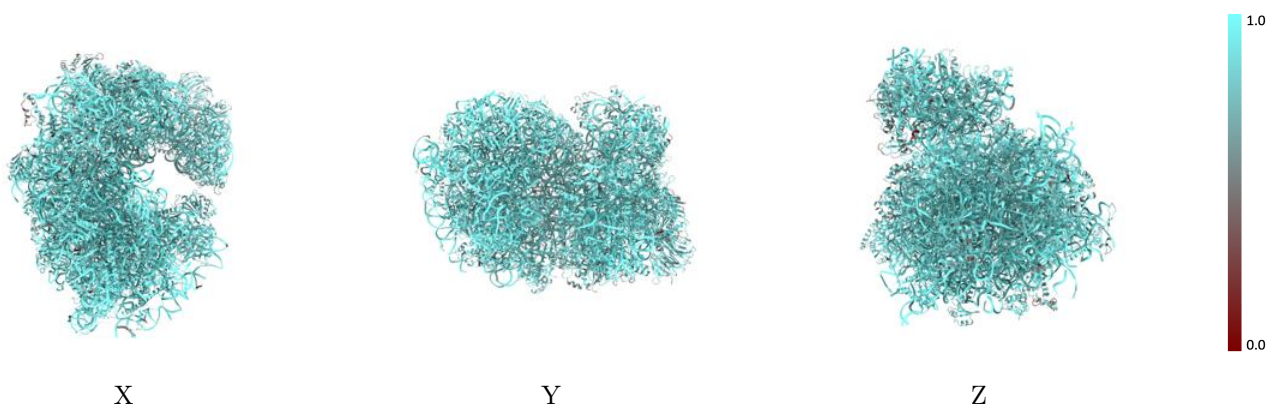
The images above show the 3D surface view of the map at the recommended contour level 0.7 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



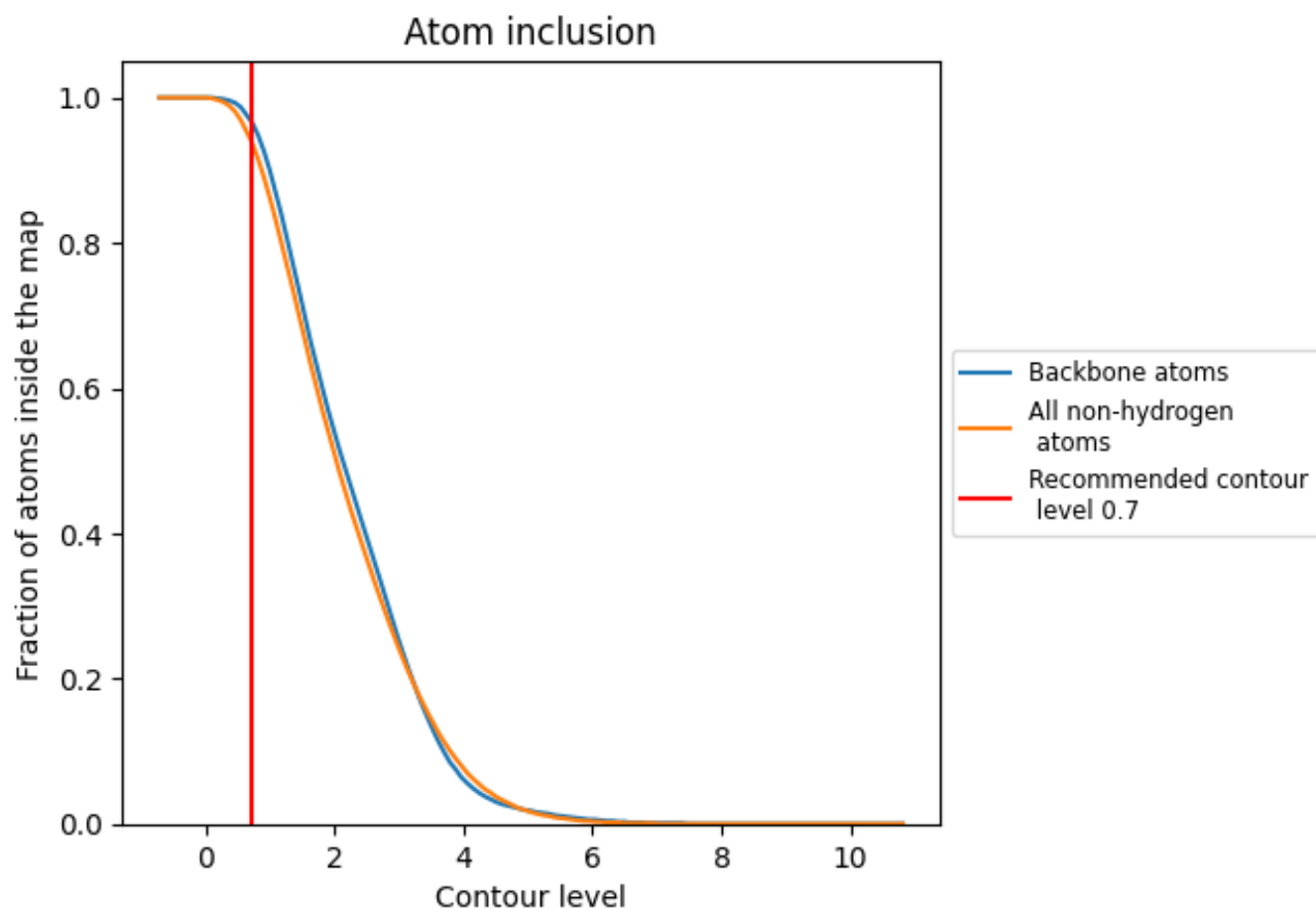
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.7).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 97% of all backbone atoms, 94% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.7) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion | Q-score |
|-------|--|--|
| All |  0.9410 |  0.5280 |
| 22 |  0.9610 |  0.4440 |
| 51 |  0.9770 |  0.5840 |
| 71 |  0.9980 |  0.6170 |
| 81 |  0.9850 |  0.5990 |
| A1 |  0.9720 |  0.6120 |
| A2 |  0.9080 |  0.4950 |
| B1 |  0.9640 |  0.6140 |
| B2 |  0.7720 |  0.3260 |
| C1 |  0.9640 |  0.6040 |
| C2 |  0.9190 |  0.5240 |
| D1 |  0.9390 |  0.5730 |
| D2 |  0.8190 |  0.3590 |
| E1 |  0.9380 |  0.5720 |
| E2 |  0.8430 |  0.3590 |
| F1 |  0.9620 |  0.6130 |
| F2 |  0.7950 |  0.3820 |
| G1 |  0.9030 |  0.5450 |
| G2 |  0.7820 |  0.3760 |
| H1 |  0.9420 |  0.5930 |
| H2 |  0.7590 |  0.3530 |
| I1 |  0.9110 |  0.5850 |
| I2 |  0.7900 |  0.3790 |
| J1 |  0.8790 |  0.5300 |
| J2 |  0.8980 |  0.4040 |
| K2 |  0.8680 |  0.3160 |
| L1 |  0.9020 |  0.5750 |
| L2 |  0.8110 |  0.3640 |
| M1 |  0.9600 |  0.6040 |
| N1 |  0.9800 |  0.6220 |
| N2 |  0.8260 |  0.3430 |
| O1 |  0.9680 |  0.6150 |
| O2 |  0.8220 |  0.3390 |
| P1 |  0.9670 |  0.6160 |
| P2 |  0.8700 |  0.3940 |





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| Chain | Atom inclusion | Q-score |
|-------|----------------|---------|
| Q1 | 0.9730 | 0.6120 |
| Q2 | 0.8710 | 0.4080 |
| R1 | 0.9390 | 0.5540 |
| R2 | 0.7600 | 0.3950 |
| S1 | 0.9730 | 0.6220 |
| S2 | 0.8100 | 0.3730 |
| T1 | 0.9420 | 0.6060 |
| T2 | 0.8990 | 0.4280 |
| U1 | 0.8660 | 0.4930 |
| U2 | 0.8320 | 0.3990 |
| V1 | 0.9540 | 0.5990 |
| V2 | 0.8800 | 0.5180 |
| W1 | 0.9630 | 0.5890 |
| W2 | 0.9260 | 0.5050 |
| X1 | 0.9320 | 0.5930 |
| X2 | 0.8830 | 0.4930 |
| Y1 | 0.9420 | 0.5890 |
| Y2 | 0.7760 | 0.3070 |
| Z1 | 0.9550 | 0.5570 |
| Z2 | 0.7770 | 0.3320 |
| a1 | 0.9690 | 0.6070 |
| a2 | 0.8980 | 0.4490 |
| b1 | 0.9430 | 0.5940 |
| b2 | 0.8360 | 0.3450 |
| c1 | 0.9700 | 0.5630 |
| c2 | 0.7730 | 0.3430 |
| d1 | 0.9320 | 0.5840 |
| d2 | 0.9360 | 0.4270 |
| e1 | 0.9730 | 0.6190 |
| e2 | 0.7790 | 0.3640 |
| f1 | 0.9760 | 0.6320 |
| g1 | 0.9700 | 0.5990 |
| g2 | 0.8050 | 0.3800 |
| h1 | 0.9230 | 0.5820 |
| i1 | 0.9260 | 0.5740 |
| j1 | 0.9750 | 0.6200 |
| k1 | 0.8440 | 0.5270 |
| l1 | 0.9250 | 0.5740 |
| m1 | 0.9650 | 0.6110 |
| n1 | 0.8710 | 0.5300 |
| o1 | 0.9370 | 0.5960 |
| p1 | 0.9380 | 0.5820 |

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| Chain | Atom inclusion | Q-score |
|-------|--|--|
| r1 |  0.9640 |  0.5940 |