# wwPDB EM Validation Summary Report

Dec 17, 2024 – 05:11 AM EST

| | | |
|---|---|---|
| PDB ID | : | 6D9J |
| EMDB ID | : | EMD-7836 |
| Title | : | Mammalian 80S ribosome with a double translocated CrPV-IRES, P-sitetRNA and eRF1. |
| Authors | : | Pisareva, V.P.; Pisarev, A.V.; Fernandez, I.S. |
| Deposited on | : | 2018-04-30 |
| Resolution | : | 3.20 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:

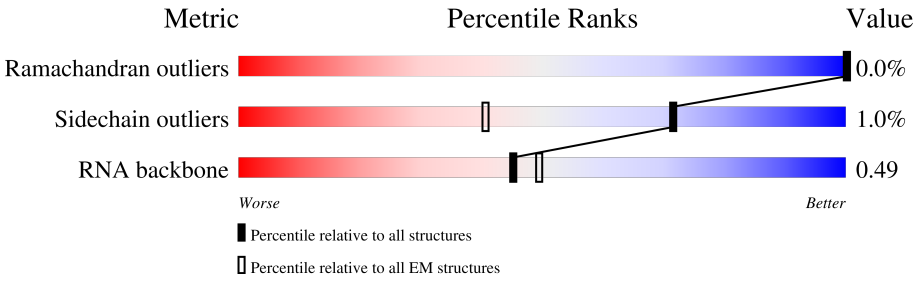
| | | |
|---|---|---|
| EMDB validation analysis | : | 0.0.1.dev113 |
| MolProbity | : | 4.02b-467 |
| Percentile statistics | : | 20231227.v01 (using entries in the PDB archive December 27th 2023) |
| MapQ | : | 1.9.13 |
| Ideal geometry (proteins) | : | Engh & Huber (2001) |
| Ideal geometry (DNA, RNA) | : | Parkinson et al. (1996) |
| Validation Pipeline (wwPDB-VP) | : | 2.40 |

# 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 3.20 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.



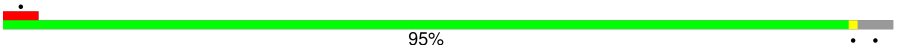
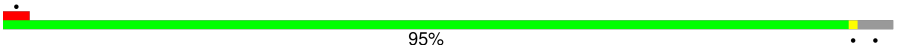
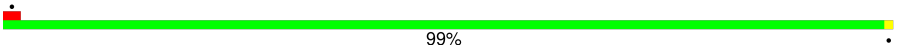
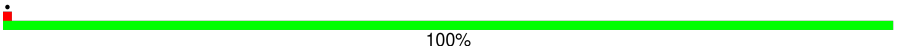
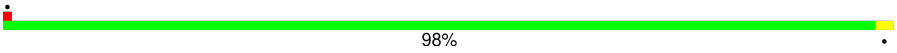
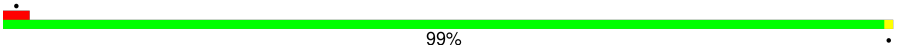
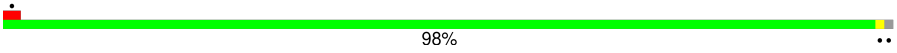
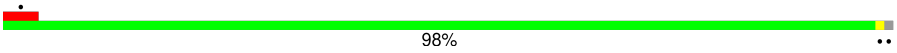
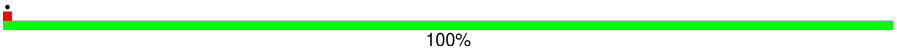
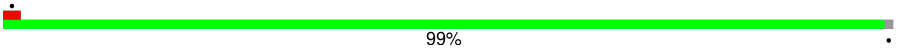
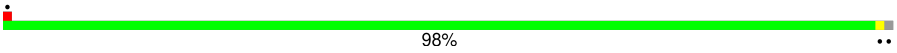
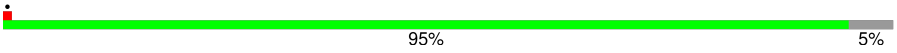
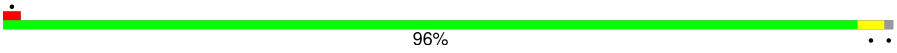
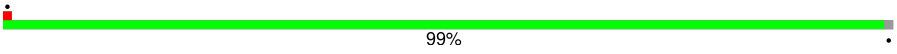

| Metric | Whole archive (#Entries) | EM structures (#Entries) |
|---|---|---|
| Ramachandran outliers | 207382 | 16835 |
| Sidechain outliers | 206894 | 16415 |
| RNA backbone | 6643 | 2191 |

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 | A | 257 | 91% 7% |
| 2 | B | 403 | 97% |
| 3 | C | 392 | 90% 8% |
| 4 | D | 297 | 98% |
| 5 | E | 291 | 74% 26% |
| 6 | F | 249 | 90% 10% |
| 7 | G | 242 | 95% |
| 8 | H | 192 | 96% |

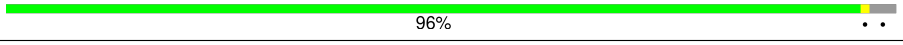
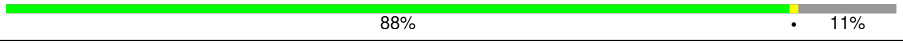
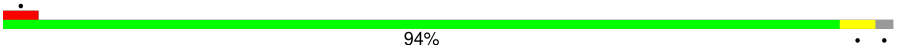
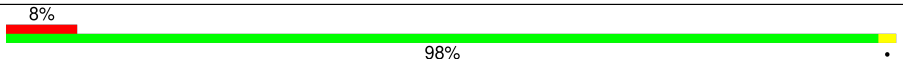
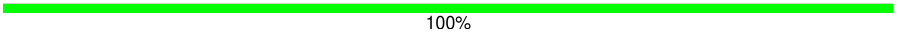
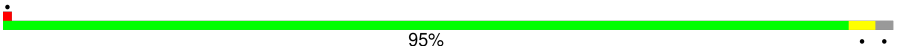
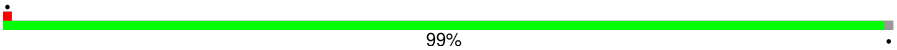
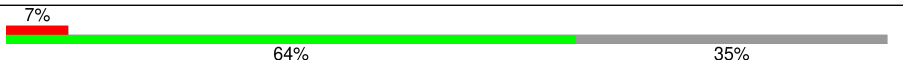
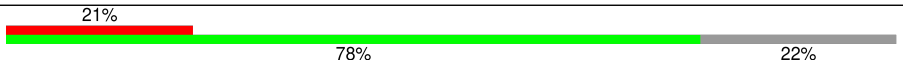
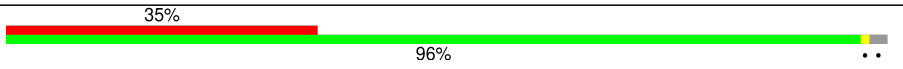
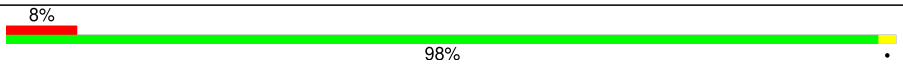
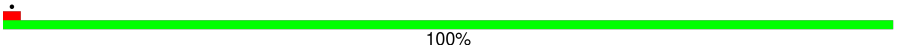
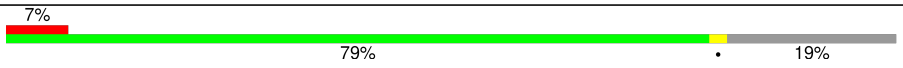
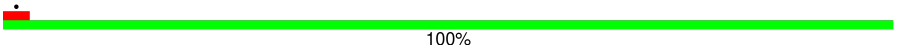
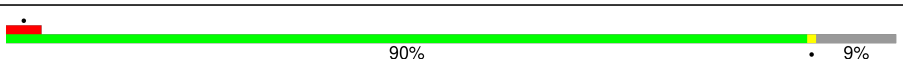
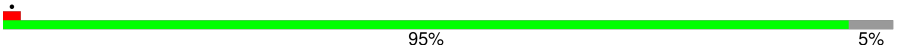
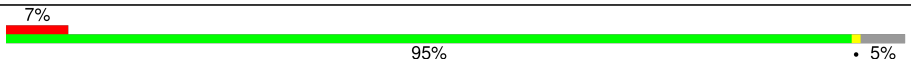
*Continued on next page...*

*Continued from previous page...*

| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 9 | I | 214 |   |
| 10 | J | 178 |   |
| 11 | L | 211 |   |
| 12 | M | 198 |   |
| 13 | N | 204 |   |
| 14 | O | 198 |   |
| 15 | P | 187 |   |
| 16 | Q | 187 |   |
| 17 | R | 181 |   |
| 18 | S | 176 |   |
| 19 | T | 160 |   |
| 20 | U | 99 |   |
| 21 | V | 140 |   |
| 22 | W | 157 |   |
| 23 | X | 156 |   |
| 24 | Y | 145 |   |
| 25 | Z | 136 |   |
| 26 | a | 148 |   |
| 27 | b | 226 |   |
| 28 | c | 115 |   |
| 29 | d | 125 |   |
| 30 | e | 135 |   |
| 31 | f | 110 |   |
| 32 | g | 126 |   |
| 33 | h | 123 |   |

*Continued on next page...*

*Continued from previous page...*

| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 34 | i | 105 |   |
| 35 | j | 97 |   |
| 36 | k | 69 |   |
| 37 | l | 51 |   |
| 38 | m | 52 |   |
| 39 | n | 25 |   |
| 40 | o | 106 |   |
| 41 | p | 92 |   |
| 42 | r | 137 |   |
| 43 | s | 303 |   |
| 44 | t | 195 |   |
| 45 | 5 | 3594 |   |
| 46 | 7 | 119 |   |
| 47 | 8 | 151 |   |
| 48 | K | 217 |   |
| 49 | 2 | 1697 |   |
| 50 | BB | 217 |   |
| 51 | CC | 264 |   |
| 52 | DD | 221 |   |
| 53 | EE | 281 |   |
| 54 | FF | 262 |   |
| 55 | GG | 204 |   |
| 56 | HH | 249 |   |
| 57 | II | 194 |   |
| 58 | JJ | 206 |   |

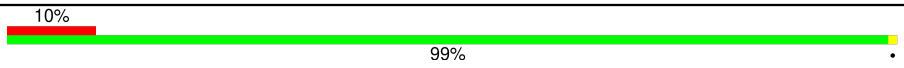
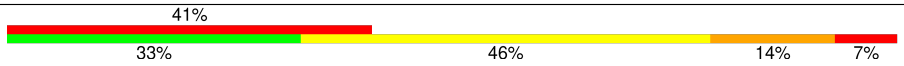
*Continued on next page...*

*Continued from previous page...*

| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 59 | KK | 194 | 94% 5% |
| 60 | LL | 149 | 5% 64% 36% |
| 61 | MM | 158 | 7% 89% 9% |
| 62 | NN | 132 | 52% 88% 11% |
| 63 | OO | 151 | 97% |
| 64 | PP | 151 | 6% 90% 10% |
| 65 | QQ | 145 | 6% 79% 21% |
| 66 | RR | 172 | 82% 17% |
| 67 | SS | 135 | 24% 96% |
| 68 | TT | 152 | 12% 93% 5% |
| 69 | UU | 145 | 97% |
| 70 | VV | 119 | 8% 83% 16% |
| 71 | WW | 83 | 5% 98% |
| 72 | XX | 130 | 98% |
| 73 | YY | 143 | 97% |
| 74 | ZZ | 134 | 91% 7% |
| 75 | aa | 125 | 6% 60% 40% |
| 76 | bb | 101 | 100% |
| 77 | cc | 84 | 6% 99% |
| 78 | dd | 69 | 13% 90% 10% |
| 79 | ee | 56 | 98% |
| 80 | ff | 133 | 41% 57% |
| 81 | gg | 156 | 19% 43% 56% |
| 82 | hh | 317 | 5% 98% |
| 83 | 3 | 87 | 7% 70% 30% |

*Continued on next page...*

*Continued from previous page...*

| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 84 | 9 | 856 |   |
| 85 | 4 | 190 |   |

# 2 Entry composition (i)

There are 87 unique types of molecules in this entry. The entry contains 227188 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 Ribosomal protein L8.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | S | | |
| 1 | A | 239 | 1777 | 1110 | 361 | 300 | 6 | 0 | 0 |

- Molecule 2 is a protein called uL3.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | S | | |
| 2 | B | 394 | 3172 | 2020 | 597 | 542 | 13 | 0 | 0 |

- Molecule 3 is a protein called Ribosomal protein L4.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | S | | |
| 3 | C | 362 | 2883 | 1812 | 577 | 480 | 14 | 0 | 0 |

- Molecule 4 is a protein called Large ribosomal subunit protein uL18.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | S | | |
| 4 | D | 293 | 2391 | 1512 | 438 | 427 | 14 | 0 | 0 |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| D | 1 | LYS | - | expression tag | UNP P19949 |

- Molecule 5 is a protein called 60S ribosomal protein L6.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | S | | |
| 5 | E | 216 | 1729 | 1115 | 329 | 282 | 3 | 0 | 0 |

- Molecule 6 is a protein called uL30.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 6 | F | 225 | Total | C | N | O | S | 0 | 0 |
| | | | 1875 | 1205 | 358 | 303 | 9 | | |

- Molecule 7 is a protein called eL8.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 7 | G | 233 | Total | C | N | O | S | 0 | 0 |
| | | | 1879 | 1199 | 361 | 315 | 4 | | |

- Molecule 8 is a protein called 60S ribosomal protein L9.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 8 | H | 190 | Total | C | N | O | S | 0 | 0 |
| | | | 1516 | 954 | 284 | 272 | 6 | | |

- Molecule 9 is a protein called 60S ribosomal protein L10.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 9 | I | 205 | Total | C | N | O | S | 0 | 0 |
| | | | 1664 | 1056 | 321 | 274 | 13 | | |

- Molecule 10 is a protein called Ribosomal protein L11.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 10 | J | 170 | Total | C | N | O | S | 0 | 0 |
| | | | 1362 | 861 | 254 | 241 | 6 | | |

- Molecule 11 is a protein called 60S ribosomal protein L13.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 11 | L | 210 | Total | C | N | O | S | 0 | 0 |
| | | | 1702 | 1065 | 354 | 279 | 4 | | |

There are 9 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| L | 46 | ILE | - | insertion | UNP G1TPV0 |
| L | 47 | ALA | - | insertion | UNP G1TPV0 |
| L | 48 | PRO | - | insertion | UNP G1TPV0 |
| L | 49 | ARG | - | insertion | UNP G1TPV0 |
| L | 50 | PRO | - | insertion | UNP G1TPV0 |
| L | 51 | ALA | - | insertion | UNP G1TPV0 |

*Continued on next page...*

*Continued from previous page...*

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| L | 52 | ALA | - | insertion | UNP G1TPV0 |
| L | 53 | GLY | - | insertion | UNP G1TPV0 |
| L | 54 | PRO | - | insertion | UNP G1TPV0 |

- Molecule 12 is a protein called Large ribosomal subunit protein eL14.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 12 | M | 137 | Total | C | N | O | S | 0 | 0 |
| | | | 1130 | 722 | 220 | 181 | 7 | | |

There are 20 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| M | ? | - | LYS | deletion | UNP G1SZ12 |
| M | ? | - | ALA | deletion | UNP G1SZ12 |
| M | ? | - | ALA | deletion | UNP G1SZ12 |
| M | ? | - | ALA | deletion | UNP G1SZ12 |
| M | ? | - | GLN | deletion | UNP G1SZ12 |
| M | ? | - | LYS | deletion | UNP G1SZ12 |
| M | ? | - | ALA | deletion | UNP G1SZ12 |
| M | ? | - | PRO | deletion | UNP G1SZ12 |
| M | ? | - | ALA | deletion | UNP G1SZ12 |
| M | ? | - | GLN | deletion | UNP G1SZ12 |
| M | ? | - | LYS | deletion | UNP G1SZ12 |
| M | ? | - | ALA | deletion | UNP G1SZ12 |
| M | ? | - | PRO | deletion | UNP G1SZ12 |
| M | ? | - | ALA | deletion | UNP G1SZ12 |
| M | ? | - | GLN | deletion | UNP G1SZ12 |
| M | ? | - | LYS | deletion | UNP G1SZ12 |
| M | ? | - | ALA | deletion | UNP G1SZ12 |
| M | ? | - | ALA | deletion | UNP G1SZ12 |
| M | ? | - | GLY | deletion | UNP G1SZ12 |
| M | ? | - | GLN | deletion | UNP G1SZ12 |

- Molecule 13 is a protein called Ribosomal protein L15.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 13 | N | 203 | Total | C | N | O | S | 0 | 0 |
| | | | 1701 | 1072 | 359 | 266 | 4 | | |

- Molecule 14 is a protein called uL13.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 14 | O | 198 | Total | C | N | O | S | 0 | 0 |
| | | | 1623 | 1046 | 318 | 254 | 5 | | |

- Molecule 15 is a protein called Large ribosomal subunit protein uL22.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 15 | P | 153 | Total | C | N | O | S | 0 | 0 |
| | | | 1242 | 777 | 241 | 215 | 9 | | |

- Molecule 16 is a protein called eL18.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 16 | Q | 187 | Total | C | N | O | S | 0 | 0 |
| | | | 1515 | 946 | 315 | 250 | 4 | | |

- Molecule 17 is a protein called eL19.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 17 | R | 180 | Total | C | N | O | S | 0 | 0 |
| | | | 1508 | 933 | 328 | 238 | 9 | | |

- Molecule 18 is a protein called eL20.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 18 | S | 176 | Total | C | N | O | S | 0 | 0 |
| | | | 1462 | 930 | 285 | 236 | 11 | | |

- Molecule 19 is a protein called eL21.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 19 | T | 159 | Total | C | N | O | S | 0 | 0 |
| | | | 1298 | 823 | 252 | 217 | 6 | | |

- Molecule 20 is a protein called eL22.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 20 | U | 99 | Total | C | N | O | S | 0 | 0 |
| | | | 809 | 519 | 141 | 147 | 2 | | |

- Molecule 21 is a protein called Ribosomal protein L23.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 21 | V | 129 | Total | C | N | O | S | 0 | 0 |
| | | | 969 | 613 | 182 | 169 | 5 | | |

- Molecule 22 is a protein called eL24.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 22 | W | 106 | Total | C | N | O | S | 0 | 0 |
| | | | 860 | 538 | 174 | 144 | 4 | | |

- Molecule 23 is a protein called eL23.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 23 | X | 118 | Total | C | N | O | S | 0 | 0 |
| | | | 967 | 618 | 181 | 167 | 1 | | |

- Molecule 24 is a protein called uL24.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 24 | Y | 134 | Total | C | N | O | S | 0 | 0 |
| | | | 1115 | 700 | 226 | 186 | 3 | | |

- Molecule 25 is a protein called 60S ribosomal protein L27.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 25 | Z | 135 | Total | C | N | O | S | 0 | 0 |
| | | | 1107 | 714 | 208 | 182 | 3 | | |

- Molecule 26 is a protein called uL15.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 26 | a | 147 | Total | C | N | O | S | 0 | 0 |
| | | | 1162 | 734 | 239 | 185 | 4 | | |

- Molecule 27 is a protein called eL29.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 27 | b | 104 | Total | C | N | O | S | 0 | 0 |
| | | | 848 | 527 | 189 | 129 | 3 | | |

- Molecule 28 is a protein called eL30.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 28 | c | 98 | Total | C | N | O | S | 0 | 0 |
| | | | 761 | 481 | 134 | 140 | 6 | | |

- Molecule 29 is a protein called eL31.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 29 | d | 107 | Total | C | N | O | S | 0 | 0 |
| | | | 888 | 560 | 171 | 155 | 2 | | |

- Molecule 30 is a protein called Ribosomal protein L32.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 30 | e | 128 | Total | C | N | O | S | 0 | 0 |
| | | | 1053 | 667 | 216 | 165 | 5 | | |

- Molecule 31 is a protein called eL33.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 31 | f | 109 | Total | C | N | O | S | 0 | 0 |
| | | | 876 | 555 | 174 | 143 | 4 | | |

- Molecule 32 is a protein called Large ribosomal subunit protein eL34.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 32 | g | 114 | Total | C | N | O | S | 0 | 0 |
| | | | 906 | 566 | 187 | 147 | 6 | | |

- Molecule 33 is a protein called eL35.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 33 | h | 122 | Total | C | N | O | S | 0 | 0 |
| | | | 1013 | 640 | 204 | 168 | 1 | | |

- Molecule 34 is a protein called 60S ribosomal protein L36.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 34 | i | 102 | Total | C | N | O | S | 0 | 0 |
| | | | 830 | 520 | 176 | 129 | 5 | | |

- Molecule 35 is a protein called Ribosomal protein L37.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 35 | j | 86 | Total | C | N | O | S | 0 | 0 |
| | | | 705 | 434 | 155 | 111 | 5 | | |

- Molecule 36 is a protein called eL38.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 36 | k | 69 | Total | C | N | O | S | 0 | 0 |
| | | | 569 | 366 | 103 | 99 | 1 | | |

- Molecule 37 is a protein called eL39.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 37 | l | 50 | Total | C | N | O | S | 0 | 0 |
| | | | 447 | 286 | 96 | 64 | 1 | | |

- Molecule 38 is a protein called eL40.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 38 | m | 52 | Total | C | N | O | S | 0 | 0 |
| | | | 429 | 266 | 90 | 67 | 6 | | |

- Molecule 39 is a protein called eL41.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 39 | n | 25 | Total | C | N | O | S | 0 | 0 |
| | | | 239 | 145 | 64 | 27 | 3 | | |

- Molecule 40 is a protein called Large ribosomal subunit protein eL42.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 40 | o | 104 | Total | C | N | O | S | 0 | 0 |
| | | | 851 | 533 | 174 | 138 | 6 | | |

- Molecule 41 is a protein called eL43.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 41 | p | 91 | Total | C | N | O | S | 0 | 0 |
| | | | 708 | 445 | 136 | 120 | 7 | | |

- Molecule 42 is a protein called eL28.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 42 | r | 124 | Total | C | N | O | S | 0 | 0 |
| | | | 994 | 616 | 205 | 167 | 6 | | |

- Molecule 43 is a protein called 60S acidic ribosomal protein P0.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 43 | s | 196 | Total | C | N | O | S | 0 | 0 |
| | | | 1507 | 959 | 263 | 276 | 9 | | |

There are 30 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| s | 262 | LEU | ALA | conflict | UNP A0A1U7UFL5 |
| s | ? | - | GLU | deletion | UNP A0A1U7UFL5 |
| s | 266 | THR | ALA | conflict | UNP A0A1U7UFL5 |
| s | 267 | LEU | PHE | conflict | UNP A0A1U7UFL5 |
| s | 269 | ILE | ALA | conflict | UNP A0A1U7UFL5 |
| s | 270 | ILE | ASP | conflict | UNP A0A1U7UFL5 |
| s | ? | - | SER | deletion | UNP A0A1U7UFL5 |
| s | ? | - | ALA | deletion | UNP A0A1U7UFL5 |
| s | ? | - | PHE | deletion | UNP A0A1U7UFL5 |
| s | ? | - | VAL | deletion | UNP A0A1U7UFL5 |
| s | ? | - | ALA | deletion | UNP A0A1U7UFL5 |
| s | ? | - | ALA | deletion | UNP A0A1U7UFL5 |
| s | ? | - | ALA | deletion | UNP A0A1U7UFL5 |
| s | ? | - | PRO | deletion | UNP A0A1U7UFL5 |
| s | ? | - | VAL | deletion | UNP A0A1U7UFL5 |
| s | 272 | VAL | ALA | conflict | UNP A0A1U7UFL5 |
| s | 273 | ARG | ALA | conflict | UNP A0A1U7UFL5 |
| s | 274 | ASP | ALA | conflict | UNP A0A1U7UFL5 |
| s | 275 | SER | ALA | conflict | UNP A0A1U7UFL5 |
| s | 276 | THR | PRO | conflict | UNP A0A1U7UFL5 |
| s | 278 | ASP | ALA | conflict | UNP A0A1U7UFL5 |
| s | 282 | ALA | LEU | conflict | UNP A0A1U7UFL5 |
| s | 284 | GLN | ALA | conflict | UNP A0A1U7UFL5 |
| s | 286 | SER | ALA | conflict | UNP A0A1U7UFL5 |
| s | 290 | PRO | ALA | conflict | UNP A0A1U7UFL5 |
| s | ? | - | GLU | deletion | UNP A0A1U7UFL5 |
| s | ? | - | GLU | deletion | UNP A0A1U7UFL5 |
| s | ? | - | SER | deletion | UNP A0A1U7UFL5 |
| s | ? | - | GLU | deletion | UNP A0A1U7UFL5 |
| s | 294 | ASN | ASP | conflict | UNP A0A1U7UFL5 |

- Molecule 44 is a protein called Ribosomal protein L12.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 44 | t | 153 | Total | C | N | O | S | 0 | 0 |
| | | | 1160 | 722 | 218 | 217 | 3 | | |

- Molecule 45 is a RNA chain called 28S rRNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 45 | 5 | 3594 | Total | C | N | O | P | 0 | 0 |
| | | | 77073 | 34324 | 14116 | 25039 | 3594 | | |

- Molecule 46 is a RNA chain called 5S rRNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 46 | 7 | 119 | Total | C | N | O | P | 0 | 0 |
| | | | 2538 | 1132 | 454 | 834 | 118 | | |

- Molecule 47 is a RNA chain called 5.8S rRNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 47 | 8 | 151 | Total | C | N | O | P | 0 | 0 |
| | | | 3208 | 1432 | 564 | 1062 | 150 | | |

- Molecule 48 is a protein called Ribosomal protein.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 48 | K | 212 | Total | C | N | O | S | 0 | 0 |
| | | | 1705 | 1091 | 306 | 300 | 8 | | |

- Molecule 49 is a RNA chain called 18S rRNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 49 | 2 | 1697 | Total | C | N | O | P | 0 | 0 |
| | | | 36229 | 16171 | 6507 | 11855 | 1696 | | |

- Molecule 50 is a protein called uS2.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 50 | BB | 217 | Total | C | N | O | S | 0 | 0 |
| | | | 1710 | 1086 | 300 | 316 | 8 | | |

- Molecule 51 is a protein called 40S ribosomal protein S3a.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 51 | CC | 213 | Total | C | N | O | S | 0 | 0 |
| | | | 1729 | 1098 | 309 | 308 | 14 | | |

- Molecule 52 is a protein called uS5.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 52 | DD | 221 | Total | C | N | O | S | 0 | 0 |
| | | | 1716 | 1111 | 295 | 301 | 9 | | |

- Molecule 53 is a protein called Ribosomal protein S3.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 53 | EE | 228 | Total | C | N | O | S | 0 | 0 |
| | | | 1768 | 1126 | 318 | 316 | 8 | | |

- Molecule 54 is a protein called eS4.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 54 | FF | 262 | Total | C | N | O | S | 0 | 0 |
| | | | 2076 | 1324 | 386 | 358 | 8 | | |

- Molecule 55 is a protein called Ribosomal protein S5.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 55 | GG | 185 | Total | C | N | O | S | 0 | 0 |
| | | | 1471 | 921 | 277 | 266 | 7 | | |

- Molecule 56 is a protein called 40S ribosomal protein S6.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 56 | HH | 237 | Total | C | N | O | S | 0 | 0 |
| | | | 1923 | 1200 | 387 | 329 | 7 | | |

- Molecule 57 is a protein called 40S ribosomal protein S7.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 57 | II | 185 | Total | C | N | O | S | 0 | 0 |
| | | | 1488 | 952 | 271 | 264 | 1 | | |

- Molecule 58 is a protein called 40S ribosomal protein S8.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 58 | JJ | 206 | Total | C | N | O | S | 0 | 0 |
| | | | 1686 | 1058 | 332 | 291 | 5 | | |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| JJ | 47 | ARG | GLY | conflict | UNP G1TJW1 |

- Molecule 59 is a protein called Ribosomal protein S9 (Predicted).

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 59 | KK | 185 | Total | C | N | O | S | 0 | 0 |
| | | | 1525 | 969 | 306 | 248 | 2 | | |

- Molecule 60 is a protein called S10_plectin domain-containing protein.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 60 | LL | 96 | Total | C | N | O | S | 0 | 0 |
| | | | 810 | 530 | 143 | 131 | 6 | | |

- Molecule 61 is a protein called Ribosomal protein S11.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 61 | MM | 143 | Total | C | N | O | S | 0 | 0 |
| | | | 1175 | 749 | 222 | 198 | 6 | | |

- Molecule 62 is a protein called 40S ribosomal protein S12.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 62 | NN | 117 | Total | C | N | O | S | 0 | 0 |
| | | | 908 | 570 | 161 | 169 | 8 | | |

- Molecule 63 is a protein called Ribosomal protein S13.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 63 | OO | 149 | Total | C | N | O | S | 0 | 0 |
| | | | 1202 | 770 | 228 | 203 | 1 | | |

- Molecule 64 is a protein called Small ribosomal subunit protein uS11.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 64 | PP | 136 | Total | C | N | O | S | 0 | 0 |
| | | | 1016 | 621 | 199 | 190 | 6 | | |

- Molecule 65 is a protein called uS19.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 65 | QQ | 115 | Total | C | N | O | S | 0 | 0 |
| | | | 956 | 610 | 176 | 163 | 7 | | |

- Molecule 66 is a protein called Ribosomal protein S16.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 66 | RR | 142 | Total | C | N | O | S | 0 | 0 |
| | | | 1128 | 717 | 213 | 195 | 3 | | |

- Molecule 67 is a protein called eS17.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 67 | SS | 132 | Total | C | N | O | S | 0 | 0 |
| | | | 1068 | 670 | 199 | 195 | 4 | | |

- Molecule 68 is a protein called uS13.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 68 | TT | 144 | Total | C | N | O | S | 0 | 0 |
| | | | 1190 | 746 | 241 | 202 | 1 | | |

- Molecule 69 is a protein called eS19.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 69 | UU | 141 | Total | C | N | O | S | 0 | 0 |
| | | | 1097 | 688 | 211 | 195 | 3 | | |

- Molecule 70 is a protein called uS10.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 70 | VV | 100 | Total | C | N | O | S | 0 | 0 |
| | | | 795 | 498 | 152 | 141 | 4 | | |

- Molecule 71 is a protein called eS21.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 71 | WW | 83 | Total | C | N | O | S | 0 | 0 |
| | | | 636 | 393 | 117 | 121 | 5 | | |

- Molecule 72 is a protein called Ribosomal protein S15a.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 72 | XX | 129 | Total | C | N | O | S | 0 | 0 |
| | | | 1034 | 659 | 193 | 176 | 6 | | |

- Molecule 73 is a protein called Ribosomal protein S23.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 73 | YY | 141 | Total | C | N | O | S | 0 | 0 |
| | | | 1098 | 693 | 219 | 183 | 3 | | |

- Molecule 74 is a protein called 40S ribosomal protein S24.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 74 | ZZ | 124 | Total | C | N | O | S | 0 | 0 |
| | | | 1011 | 640 | 198 | 168 | 5 | | |

- Molecule 75 is a protein called eS25.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 75 | aa | 75 | Total | C | N | O | S | 0 | 0 |
| | | | 598 | 382 | 111 | 104 | 1 | | |

- Molecule 76 is a protein called eS26.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 76 | bb | 101 | Total | C | N | O | S | 0 | 0 |
| | | | 814 | 507 | 170 | 132 | 5 | | |

- Molecule 77 is a protein called 40S ribosomal protein S27.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 77 | cc | 83 | Total | C | N | O | S | 0 | 0 |
| | | | 651 | 408 | 121 | 115 | 7 | | |

- Molecule 78 is a protein called Ribosomal protein S28.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 78 | dd | 62 | Total | C | N | O | S | 0 | 0 |
| | | | 488 | 297 | 97 | 92 | 2 | | |

- Molecule 79 is a protein called eS29.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 79 | ee | 55 | Total | C | N | O | S | 0 | 0 |
| | | | 459 | 286 | 94 | 74 | 5 | | |

- Molecule 80 is a protein called 40S ribosomal protein S30.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 80 | ff | 57 | Total | C | N | O | S | 0 | 0 |
| | | | 457 | 282 | 101 | 73 | 1 | | |

- Molecule 81 is a protein called Ribosomal protein S27a.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 81 | gg | 68 | Total | C | N | O | S | 0 | 0 |
| | | | 555 | 351 | 103 | 94 | 7 | | |

- Molecule 82 is a protein called RACK1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 82 | hh | 313 | Total | C | N | O | S | 0 | 0 |
| | | | 2436 | 1535 | 424 | 465 | 12 | | |

- Molecule 83 is a RNA chain called P-site tRNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 83 | 3 | 87 | Total | C | N | O | P | 0 | 0 |
| | | | 1860 | 829 | 333 | 612 | 86 | | |

- Molecule 84 is a protein called Elongation factor 2.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 84 | 9 | 856 | Total | C | N | O | S | 0 | 0 |
| | | | 6673 | 4234 | 1148 | 1247 | 44 | | |

- Molecule 85 is a RNA chain called CrPV IRES.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 85 | 4 | 190 | Total | C | N | O | P | 0 | 0 |
| | | | 4020 | 1802 | 689 | 1339 | 190 | | |

There are 3 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| 4 | 6217 | C | - | expression tag | GB 8895506 |
| 4 | 6218 | U | - | expression tag | GB 8895506 |
| 4 | 6219 | U | - | expression tag | GB 8895506 |

- Molecule 86 is ZINC ION (three-letter code: ZN) (formula: Zn).

| Mol | Chain | Residues | Atoms | | AltConf |
|---|---|---|---|---|---|
| 86 | p | 1 | Total | Zn | 0 |
| | | | 1 | 1 | |
| 86 | 2 | 1 | Total | Zn | 0 |
| | | | 1 | 1 | |
| 86 | bb | 1 | Total | Zn | 0 |
| | | | 1 | 1 | |
| 86 | gg | 1 | Total | Zn | 0 |
| | | | 1 | 1 | |

- Molecule 87 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

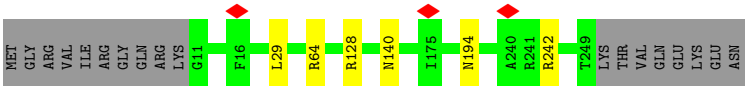
| Mol | Chain | Residues | Atoms | | AltConf |
|---|---|---|---|---|---|
| 87 | 5 | 2 | Total | Mg | 0 |
| | | | 2 | 2 | |

# 3 Residue-property plots (i)

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

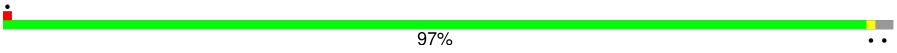
• Molecule 1: Ribosomal protein L8

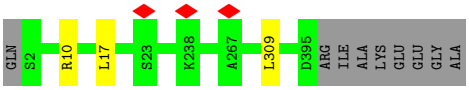
Chain A:


• Molecule 2: uL3

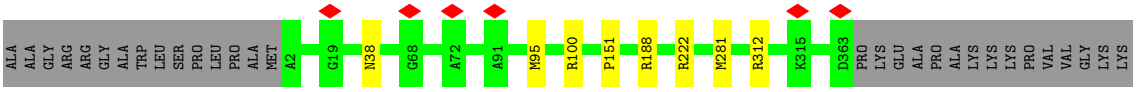
Chain B:



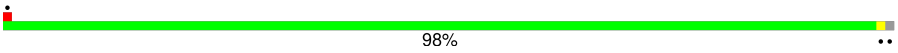

• Molecule 3: Ribosomal protein L4

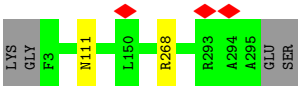
Chain C:


• Molecule 4: Large ribosomal subunit protein uL18

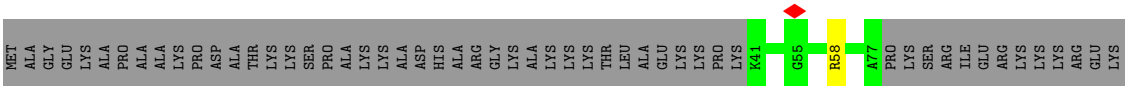
Chain D:

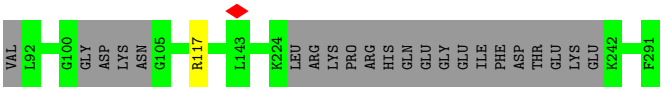



• Molecule 5: 60S ribosomal protein L6

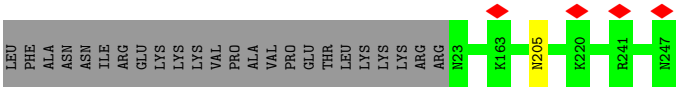
Chain E:



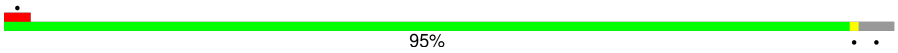

• Molecule 6: uL30

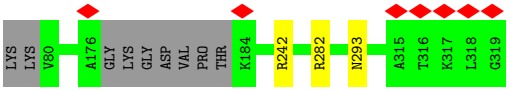
Chain F:


• Molecule 7: eL8

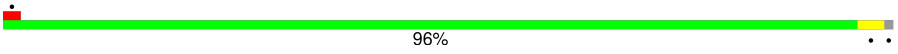
Chain G:

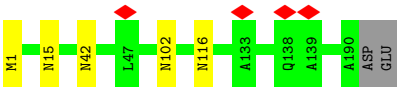



• Molecule 8: 60S ribosomal protein L9

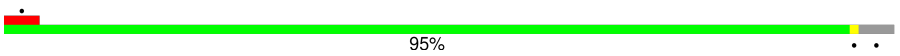
Chain H:

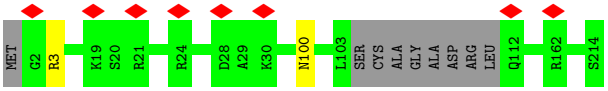



• Molecule 9: 60S ribosomal protein L10

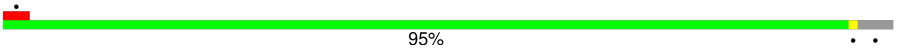
Chain I:

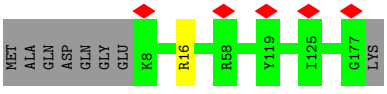



• Molecule 10: Ribosomal protein L11

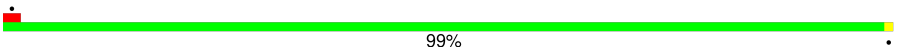
Chain J:

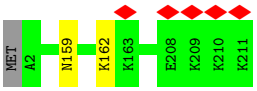



• Molecule 11: 60S ribosomal protein L13

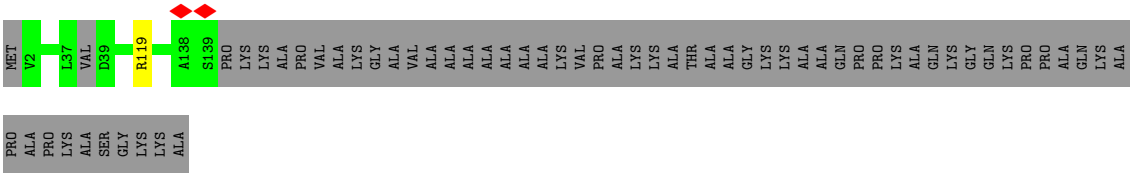
Chain L:



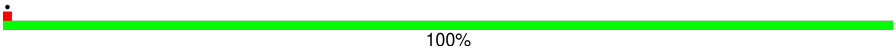

• Molecule 12: Large ribosomal subunit protein eL14

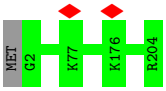
Chain M:


• Molecule 13: Ribosomal protein L15

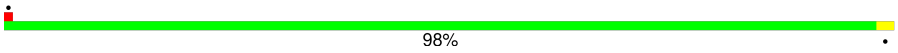
Chain N:

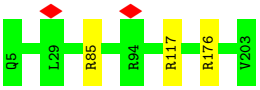



• Molecule 14: uL13

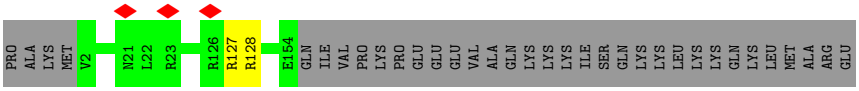
Chain O:



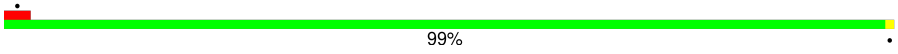

• Molecule 15: Large ribosomal subunit protein uL22

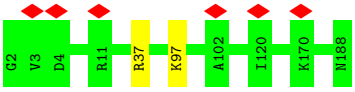
Chain P:


• Molecule 16: eL18

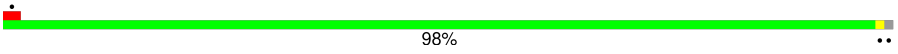
Chain Q:

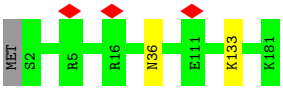



• Molecule 17: eL19

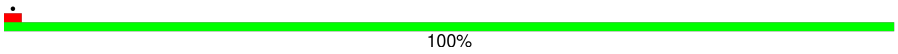
Chain R:

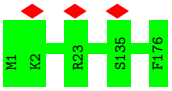



• Molecule 18: eL20

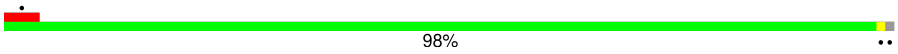
Chain S:

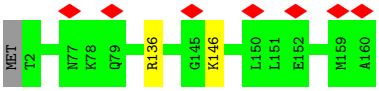





• Molecule 19: eL21

Chain T:



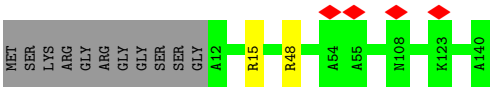

• Molecule 20: eL22

Chain U:



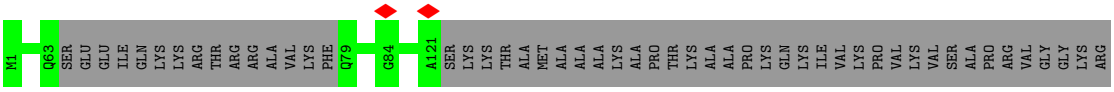
• Molecule 21: Ribosomal protein L23

Chain V:

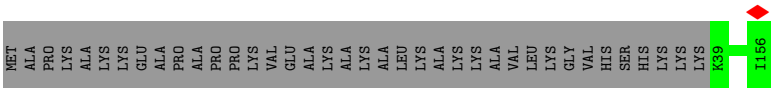

• Molecule 22: eL24

Chain W:

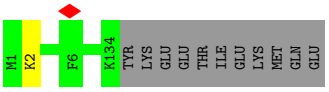

• Molecule 23: eL23

Chain X:

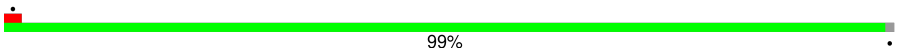

• Molecule 24: uL24

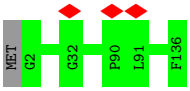
Chain Y:


• Molecule 25: 60S ribosomal protein L27

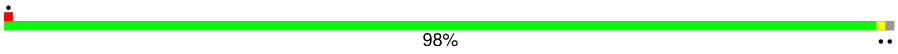
Chain Z:

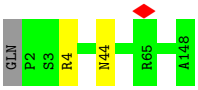



• Molecule 26: uL15

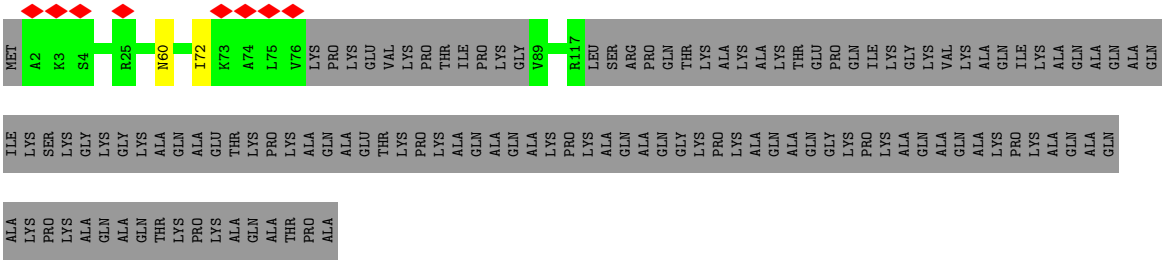
Chain a:



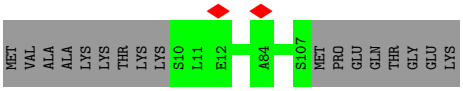

• Molecule 27: eL29

Chain b:

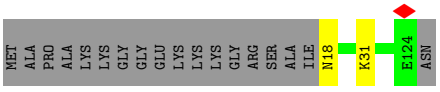

• Molecule 28: eL30

Chain c:

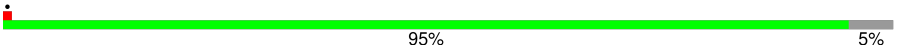

• Molecule 29: eL31

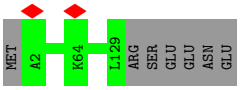
Chain d:


• Molecule 30: Ribosomal protein L32

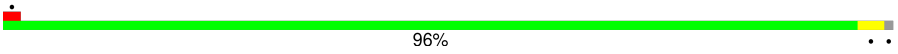
Chain e:

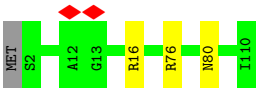



• Molecule 31: eL33

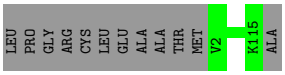
Chain f:



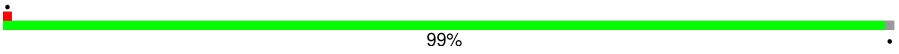

• Molecule 32: Large ribosomal subunit protein eL34

Chain g:


• Molecule 33: eL35

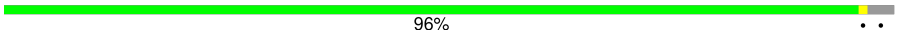
Chain h:

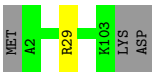




• Molecule 34: 60S ribosomal protein L36

Chain i:



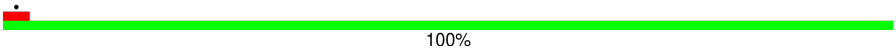

• Molecule 35: Ribosomal protein L37

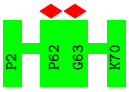
Chain j:



• Molecule 36: eL38

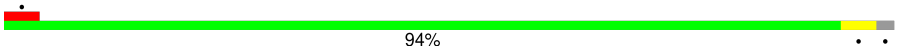
Chain k:

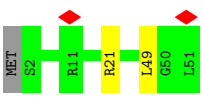



• Molecule 37: eL39

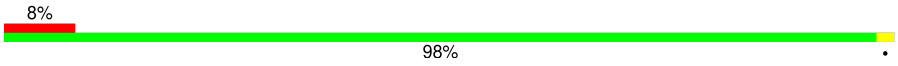
Chain l:

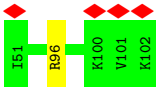



• Molecule 38: eL40

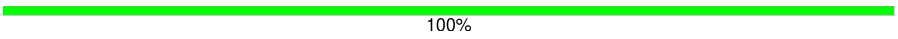
Chain m:




• Molecule 39: eL41

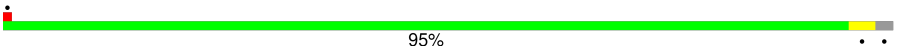
Chain n:

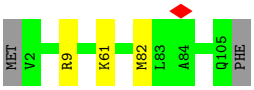



There are no outlier residues recorded for this chain.

• Molecule 40: Large ribosomal subunit protein eL42

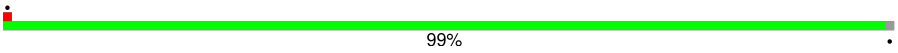
Chain o:




• Molecule 41: eL43

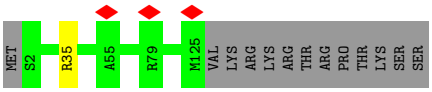
Chain p:





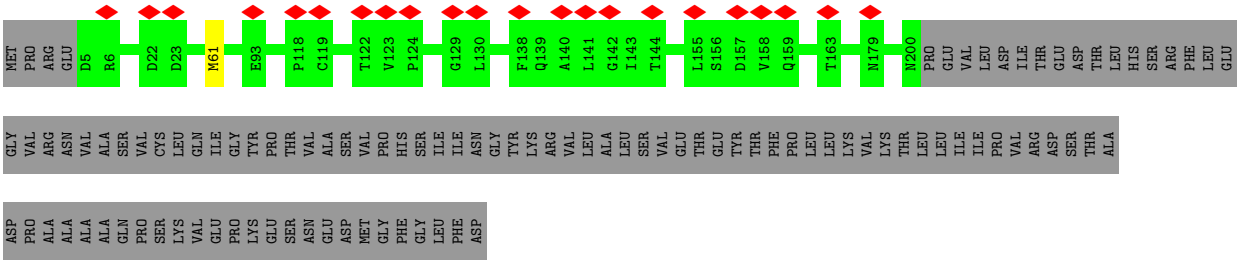
• Molecule 42: eL28

Chain r:

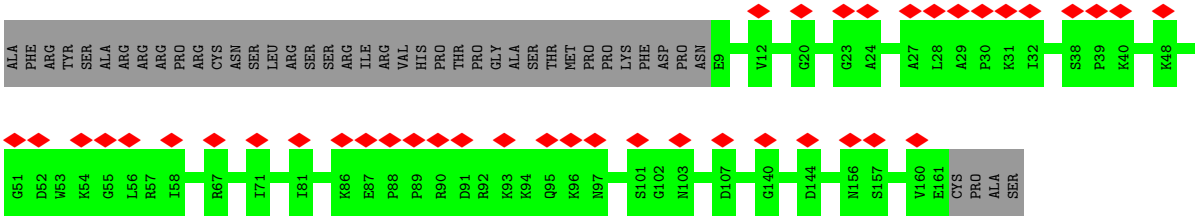

• Molecule 43: 60S acidic ribosomal protein P0

Chain s:

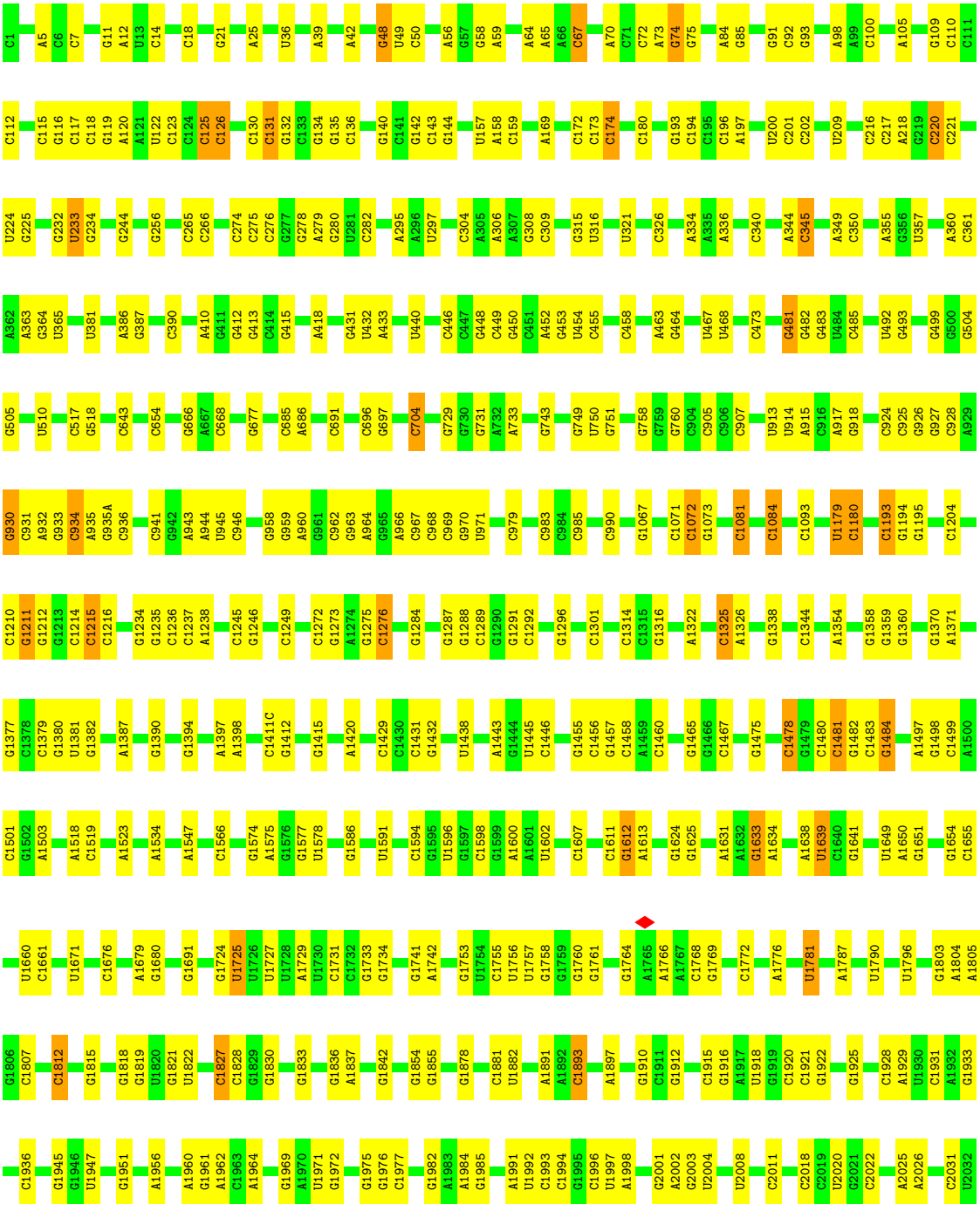

• Molecule 44: Ribosomal protein L12

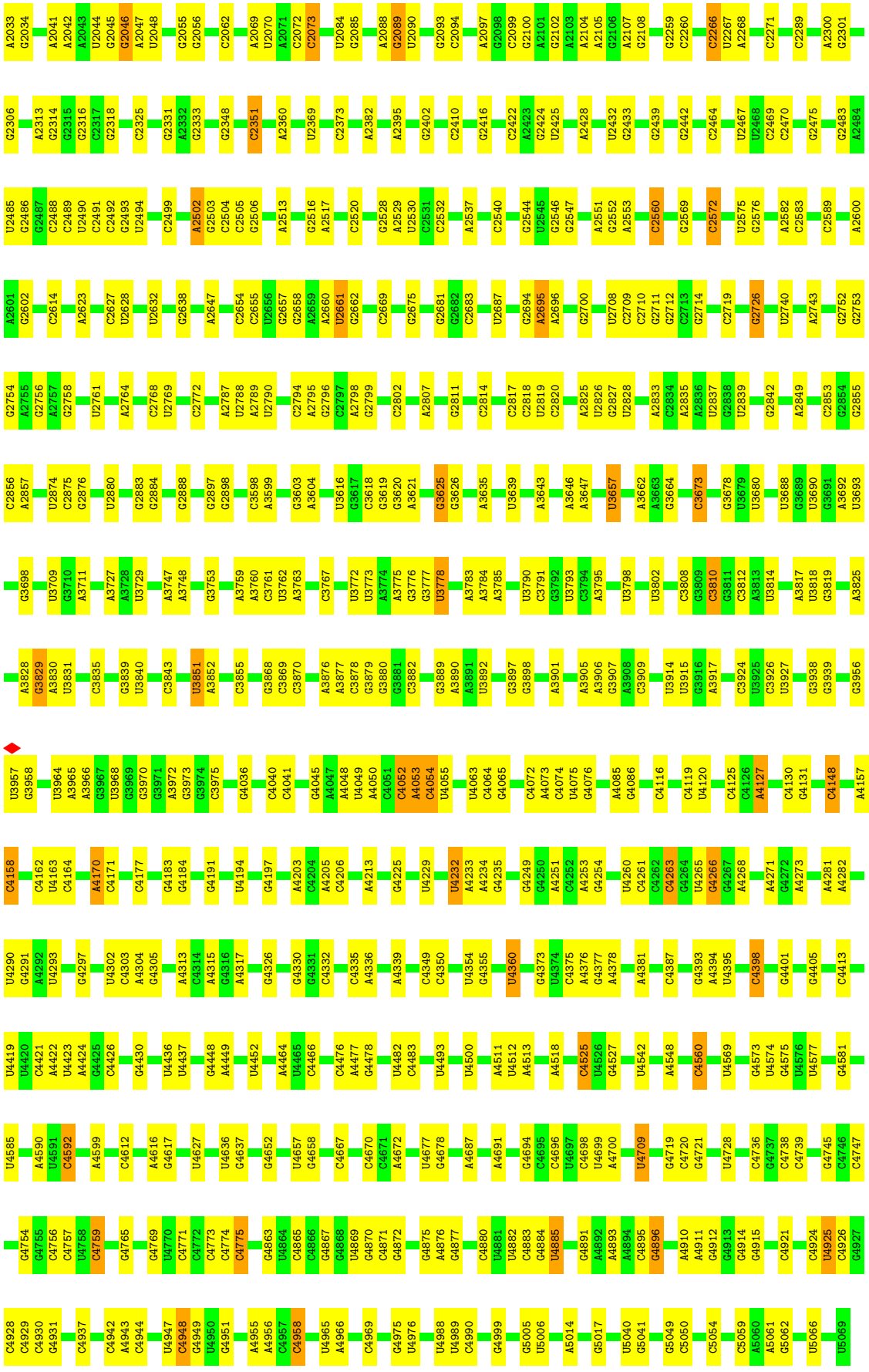
Chain t:




• Molecule 45: 28S rRNA

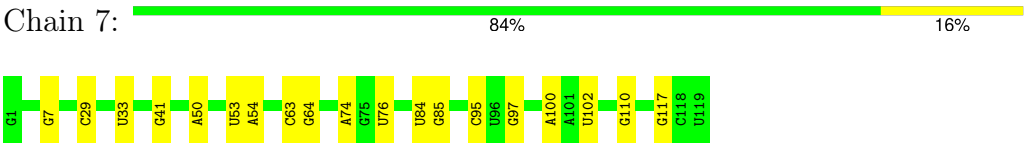
Chain 5:


A2033 G2034
A2041 A2042 A2043 U2044 G2045 G2046 A2047 U2048
G2055 G2056
C2062
A2069 U2070 A2071 C2072 C2073
U2084 G2085
A2088 G2089 U2090
G2093 C2094
A2097 G2098 C2099 G2100 A2101 G2102 A2103 A2104 A2105 G2106 A2107 G2108
G2259 C2260
C2266 U2267 A2268
C2271
C2289
A2300 G2301
G2306 A2313 G2314 G2315 G2316 C2317 G2318
C2325
G2331 A2332 G2333
G2348
C2351
A2360
U2369
C2373
A2382
A2395
G2402
C2410
G2416
C2422 A2423 G2424 U2425
A2428
U2432 G2433
G2439
G2442
C2464
U2467 U2468 C2469 C2470
G2475
G2483 A2484
U2485 G2486 G2487 C2488 C2489 U2490 C2491 C2492 G2493 U2494
C2499
A2502 G2503 C2504 C2505 G2506
A2513
G2516 A2517
C2520
G2528 A2529 U2530 C2531
C2532
A2537
C2540
G2544 U2545 G2546 G2547
A2551 G2552 A2553
C2560
G2569
C2572
U2575 G2576
A2582 C2583
C2589
A2600
A2601 G2602
C2614
A2623
C2627 U2628
U2632
G2638
A2647
C2654 C2655 U2656 G2657 G2658 A2659 A2660 U2661 G2662
C2669
G2675
G2681 G2682 C2683
U2687
G2694 A2695 A2696
G2700
U2708 C2709 C2710 G2711 G2712 C2713 G2714
C2719
G2726
U2740
A2743
G2752 G2753
G2754 A2755 G2756 A2757 G2758
U2761
A2764
C2768 U2769
C2772
A2787 U2788 A2789 U2790
C2794 A2795 G2796 C2797 A2798 G2799
C2802
A2807
G2811
C2814
C2817 C2818 U2819 C2820
A2825 U2826 G2827 U2828
A2833 C2834 A2835 A2836 U2837 G2838 U2839
G2842
A2849
C2853 G2854 G2855
C2856 A2857
U2874 C2875 G2876
U2880
G2883 G2884
G2888
G2897 G2898
C3598 A3599
G3603 A3604
U3616 G3617 C3618 G3619 G3620 A3621
G3625 G3626
A3635
U3639
A3643
A3646 A3647
U3657
A3662 A3663 G3664
C3673
G3678 U3679 U3680
U3688 G3689 U3690 G3691 A3692 U3693
G3698
U3709 G3710 A3711
A3727 A3728 U3729
A3747 A3748
G3753
A3759 A3760 C3761 U3762 A3763
C3767
U3772 U3773 A3774 A3775 G3776 G3777 U3778
A3783 A3784 A3785
U3790 C3791 G3792 U3793 C3794 A3795
U3798
U3802
C3808 G3809 C3810 G3811 C3812 A3813 U3814
A3817 U3818 G3819
A3825
A3828 G3829 A3830 U3831
C3835
G3839 U3840
C3843
U3851 A3852
C3855
G3868 C3869 C3870
A3876 A3877 C3878 G3879 G3880 G3881 C3882
G3889 A3890 A3891 U3892
G3897 G3898
A3901
A3905 A3906 G3907 A3908 C3909
U3914 U3915 G3916 A3917
C3924 U3925 C3926 U3927
G3938 G3939
G3956
U3957 G3958
U3964 A3965 A3966 G3967 U3968 G3969 G3970 G3971 A3972 G3973 G3974 C3975
G4036
C4040 C4041
G4045 A4047 A4048 U4049 A4050 C4051 C4052 A4053 C4054 U4055
U4063 C4064 G4065
C4072 A4073 C4074 U4075 G4076
A4085 G4086
C4116
C4119 U4120
C4125 C4126 A4127
C4130 G4131
C4148
A4157
C4158
C4162 U4163 C4164
A4170 C4171
C4177
G4183 G4184
G4191
U4194
G4197
A4203 C4204 A4205 C4206
A4213
G4225
U4229
U4232 A4233 A4234 G4235
G4249 G4250 A4251 C4252 A4253 G4254
U4260 C4261 C4262 C4263 G4264 U4265 G4266 G4267 A4268
A4271 G4272 A4273
A4281 A4282
U4290 G4291 A4292 U4293
G4297
U4302 C4303 A4304 G4305
A4313 C4314 A4315 G4316 A4317
G4326
G4330 G4331 C4332
C4335 A4336
A4339
C4349 C4350
U4354 G4355
U4360
G4373 U4374 C4375 A4376 G4377 A4378
A4381
C4387
G4393 A4394 U4395
C4398
G4401
G4405
C4413
U4419 U4420 C4421 A4422 U4423 A4424 G4425 C4426
G4430
U4436 U4437
G4448 A4449
U4452
A4464 U4465 C4466
C4476 A4477 G4478
U4482 C4483
U4493
U4500
A4511 U4512 A4513
A4518
C4525 U4526 G4527
U4542
A4548
C4560
U4569
G4573 U4574 G4575 U4576 U4577
G4581
U4585
A4590 U4591 C4592
A4599
C4612
A4616 G4617
U4627
U4636 G4637
G4652
U4657 G4658
C4667
C4670 C4671 A4672
U4677 G4678
A4687
A4691
G4694 C4695 C4696 U4697 C4698 U4699 A4700
U4709
G4719 C4720 G4721
U4728
C4736 G4737 C4738 C4739
G4745 C4746 C4747
G4754 G4755 C4756 C4757 U4758 C4759
G4765
G4769 U4770 C4771 C4772 C4773 C4774 C4775
G4863 U4864 C4865 C4866 G4867 G4868
U4869 G4870 C4871 G4872
G4875 A4876 G4877
C4880 U4881 U4882 C4883 G4884 U4885
G4891 A4892 A4893 A4894 C4895 G4896
A4910 A4911 G4912 G4913 G4914 G4915
C4921
C4924 U4925 C4926 G4927
C4928 C4929 C4930 G4931
C4937
C4942 A4943 C4944
U4947 C4948 G4949 U4950 G4951
A4955 A4956 C4957 C4958
U4965 A4966
C4969
G4975 U4976
U4988 U4989 C4990
G4999
G5005 U5006
A5014
G5017
U5040 G5041
G5049 C5050
C5054
C5059 A5060 A5061 G5062
U5066
U5069

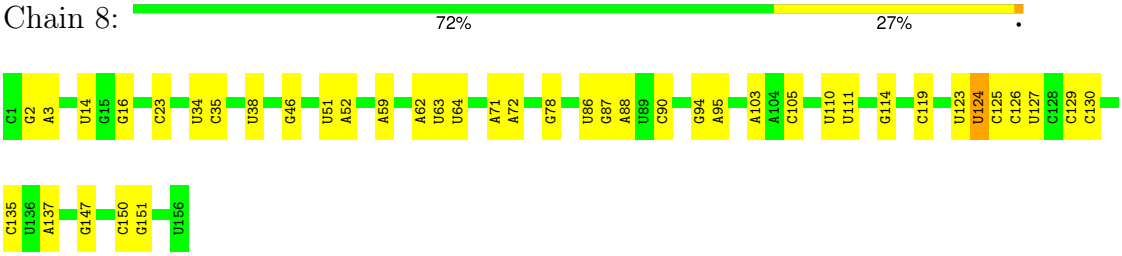
• Molecule 46: 5S rRNA

Chain 7:



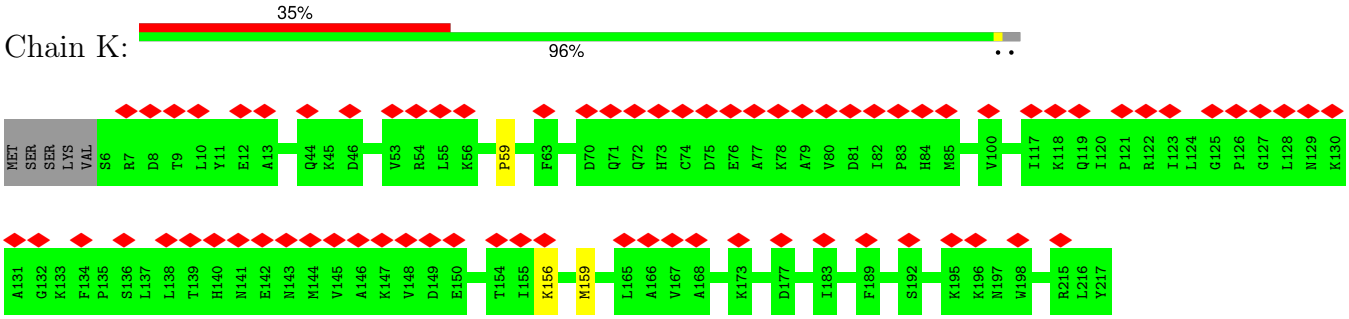

• Molecule 47: 5.8S rRNA

Chain 8:



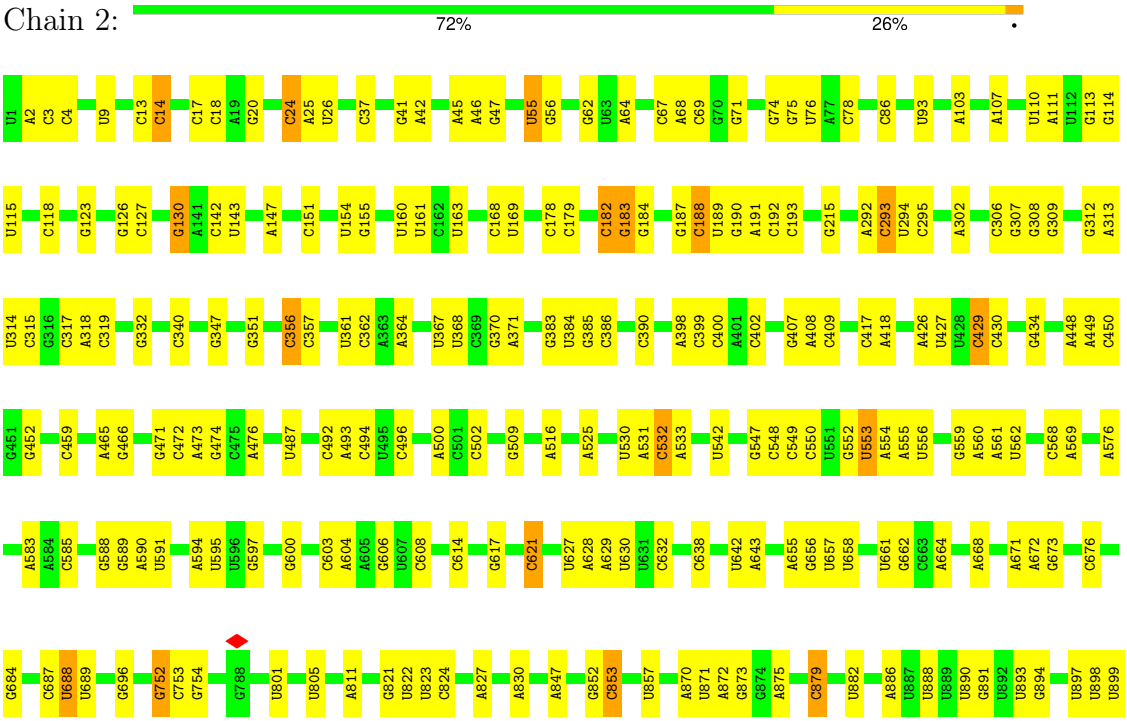

• Molecule 48: Ribosomal protein

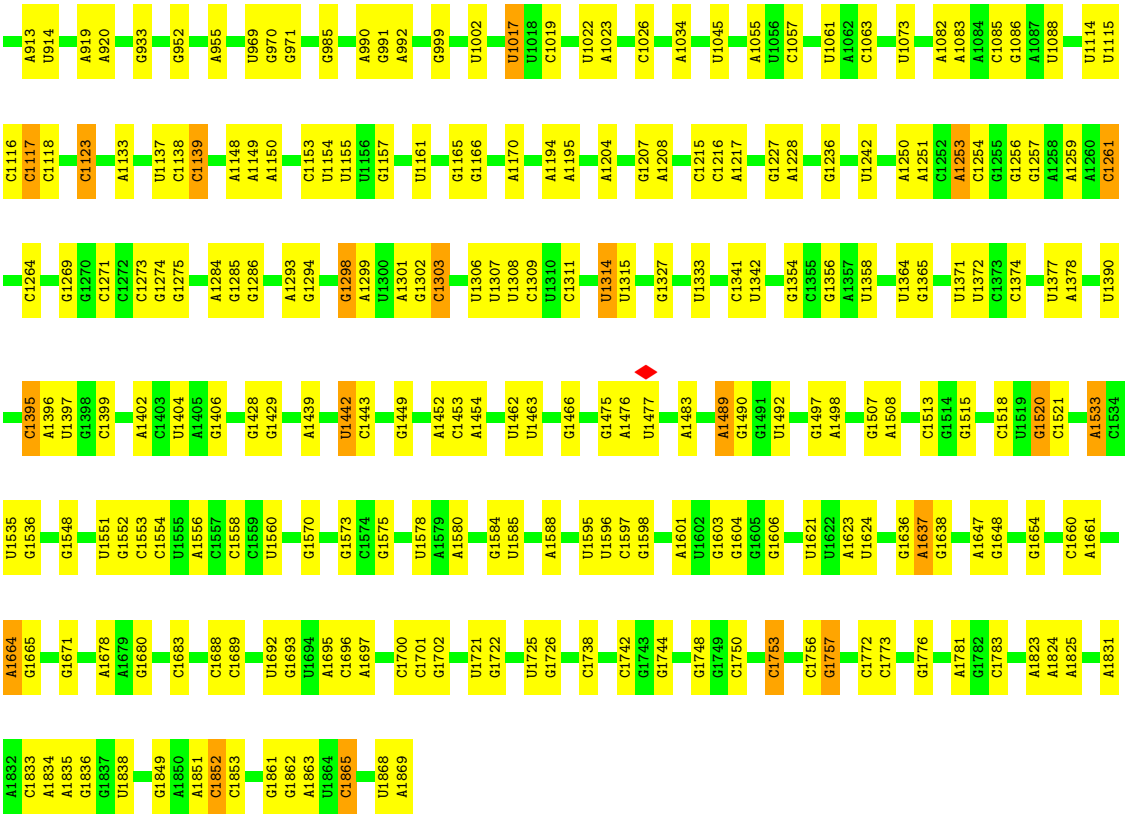
Chain K:




• Molecule 49: 18S rRNA

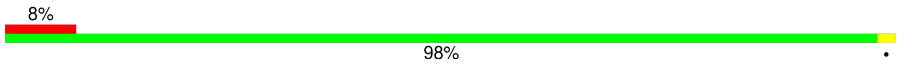
Chain 2:






- Molecule 50: uS2

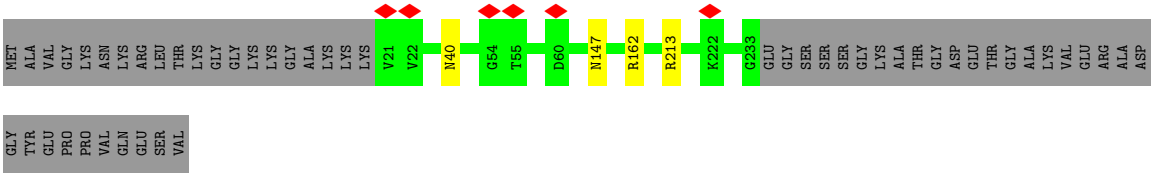
Chain BB:





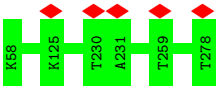
- Molecule 51: 40S ribosomal protein S3a

Chain CC:

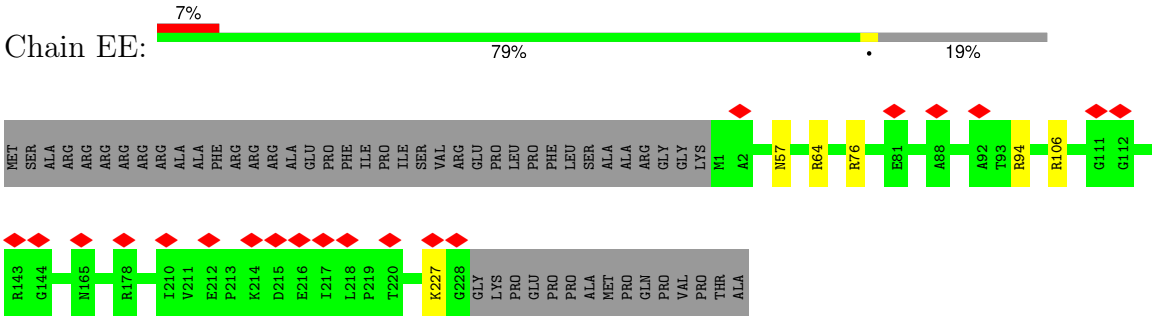

- Molecule 52: uS5

Chain DD:

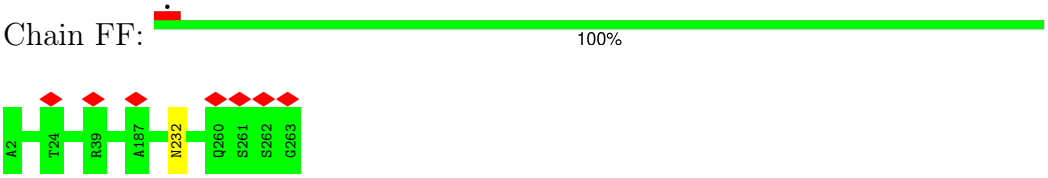

- Molecule 53: Ribosomal protein S3

Chain EE:



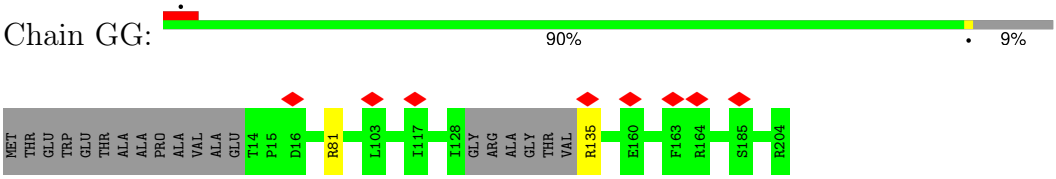

• Molecule 54: eS4

Chain FF:



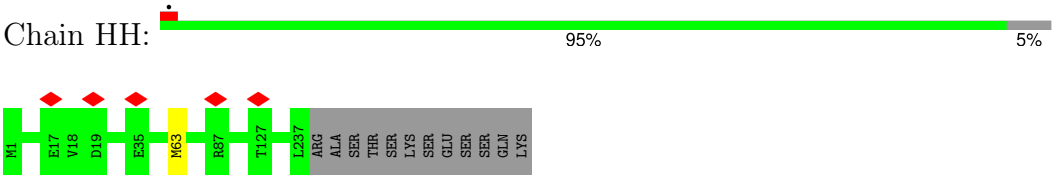

• Molecule 55: Ribosomal protein S5

Chain GG:



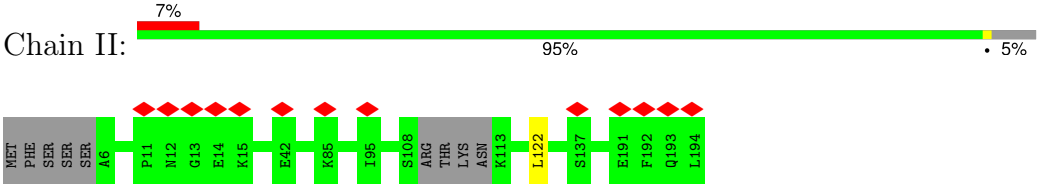

• Molecule 56: 40S ribosomal protein S6

Chain HH:



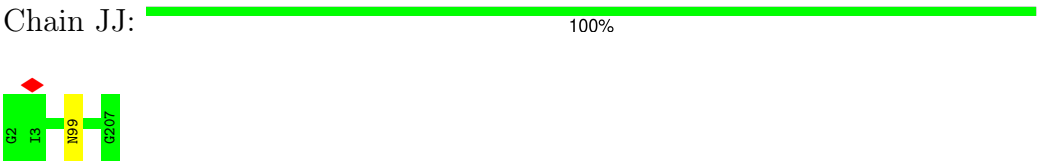

• Molecule 57: 40S ribosomal protein S7

Chain II:



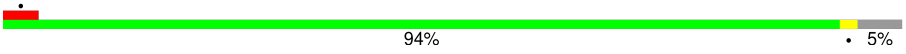

• Molecule 58: 40S ribosomal protein S8

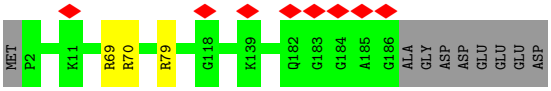
Chain JJ:




• Molecule 59: Ribosomal protein S9 (Predicted)

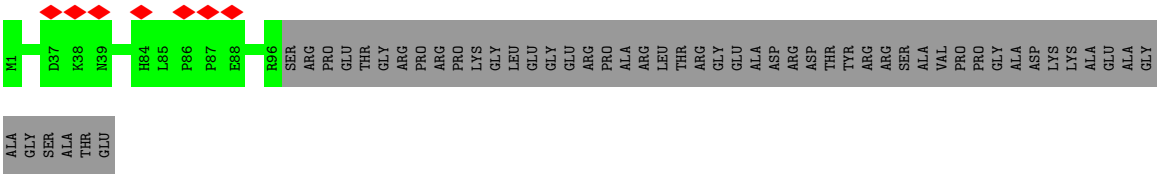
Chain KK:





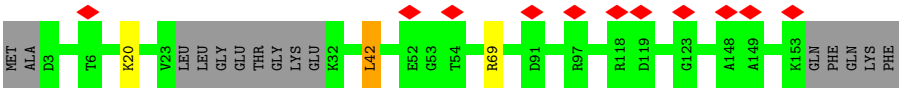

• Molecule 60: S10_plectin domain-containing protein

Chain LL:

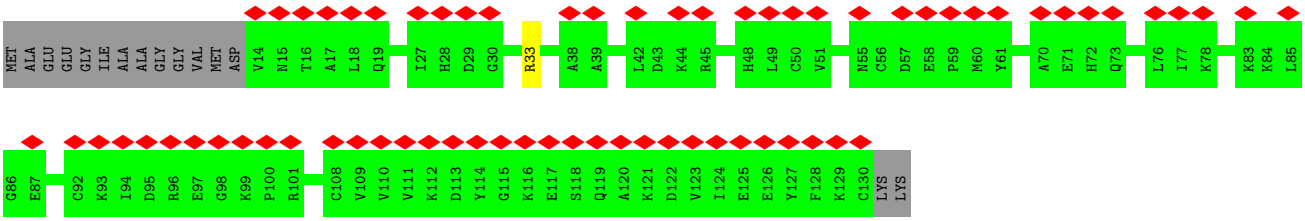

• Molecule 61: Ribosomal protein S11

Chain MM:

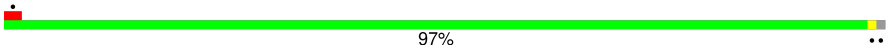

• Molecule 62: 40S ribosomal protein S12

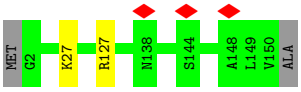
Chain NN:


• Molecule 63: Ribosomal protein S13

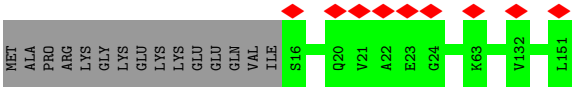
Chain OO:



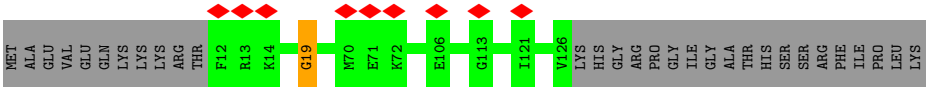

• Molecule 64: Small ribosomal subunit protein uS11

Chain PP:

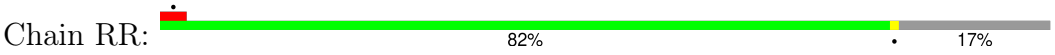



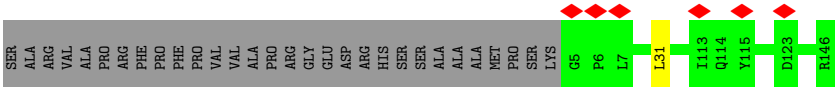

• Molecule 65: uS19

Chain QQ:

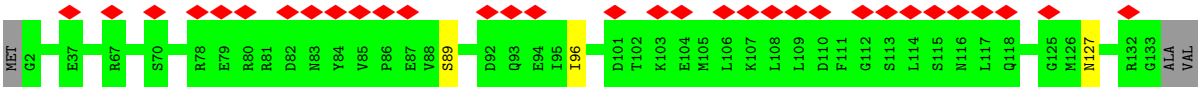



• Molecule 66: Ribosomal protein S16

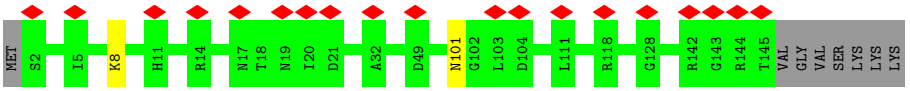


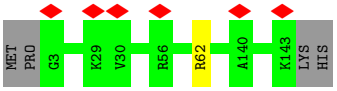

• Molecule 67: eS17

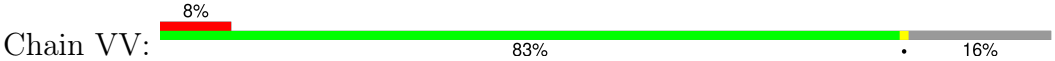

• Molecule 68: uS13

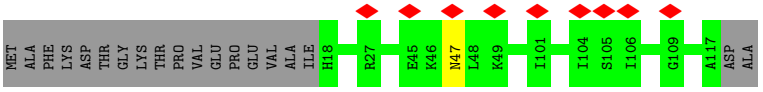




• Molecule 69: eS19

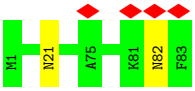




• Molecule 70: uS10



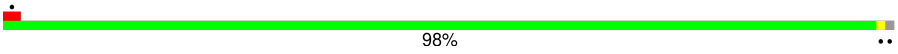



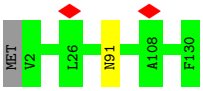

• Molecule 71: eS21


• Molecule 72: Ribosomal protein S15a

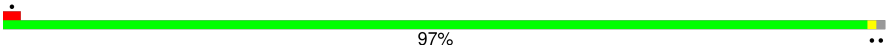
Chain XX:

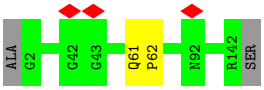



• Molecule 73: Ribosomal protein S23

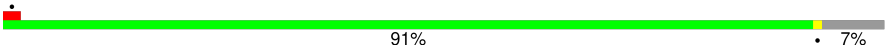
Chain YY:

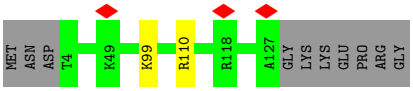



• Molecule 74: 40S ribosomal protein S24

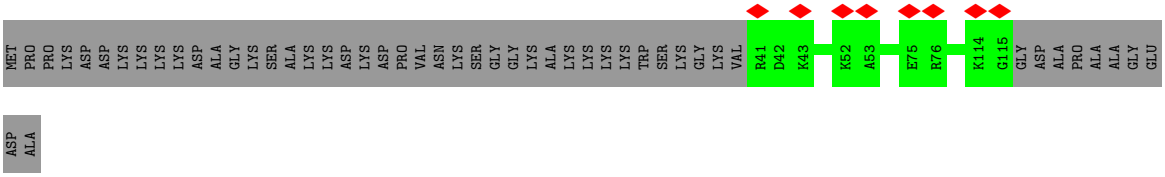
Chain ZZ:



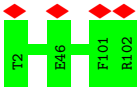

• Molecule 75: eS25

Chain aa:

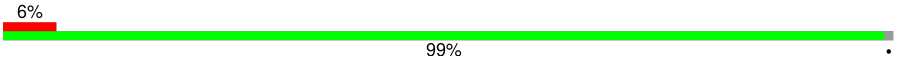

• Molecule 76: eS26

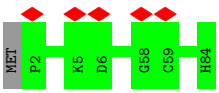
Chain bb:


• Molecule 77: 40S ribosomal protein S27

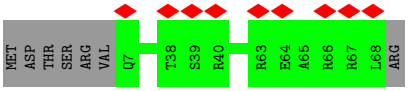
Chain cc:



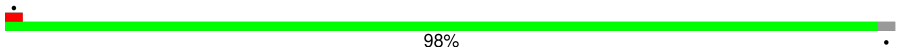

• Molecule 78: Ribosomal protein S28

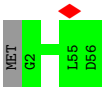
Chain dd:




• Molecule 79: eS29

Chain ee:

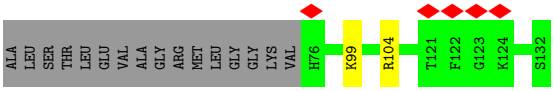



• Molecule 80: 40S ribosomal protein S30

Chain ff:

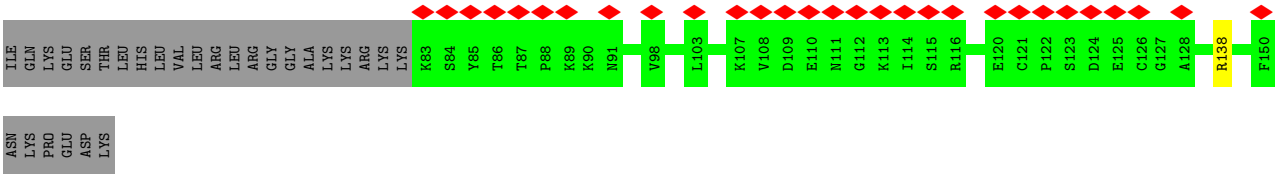





• Molecule 81: Ribosomal protein S27a

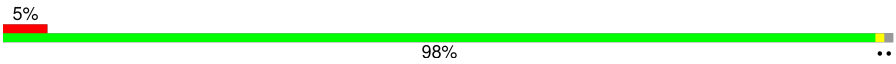
Chain gg:

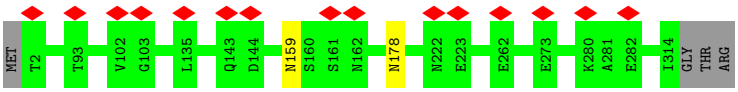





• Molecule 82: RACK1

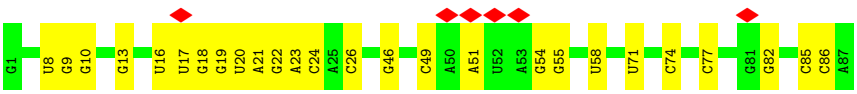
Chain hh:



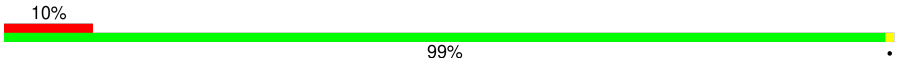

• Molecule 83: P-site tRNA

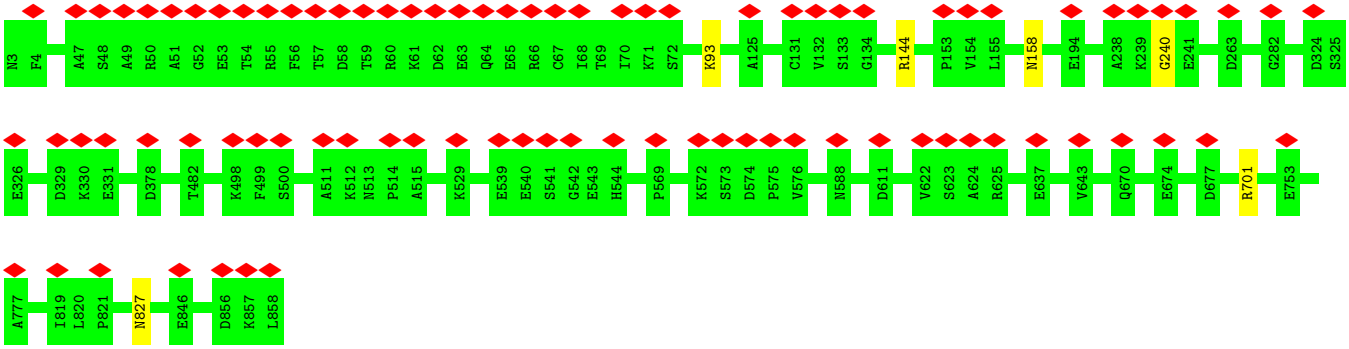
Chain 3:


• Molecule 84: Elongation factor 2

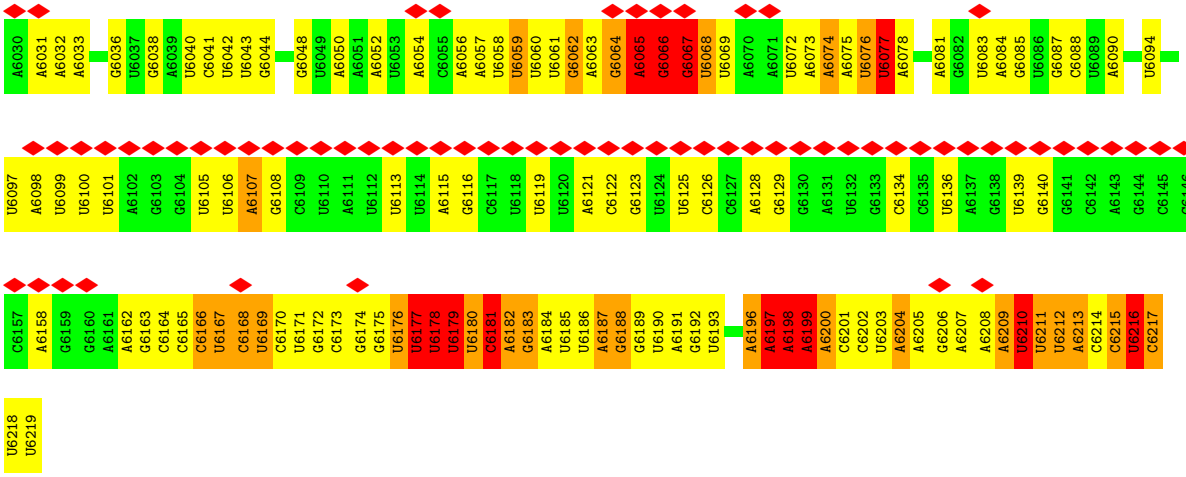
Chain 9:




• Molecule 85: CrPV IRES

Chain 4:

# 4 Experimental information (i)

| Property | Value | Source |
|---|---|---|
| EM reconstruction method | SINGLE PARTICLE | Depositor |
| Imposed symmetry | POINT, Not provided | |
| Number of particles used | 75654 | Depositor |
| Resolution determination method | FSC 0.143 CUT-OFF | Depositor |
| CTF correction method | NONE | 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 | 0.076 | Depositor |
| Minimum map value | -0.013 | Depositor |
| Average map value | 0.002 | Depositor |
| Map value standard deviation | 0.008 | Depositor |
| Recommended contour level | 0.02 | Depositor |
| Map size (Å) | 432.00003, 432.00003, 432.00003 | wwPDB |
| Map dimensions | 400, 400, 400 | wwPDB |
| Map angles (°) | 90.0, 90.0, 90.0 | wwPDB |
| Pixel spacing (Å) | 1.08, 1.08, 1.08 | Depositor |

# 5 Model quality

## 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: ZN, MG

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 | A | 0.26 | 0/1812 | 0.50 | 1/2439 (0.0%) |
| 2 | B | 0.25 | 0/3240 | 0.51 | 2/4339 (0.0%) |
| 3 | C | 0.24 | 0/2936 | 0.45 | 0/3943 |
| 4 | D | 0.26 | 0/2437 | 0.44 | 0/3264 |
| 5 | E | 0.25 | 0/1762 | 0.48 | 0/2362 |
| 6 | F | 0.25 | 0/1911 | 0.44 | 0/2549 |
| 7 | G | 0.25 | 0/1910 | 0.49 | 0/2569 |
| 8 | H | 0.25 | 0/1535 | 0.50 | 0/2063 |
| 9 | I | 0.26 | 0/1702 | 0.45 | 0/2272 |
| 10 | J | 0.25 | 0/1385 | 0.47 | 0/1852 |
| 11 | L | 0.27 | 0/1733 | 0.46 | 0/2316 |
| 12 | M | 0.25 | 0/1150 | 0.44 | 0/1534 |
| 13 | N | 0.24 | 0/1746 | 0.43 | 0/2338 |
| 14 | O | 0.25 | 0/1653 | 0.44 | 0/2206 |
| 15 | P | 0.24 | 0/1268 | 0.47 | 0/1700 |
| 16 | Q | 0.24 | 0/1539 | 0.48 | 0/2054 |
| 17 | R | 0.24 | 0/1524 | 0.44 | 0/2013 |
| 18 | S | 0.25 | 0/1501 | 0.48 | 0/2012 |
| 19 | T | 0.25 | 0/1326 | 0.44 | 0/1770 |
| 20 | U | 0.26 | 0/823 | 0.45 | 0/1104 |
| 21 | V | 0.26 | 0/983 | 0.46 | 0/1319 |
| 22 | W | 0.25 | 0/873 | 0.43 | 0/1158 |
| 23 | X | 0.24 | 0/984 | 0.46 | 0/1323 |
| 24 | Y | 0.24 | 0/1132 | 0.44 | 0/1504 |
| 25 | Z | 0.26 | 0/1130 | 0.46 | 0/1507 |
| 26 | a | 0.23 | 0/1191 | 0.42 | 0/1590 |
| 27 | b | 0.24 | 0/861 | 0.40 | 0/1138 |
| 28 | c | 0.25 | 0/771 | 0.45 | 0/1034 |
| 29 | d | 0.26 | 0/903 | 0.49 | 0/1216 |
| 30 | e | 0.24 | 0/1071 | 0.47 | 0/1429 |
| 31 | f | 0.25 | 0/895 | 0.49 | 0/1198 |
| 32 | g | 0.25 | 0/916 | 0.48 | 0/1220 |

| Mol | Chain | Bond lengths | | Bond angles | |
|---|---|---|---|---|---|
| | | RMSZ | #\|Z\| >5 | RMSZ | #\|Z\| >5 |
| 33 | h | 0.25 | 0/1021 | 0.42 | 0/1348 |
| 34 | i | 0.25 | 0/841 | 0.43 | 0/1112 |
| 35 | j | 0.26 | 0/720 | 0.45 | 0/952 |
| 36 | k | 0.24 | 0/575 | 0.47 | 0/761 |
| 37 | l | 0.24 | 0/459 | 0.47 | 1/608 (0.2%) |
| 38 | m | 0.25 | 0/435 | 0.46 | 0/575 |
| 39 | n | 0.23 | 0/240 | 0.40 | 0/305 |
| 40 | o | 0.24 | 0/864 | 0.46 | 0/1140 |
| 41 | p | 0.24 | 0/718 | 0.44 | 0/953 |
| 42 | r | 0.24 | 0/1010 | 0.47 | 0/1354 |
| 43 | s | 0.27 | 0/1530 | 0.47 | 0/2064 |
| 44 | t | 0.25 | 0/1174 | 0.52 | 0/1582 |
| 45 | 5 | 0.27 | 1/86202 (0.0%) | 1.01 | 331/134412 (0.2%) |
| 46 | 7 | 0.27 | 0/2836 | 1.00 | 5/4421 (0.1%) |
| 47 | 8 | 0.27 | 0/3581 | 1.00 | 10/5577 (0.2%) |
| 48 | K | 0.28 | 0/1730 | 0.55 | 0/2315 |
| 49 | 2 | 0.28 | 0/40500 | 1.03 | 194/63092 (0.3%) |
| 50 | BB | 0.26 | 0/1747 | 0.51 | 0/2374 |
| 51 | CC | 0.26 | 0/1756 | 0.50 | 0/2350 |
| 52 | DD | 0.25 | 0/1753 | 0.48 | 0/2369 |
| 53 | EE | 0.26 | 0/1796 | 0.51 | 0/2417 |
| 54 | FF | 0.25 | 0/2118 | 0.47 | 0/2849 |
| 55 | GG | 0.25 | 0/1492 | 0.46 | 0/2005 |
| 56 | HH | 0.25 | 0/1946 | 0.48 | 0/2590 |
| 57 | II | 0.26 | 0/1510 | 0.50 | 1/2022 (0.0%) |
| 58 | JJ | 0.25 | 0/1715 | 0.46 | 0/2287 |
| 59 | KK | 0.25 | 0/1550 | 0.48 | 0/2069 |
| 60 | LL | 0.25 | 0/834 | 0.48 | 0/1125 |
| 61 | MM | 0.25 | 0/1195 | 0.51 | 1/1597 (0.1%) |
| 62 | NN | 0.26 | 0/918 | 0.54 | 0/1233 |
| 63 | OO | 0.24 | 0/1226 | 0.45 | 0/1649 |
| 64 | PP | 0.25 | 0/1029 | 0.49 | 0/1380 |
| 65 | QQ | 0.25 | 0/974 | 0.49 | 0/1301 |
| 66 | RR | 0.25 | 0/1146 | 0.48 | 1/1534 (0.1%) |
| 67 | SS | 0.25 | 0/1082 | 0.50 | 1/1452 (0.1%) |
| 68 | TT | 0.25 | 0/1208 | 0.47 | 0/1618 |
| 69 | UU | 0.25 | 0/1115 | 0.44 | 0/1493 |
| 70 | VV | 0.24 | 0/805 | 0.48 | 0/1081 |
| 71 | WW | 0.26 | 0/643 | 0.48 | 0/860 |
| 72 | XX | 0.26 | 0/1051 | 0.49 | 0/1406 |
| 73 | YY | 0.26 | 0/1116 | 0.48 | 0/1490 |
| 74 | ZZ | 0.25 | 0/1028 | 0.47 | 0/1366 |
| 75 | aa | 0.24 | 0/604 | 0.50 | 0/810 |

| Mol | Chain | Bond lengths | | Bond angles | |
|---|---|---|---|---|---|
| | | RMSZ | #\|Z\| >5 | RMSZ | #\|Z\| >5 |
| 76 | bb | 0.24 | 0/828 | 0.44 | 0/1109 |
| 77 | cc | 0.24 | 0/665 | 0.47 | 0/891 |
| 78 | dd | 0.23 | 0/490 | 0.45 | 0/656 |
| 79 | ee | 0.25 | 0/470 | 0.41 | 0/623 |
| 80 | ff | 0.25 | 0/462 | 0.44 | 0/607 |
| 81 | gg | 0.24 | 0/567 | 0.46 | 0/753 |
| 82 | hh | 0.25 | 0/2492 | 0.52 | 0/3391 |
| 83 | 3 | 0.26 | 0/2077 | 0.96 | 2/3238 (0.1%) |
| 84 | 9 | 0.26 | 0/6804 | 0.52 | 0/9189 |
| 85 | 4 | 0.69 | 16/4490 (0.4%) | 1.54 | 125/6984 (1.8%) |
| All | All | 0.28 | 17/243741 (0.0%) | 0.86 | 675/357074 (0.2%) |

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

| Mol | Chain | #Chirality outliers | #Planarity outliers |
|---|---|---|---|
| 3 | C | 0 | 1 |
| 50 | BB | 0 | 1 |
| 65 | QQ | 0 | 1 |
| 67 | SS | 0 | 1 |
| 73 | YY | 0 | 1 |
| 84 | 9 | 0 | 1 |
| 85 | 4 | 1 | 14 |
| All | All | 1 | 20 |

The worst 5 of 17 bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 85 | 4 | 6178 | U | C2-O2 | 9.15 | 1.30 | 1.22 |
| 85 | 4 | 6065 | A | O3'-P | 8.59 | 1.71 | 1.61 |
| 85 | 4 | 6078 | A | O3'-P | -8.35 | 1.51 | 1.61 |
| 85 | 4 | 6217 | C | O3'-P | 8.15 | 1.71 | 1.61 |
| 85 | 4 | 6187 | A | O3'-P | 7.84 | 1.70 | 1.61 |

The worst 5 of 675 bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 85 | 4 | 6068 | U | OP1-P-O3' | 25.71 | 161.75 | 105.20 |
| 85 | 4 | 6068 | U | O3'-P-O5' | -20.16 | 65.70 | 104.00 |
| 85 | 4 | 6218 | U | O3'-P-O5' | -18.73 | 68.41 | 104.00 |

*Continued on next page...*

*Continued from previous page...*

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 85 | 4 | 6188 | G | O5'-P-OP2 | 16.39 | 130.37 | 110.70 |
| 85 | 4 | 6218 | U | P-O3'-C3' | 15.72 | 138.56 | 119.70 |

All (1) chirality outliers are listed below:

| Mol | Chain | Res | Type | Atom |
|---|---|---|---|---|
| 85 | 4 | 6210 | U | C1' |

5 of 20 planarity outliers are listed below:

| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 50 | BB | 12 | GLU | Peptide |
| 3 | C | 151 | PRO | Peptide |
| 65 | QQ | 19 | GLY | Peptide |
| 67 | SS | 89 | SER | Peptide |
| 73 | YY | 61 | GLN | Peptide |

## 5.2 Too-close contacts (i)

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

## 5.3 Torsion angles (i)

### 5.3.1 Protein backbone (i)

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

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

| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|---|---|---|---|---|---|---|---|
| 1 | A | 237/257 (92%) | 223 (94%) | 14 (6%) | 0 | 100 | 100 |
| 2 | B | 392/403 (97%) | 381 (97%) | 11 (3%) | 0 | 100 | 100 |
| 3 | C | 358/392 (91%) | 341 (95%) | 17 (5%) | 0 | 100 | 100 |
| 4 | D | 291/297 (98%) | 281 (97%) | 10 (3%) | 0 | 100 | 100 |
| 5 | E | 208/291 (72%) | 198 (95%) | 10 (5%) | 0 | 100 | 100 |
| 6 | F | 223/249 (90%) | 214 (96%) | 9 (4%) | 0 | 100 | 100 |

*Continued on next page...*

*Continued from previous page...*

| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|---|---|---|---|---|---|---|---|
| 7 | G | 229/242 (95%) | 218 (95%) | 11 (5%) | 0 | 100 | 100 |
| 8 | H | 188/192 (98%) | 176 (94%) | 12 (6%) | 0 | 100 | 100 |
| 9 | I | 201/214 (94%) | 192 (96%) | 9 (4%) | 0 | 100 | 100 |
| 10 | J | 168/178 (94%) | 165 (98%) | 3 (2%) | 0 | 100 | 100 |
| 11 | L | 208/211 (99%) | 198 (95%) | 10 (5%) | 0 | 100 | 100 |
| 12 | M | 133/198 (67%) | 128 (96%) | 5 (4%) | 0 | 100 | 100 |
| 13 | N | 201/204 (98%) | 189 (94%) | 12 (6%) | 0 | 100 | 100 |
| 14 | O | 194/198 (98%) | 186 (96%) | 8 (4%) | 0 | 100 | 100 |
| 15 | P | 151/187 (81%) | 147 (97%) | 4 (3%) | 0 | 100 | 100 |
| 16 | Q | 185/187 (99%) | 179 (97%) | 6 (3%) | 0 | 100 | 100 |
| 17 | R | 178/181 (98%) | 174 (98%) | 4 (2%) | 0 | 100 | 100 |
| 18 | S | 174/176 (99%) | 167 (96%) | 7 (4%) | 0 | 100 | 100 |
| 19 | T | 157/160 (98%) | 150 (96%) | 7 (4%) | 0 | 100 | 100 |
| 20 | U | 97/99 (98%) | 96 (99%) | 1 (1%) | 0 | 100 | 100 |
| 21 | V | 127/140 (91%) | 123 (97%) | 4 (3%) | 0 | 100 | 100 |
| 22 | W | 102/157 (65%) | 99 (97%) | 3 (3%) | 0 | 100 | 100 |
| 23 | X | 116/156 (74%) | 109 (94%) | 7 (6%) | 0 | 100 | 100 |
| 24 | Y | 132/145 (91%) | 129 (98%) | 3 (2%) | 0 | 100 | 100 |
| 25 | Z | 133/136 (98%) | 123 (92%) | 10 (8%) | 0 | 100 | 100 |
| 26 | a | 145/148 (98%) | 137 (94%) | 8 (6%) | 0 | 100 | 100 |
| 27 | b | 100/226 (44%) | 99 (99%) | 1 (1%) | 0 | 100 | 100 |
| 28 | c | 96/115 (84%) | 94 (98%) | 2 (2%) | 0 | 100 | 100 |
| 29 | d | 105/125 (84%) | 97 (92%) | 8 (8%) | 0 | 100 | 100 |
| 30 | e | 126/135 (93%) | 123 (98%) | 3 (2%) | 0 | 100 | 100 |
| 31 | f | 107/110 (97%) | 98 (92%) | 9 (8%) | 0 | 100 | 100 |
| 32 | g | 112/126 (89%) | 109 (97%) | 3 (3%) | 0 | 100 | 100 |
| 33 | h | 120/123 (98%) | 118 (98%) | 2 (2%) | 0 | 100 | 100 |
| 34 | i | 100/105 (95%) | 98 (98%) | 2 (2%) | 0 | 100 | 100 |
| 35 | j | 84/97 (87%) | 79 (94%) | 5 (6%) | 0 | 100 | 100 |
| 36 | k | 67/69 (97%) | 65 (97%) | 2 (3%) | 0 | 100 | 100 |
| 37 | l | 48/51 (94%) | 45 (94%) | 3 (6%) | 0 | 100 | 100 |

*Continued on next page...*

*Continued from previous page...*

| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|---|---|---|---|---|---|---|---|
| 38 | m | 50/52 (96%) | 47 (94%) | 3 (6%) | 0 | 100 | 100 |
| 39 | n | 23/25 (92%) | 23 (100%) | 0 | 0 | 100 | 100 |
| 40 | o | 102/106 (96%) | 97 (95%) | 5 (5%) | 0 | 100 | 100 |
| 41 | p | 89/92 (97%) | 86 (97%) | 3 (3%) | 0 | 100 | 100 |
| 42 | r | 122/137 (89%) | 119 (98%) | 3 (2%) | 0 | 100 | 100 |
| 43 | s | 194/303 (64%) | 186 (96%) | 8 (4%) | 0 | 100 | 100 |
| 44 | t | 151/195 (77%) | 135 (89%) | 16 (11%) | 0 | 100 | 100 |
| 48 | K | 204/217 (94%) | 182 (89%) | 21 (10%) | 1 (0%) | 25 | 60 |
| 50 | BB | 215/217 (99%) | 202 (94%) | 13 (6%) | 0 | 100 | 100 |
| 51 | CC | 211/264 (80%) | 197 (93%) | 14 (7%) | 0 | 100 | 100 |
| 52 | DD | 219/221 (99%) | 216 (99%) | 3 (1%) | 0 | 100 | 100 |
| 53 | EE | 226/281 (80%) | 217 (96%) | 9 (4%) | 0 | 100 | 100 |
| 54 | FF | 260/262 (99%) | 244 (94%) | 16 (6%) | 0 | 100 | 100 |
| 55 | GG | 181/204 (89%) | 173 (96%) | 8 (4%) | 0 | 100 | 100 |
| 56 | HH | 235/249 (94%) | 227 (97%) | 8 (3%) | 0 | 100 | 100 |
| 57 | II | 181/194 (93%) | 173 (96%) | 8 (4%) | 0 | 100 | 100 |
| 58 | JJ | 204/206 (99%) | 190 (93%) | 14 (7%) | 0 | 100 | 100 |
| 59 | KK | 183/194 (94%) | 181 (99%) | 2 (1%) | 0 | 100 | 100 |
| 60 | LL | 94/149 (63%) | 90 (96%) | 4 (4%) | 0 | 100 | 100 |
| 61 | MM | 139/158 (88%) | 132 (95%) | 7 (5%) | 0 | 100 | 100 |
| 62 | NN | 115/132 (87%) | 107 (93%) | 8 (7%) | 0 | 100 | 100 |
| 63 | OO | 147/151 (97%) | 145 (99%) | 2 (1%) | 0 | 100 | 100 |
| 64 | PP | 134/151 (89%) | 126 (94%) | 8 (6%) | 0 | 100 | 100 |
| 65 | QQ | 113/145 (78%) | 102 (90%) | 10 (9%) | 1 (1%) | 14 | 49 |
| 66 | RR | 140/172 (81%) | 133 (95%) | 7 (5%) | 0 | 100 | 100 |
| 67 | SS | 130/135 (96%) | 119 (92%) | 11 (8%) | 0 | 100 | 100 |
| 68 | TT | 142/152 (93%) | 133 (94%) | 9 (6%) | 0 | 100 | 100 |
| 69 | UU | 139/145 (96%) | 133 (96%) | 6 (4%) | 0 | 100 | 100 |
| 70 | VV | 98/119 (82%) | 96 (98%) | 2 (2%) | 0 | 100 | 100 |
| 71 | WW | 81/83 (98%) | 79 (98%) | 2 (2%) | 0 | 100 | 100 |
| 72 | XX | 127/130 (98%) | 120 (94%) | 7 (6%) | 0 | 100 | 100 |

*Continued on next page...*

*Continued from previous page...*

| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles |
|---|---|---|---|---|---|---|
| 73 | YY | 139/143 (97%) | 131 (94%) | 7 (5%) | 1 (1%) | 19 54 |
| 74 | ZZ | 122/134 (91%) | 120 (98%) | 2 (2%) | 0 | 100 100 |
| 75 | aa | 73/125 (58%) | 72 (99%) | 1 (1%) | 0 | 100 100 |
| 76 | bb | 99/101 (98%) | 92 (93%) | 7 (7%) | 0 | 100 100 |
| 77 | cc | 81/84 (96%) | 78 (96%) | 3 (4%) | 0 | 100 100 |
| 78 | dd | 60/69 (87%) | 60 (100%) | 0 | 0 | 100 100 |
| 79 | ee | 53/56 (95%) | 48 (91%) | 5 (9%) | 0 | 100 100 |
| 80 | ff | 55/133 (41%) | 49 (89%) | 6 (11%) | 0 | 100 100 |
| 81 | gg | 66/156 (42%) | 63 (96%) | 3 (4%) | 0 | 100 100 |
| 82 | hh | 310/317 (98%) | 292 (94%) | 18 (6%) | 0 | 100 100 |
| 84 | 9 | 854/856 (100%) | 801 (94%) | 53 (6%) | 0 | 100 100 |
| All | All | 12554/14095 (89%) | 11964 (95%) | 587 (5%) | 3 (0%) | 100 100 |

All (3) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 48 | K | 59 | PRO |
| 73 | YY | 62 | PRO |
| 65 | QQ | 19 | GLY |

### 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 | A | 172/199 (86%) | 167 (97%) | 5 (3%) | 37 67 |
| 2 | B | 342/348 (98%) | 341 (100%) | 1 (0%) | 91 96 |
| 3 | C | 302/323 (94%) | 295 (98%) | 7 (2%) | 45 72 |
| 4 | D | 247/250 (99%) | 245 (99%) | 2 (1%) | 79 90 |
| 5 | E | 190/251 (76%) | 188 (99%) | 2 (1%) | 70 86 |
| 6 | F | 196/218 (90%) | 195 (100%) | 1 (0%) | 86 93 |

*Continued on next page...*

*Continued from previous page...*

| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles |
|---|---|---|---|---|---|
| 7 | G | 200/208 (96%) | 197 (98%) | 3 (2%) | 60 81 |
| 8 | H | 169/171 (99%) | 164 (97%) | 5 (3%) | 36 66 |
| 9 | I | 175/181 (97%) | 173 (99%) | 2 (1%) | 70 86 |
| 10 | J | 143/149 (96%) | 142 (99%) | 1 (1%) | 81 92 |
| 11 | L | 175/176 (99%) | 173 (99%) | 2 (1%) | 70 86 |
| 12 | M | 116/151 (77%) | 115 (99%) | 1 (1%) | 75 89 |
| 13 | N | 171/172 (99%) | 171 (100%) | 0 | 100 100 |
| 14 | O | 170/170 (100%) | 167 (98%) | 3 (2%) | 54 77 |
| 15 | P | 134/165 (81%) | 132 (98%) | 2 (2%) | 60 81 |
| 16 | Q | 164/164 (100%) | 162 (99%) | 2 (1%) | 67 85 |
| 17 | R | 159/160 (99%) | 157 (99%) | 2 (1%) | 65 83 |
| 18 | S | 157/157 (100%) | 157 (100%) | 0 | 100 100 |
| 19 | T | 139/140 (99%) | 137 (99%) | 2 (1%) | 62 82 |
| 20 | U | 89/89 (100%) | 89 (100%) | 0 | 100 100 |
| 21 | V | 100/107 (94%) | 98 (98%) | 2 (2%) | 50 75 |
| 22 | W | 86/126 (68%) | 86 (100%) | 0 | 100 100 |
| 23 | X | 106/134 (79%) | 106 (100%) | 0 | 100 100 |
| 24 | Y | 124/135 (92%) | 123 (99%) | 1 (1%) | 79 90 |
| 25 | Z | 117/118 (99%) | 117 (100%) | 0 | 100 100 |
| 26 | a | 119/120 (99%) | 117 (98%) | 2 (2%) | 56 78 |
| 27 | b | 84/172 (49%) | 82 (98%) | 2 (2%) | 44 71 |
| 28 | c | 84/98 (86%) | 84 (100%) | 0 | 100 100 |
| 29 | d | 98/110 (89%) | 96 (98%) | 2 (2%) | 50 75 |
| 30 | e | 114/121 (94%) | 114 (100%) | 0 | 100 100 |
| 31 | f | 88/89 (99%) | 85 (97%) | 3 (3%) | 32 63 |
| 32 | g | 98/106 (92%) | 98 (100%) | 0 | 100 100 |
| 33 | h | 109/110 (99%) | 109 (100%) | 0 | 100 100 |
| 34 | i | 86/89 (97%) | 85 (99%) | 1 (1%) | 67 85 |
| 35 | j | 73/80 (91%) | 72 (99%) | 1 (1%) | 62 82 |
| 36 | k | 64/64 (100%) | 64 (100%) | 0 | 100 100 |
| 37 | l | 47/48 (98%) | 46 (98%) | 1 (2%) | 48 74 |

*Continued on next page...*

*Continued from previous page...*

| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles |
|---|---|---|---|---|---|
| 38 | m | 48/48 (100%) | 47 (98%) | 1 (2%) | 48 74 |
| 39 | n | 24/24 (100%) | 24 (100%) | 0 | 100 100 |
| 40 | o | 92/94 (98%) | 89 (97%) | 3 (3%) | 33 64 |
| 41 | p | 74/75 (99%) | 74 (100%) | 0 | 100 100 |
| 42 | r | 108/121 (89%) | 107 (99%) | 1 (1%) | 75 89 |
| 43 | s | 164/258 (64%) | 163 (99%) | 1 (1%) | 84 92 |
| 44 | t | 126/163 (77%) | 126 (100%) | 0 | 100 100 |
| 48 | K | 190/196 (97%) | 188 (99%) | 2 (1%) | 70 86 |
| 50 | BB | 180/181 (99%) | 177 (98%) | 3 (2%) | 56 78 |
| 51 | CC | 194/231 (84%) | 190 (98%) | 4 (2%) | 48 74 |
| 52 | DD | 187/187 (100%) | 187 (100%) | 0 | 100 100 |
| 53 | EE | 190/232 (82%) | 184 (97%) | 6 (3%) | 34 65 |
| 54 | FF | 224/224 (100%) | 223 (100%) | 1 (0%) | 89 94 |
| 55 | GG | 158/170 (93%) | 156 (99%) | 2 (1%) | 65 83 |
| 56 | HH | 207/218 (95%) | 206 (100%) | 1 (0%) | 86 93 |
| 57 | II | 165/174 (95%) | 165 (100%) | 0 | 100 100 |
| 58 | JJ | 178/178 (100%) | 177 (99%) | 1 (1%) | 84 92 |
| 59 | KK | 161/168 (96%) | 158 (98%) | 3 (2%) | 52 76 |
| 60 | LL | 87/125 (70%) | 87 (100%) | 0 | 100 100 |
| 61 | MM | 130/142 (92%) | 127 (98%) | 3 (2%) | 45 72 |
| 62 | NN | 99/108 (92%) | 98 (99%) | 1 (1%) | 73 87 |
| 63 | OO | 130/131 (99%) | 128 (98%) | 2 (2%) | 60 81 |
| 64 | PP | 106/119 (89%) | 106 (100%) | 0 | 100 100 |
| 65 | QQ | 105/130 (81%) | 105 (100%) | 0 | 100 100 |
| 66 | RR | 117/140 (84%) | 117 (100%) | 0 | 100 100 |
| 67 | SS | 119/121 (98%) | 118 (99%) | 1 (1%) | 79 90 |
| 68 | TT | 125/132 (95%) | 123 (98%) | 2 (2%) | 58 79 |
| 69 | UU | 111/116 (96%) | 110 (99%) | 1 (1%) | 75 89 |
| 70 | VV | 92/107 (86%) | 91 (99%) | 1 (1%) | 70 86 |
| 71 | WW | 67/67 (100%) | 65 (97%) | 2 (3%) | 36 66 |
| 72 | XX | 112/113 (99%) | 111 (99%) | 1 (1%) | 75 89 |

*Continued on next page...*

*Continued from previous page...*

| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles |
|---|---|---|---|---|---|
| 73 | YY | 113/114 (99%) | 113 (100%) | 0 | 100 100 |
| 74 | ZZ | 107/115 (93%) | 105 (98%) | 2 (2%) | 52 76 |
| 75 | aa | 66/103 (64%) | 66 (100%) | 0 | 100 100 |
| 76 | bb | 88/88 (100%) | 88 (100%) | 0 | 100 100 |
| 77 | cc | 75/76 (99%) | 75 (100%) | 0 | 100 100 |
| 78 | dd | 55/62 (89%) | 55 (100%) | 0 | 100 100 |
| 79 | ee | 48/49 (98%) | 48 (100%) | 0 | 100 100 |
| 80 | ff | 47/106 (44%) | 45 (96%) | 2 (4%) | 25 57 |
| 81 | gg | 61/140 (44%) | 60 (98%) | 1 (2%) | 58 79 |
| 82 | hh | 272/275 (99%) | 270 (99%) | 2 (1%) | 81 92 |
| 84 | 9 | 728/728 (100%) | 723 (99%) | 5 (1%) | 81 92 |
| All | All | 10937/12018 (91%) | 10824 (99%) | 113 (1%) | 71 87 |

5 of 113 residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 37 | l | 21 | ARG |
| 84 | 9 | 158 | ASN |
| 51 | CC | 162 | ARG |
| 84 | 9 | 144 | ARG |
| 71 | WW | 82 | ASN |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 109 such sidechains are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 51 | CC | 232 | HIS |
| 60 | LL | 7 | ASN |
| 84 | 9 | 64 | GLN |
| 52 | DD | 267 | GLN |
| 57 | II | 91 | HIS |

### 5.3.3 RNA (i)

| Mol | Chain | Analysed | Backbone Outliers | Pucker Outliers |
|---|---|---|---|---|
| 45 | 5 | 3558/3594 (98%) | 900 (25%) | 29 (0%) |
| 46 | 7 | 118/119 (99%) | 16 (13%) | 0 |

*Continued on next page...*

*Continued from previous page...*

| Mol | Chain | Analysed | Backbone Outliers | Pucker Outliers |
|---|---|---|---|---|
| 47 | 8 | 149/151 (98%) | 37 (24%) | 1 (0%) |
| 49 | 2 | 1676/1697 (98%) | 408 (24%) | 14 (0%) |
| 83 | 3 | 86/87 (98%) | 25 (29%) | 0 |
| 85 | 4 | 188/190 (98%) | 123 (65%) | 48 (25%) |
| All | All | 5775/5838 (98%) | 1509 (26%) | 92 (1%) |

5 of 1509 RNA backbone outliers are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 45 | 5 | 5 | A |
| 45 | 5 | 7 | C |
| 45 | 5 | 11 | G |
| 45 | 5 | 12 | A |
| 45 | 5 | 14 | C |

5 of 92 RNA pucker outliers are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 85 | 4 | 6151 | A |
| 85 | 4 | 6180 | U |
| 85 | 4 | 6164 | C |
| 85 | 4 | 6172 | G |
| 85 | 4 | 6184 | A |

## 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 oligosaccharides in this entry.

## 5.6 Ligand geometry (i)

Of 6 ligands modelled in this entry, 6 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)

The following chains have linkage breaks:

| Mol | Chain | Number of breaks |
|---|---|---|
| 45 | 5 | 36 |
| 49 | 2 | 20 |
| 48 | K | 3 |
| 47 | 8 | 1 |
| 82 | hh | 1 |
| 14 | O | 1 |
| 3 | C | 1 |

The worst 5 of 63 chain breaks are listed below:

| Model | Chain | Residue-1 | Atom-1 | Residue-2 | Atom-2 | Distance (Å) |
|---|---|---|---|---|---|---|
| 1 | 5 | 2113:G | O3' | 2258:C | P | 41.98 |
| 1 | 5 | 1252:C | O3' | 1271:G | P | 33.40 |
| 1 | 5 | 1696:C | O3' | 1720:C | P | 19.99 |
| 1 | 5 | 1219:G | O3' | 1233:G | P | 18.35 |
| 1 | 5 | 523:C | O3' | 638:G | P | 18.12 |

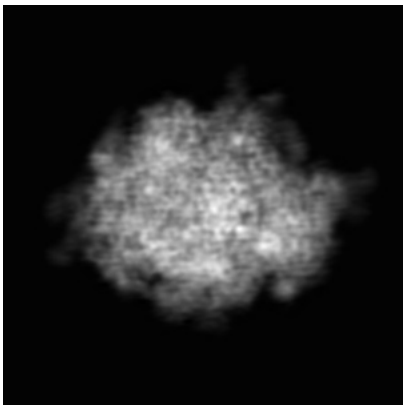
# 6 Map visualisation

This section contains visualisations of the EMDB entry EMD-7836. These allow visual inspection of the internal detail of the map and identification of artifacts.

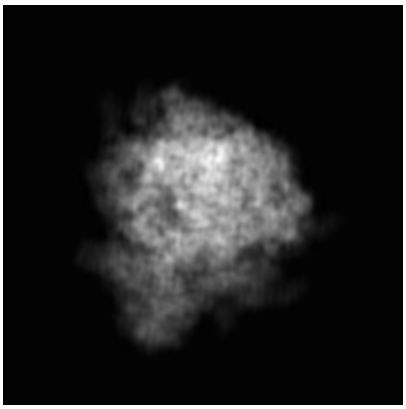
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

## 6.1 Orthogonal projections

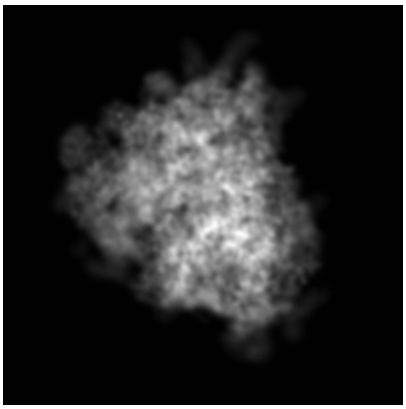
### 6.1.1 Primary map



X

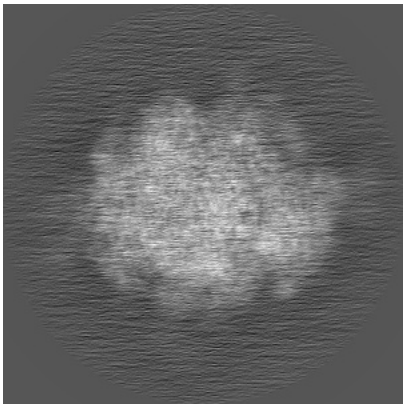


Y

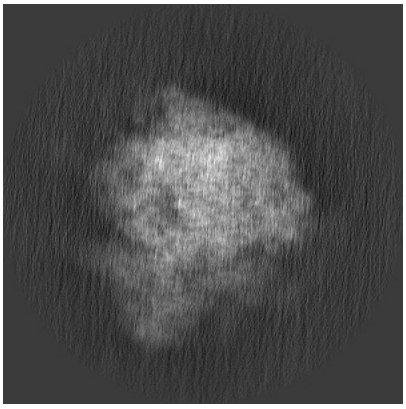


Z

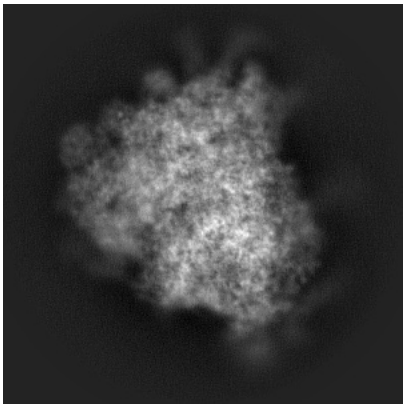
### 6.1.2 Raw map



X



Y

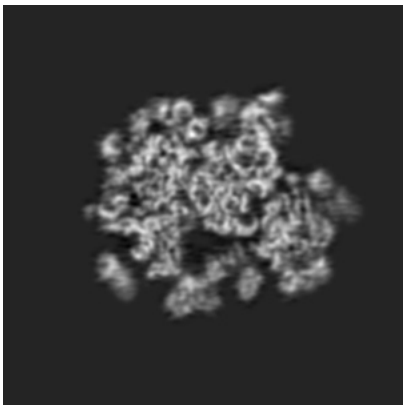


Z

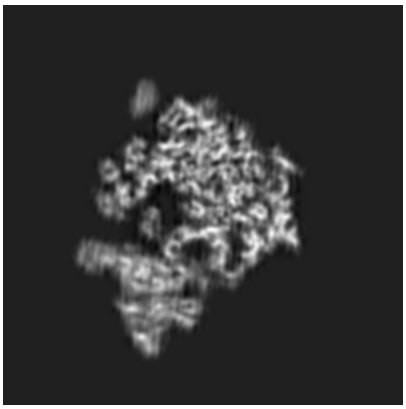
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices (i)

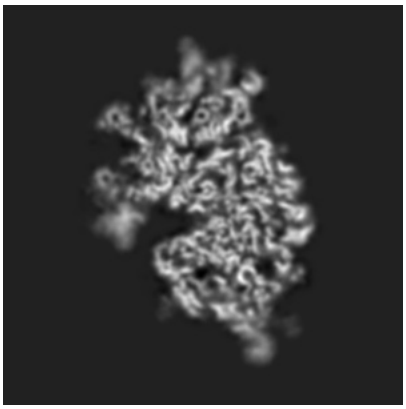
### 6.2.1 Primary map



X Index: 200

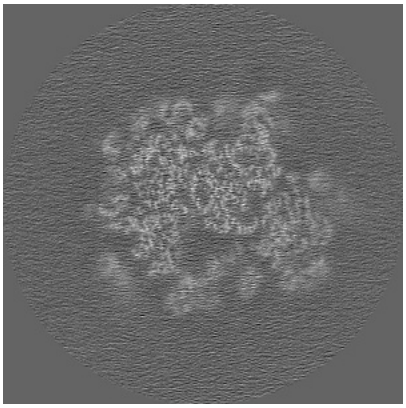


Y Index: 200

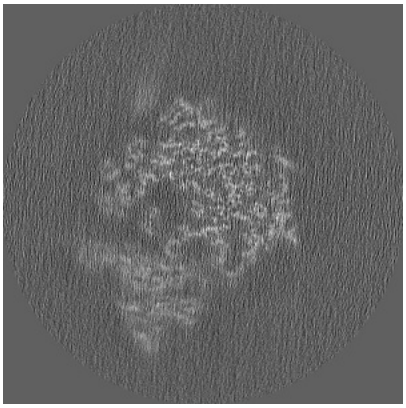


Z Index: 200

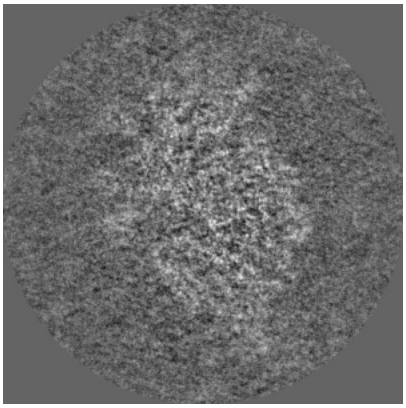
### 6.2.2 Raw map



X Index: 200



Y Index: 200

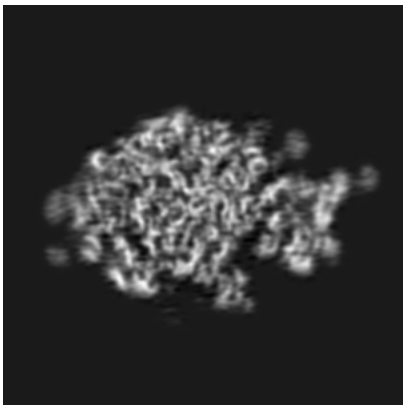


Z Index: 200

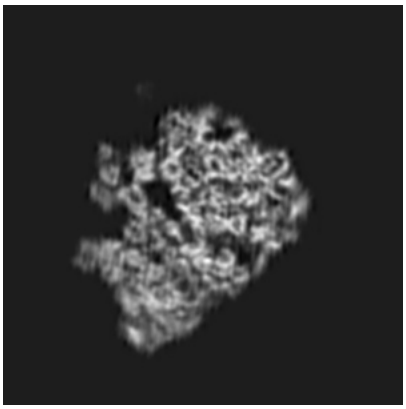
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices (i)

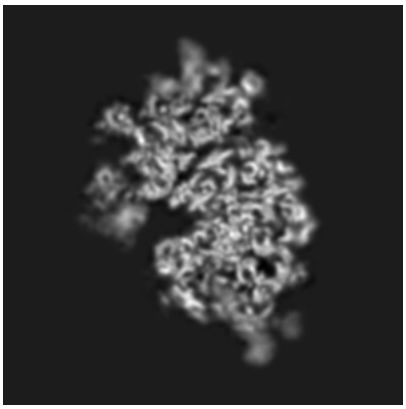
### 6.3.1 Primary map



X Index: 248

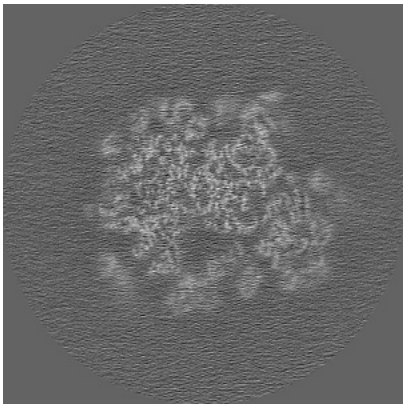


Y Index: 213

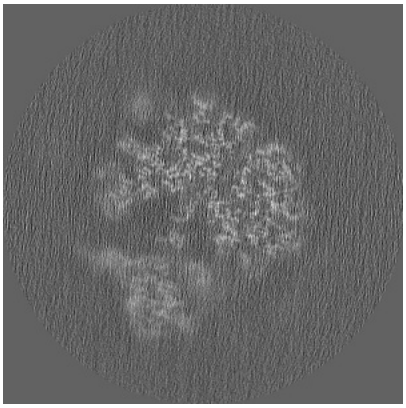


Z Index: 197

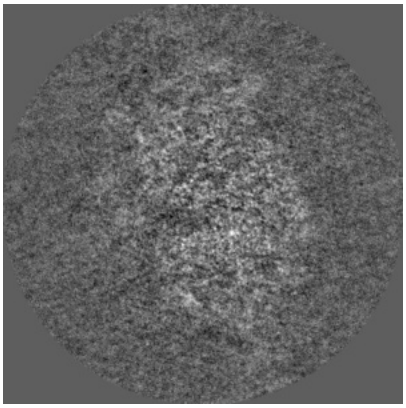
### 6.3.2 Raw map



X Index: 201



Y Index: 189

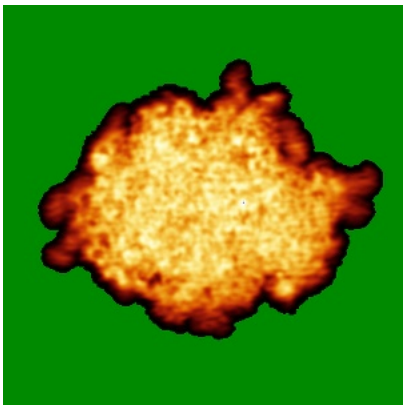


Z Index: 198

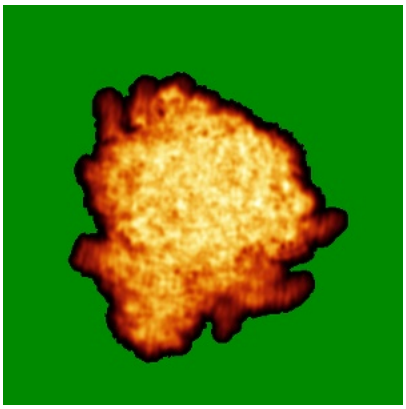
The images above show the largest variance slices of the map in three orthogonal directions.

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

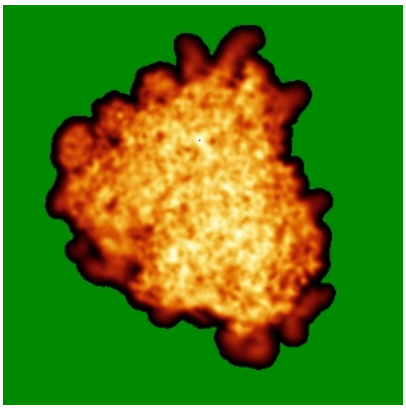
### 6.4.1 Primary map



X

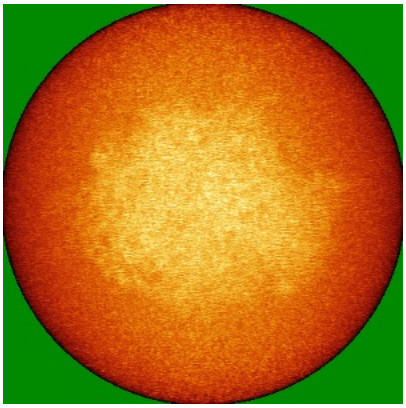


Y

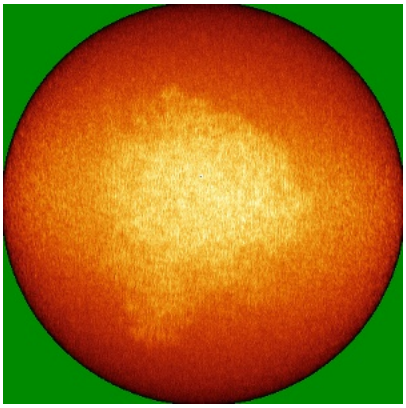


Z

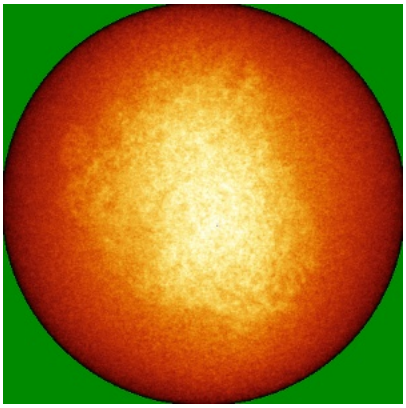
### 6.4.2 Raw map



X



Y

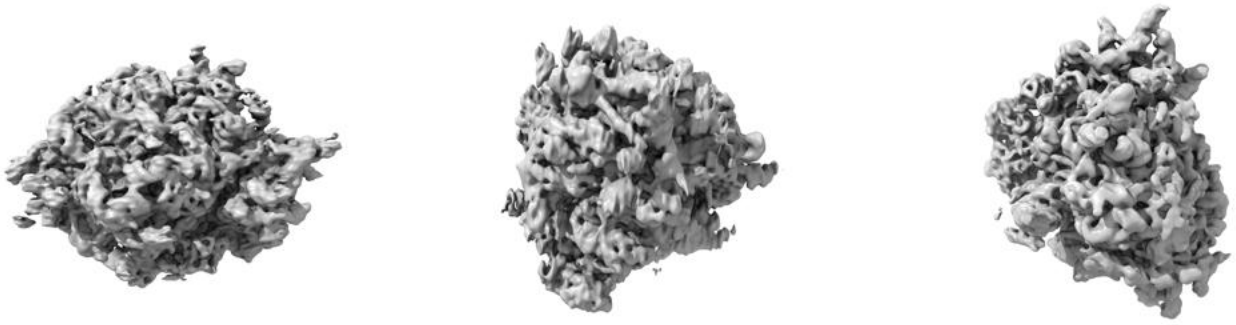


Z

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)

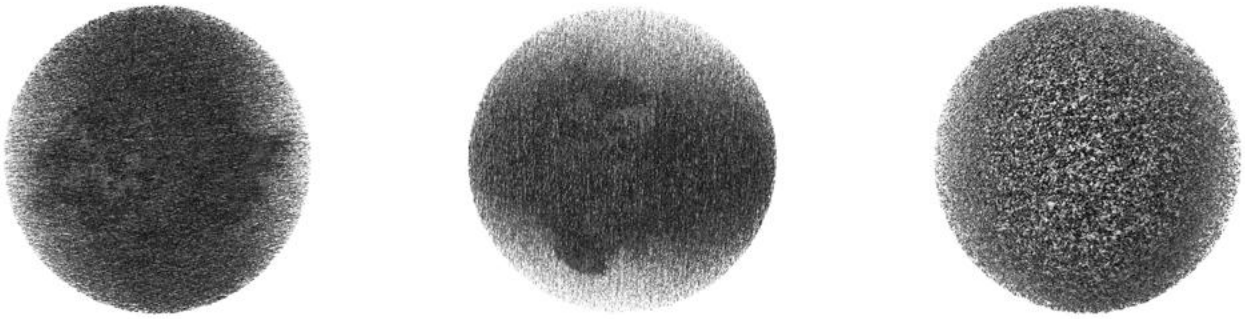
### 6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.02. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

### 6.5.2 Raw map



X Y Z

These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

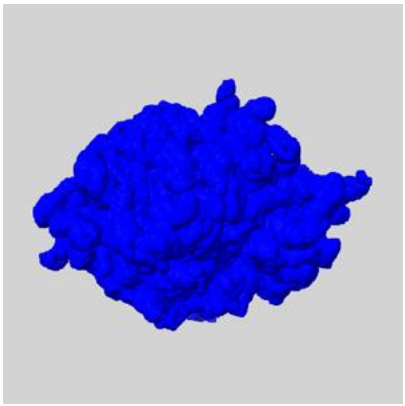
## 6.6 Mask visualisation

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

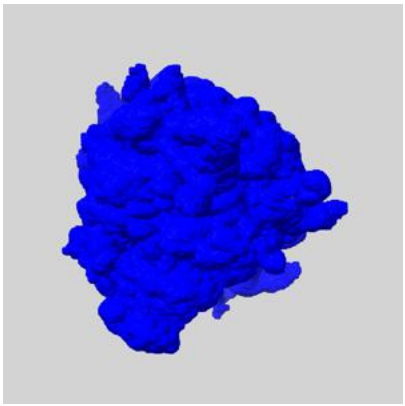
A mask typically either:

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

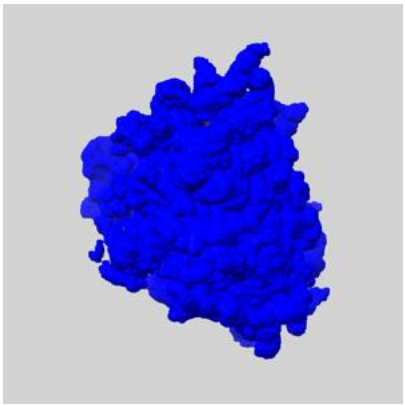
### 6.6.1 emd_7836_msk_1.map



X



Y

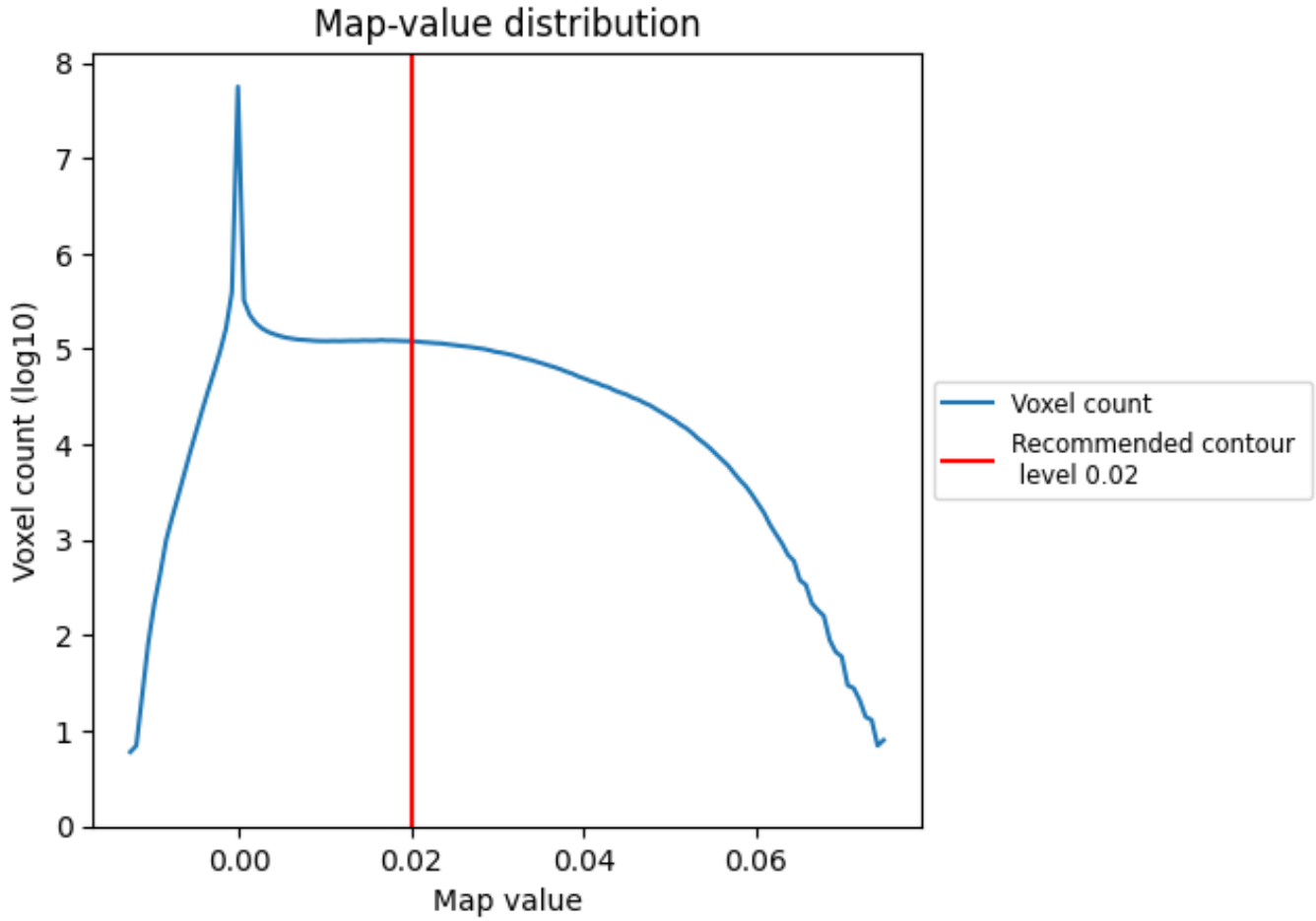


Z

# 7 Map analysis

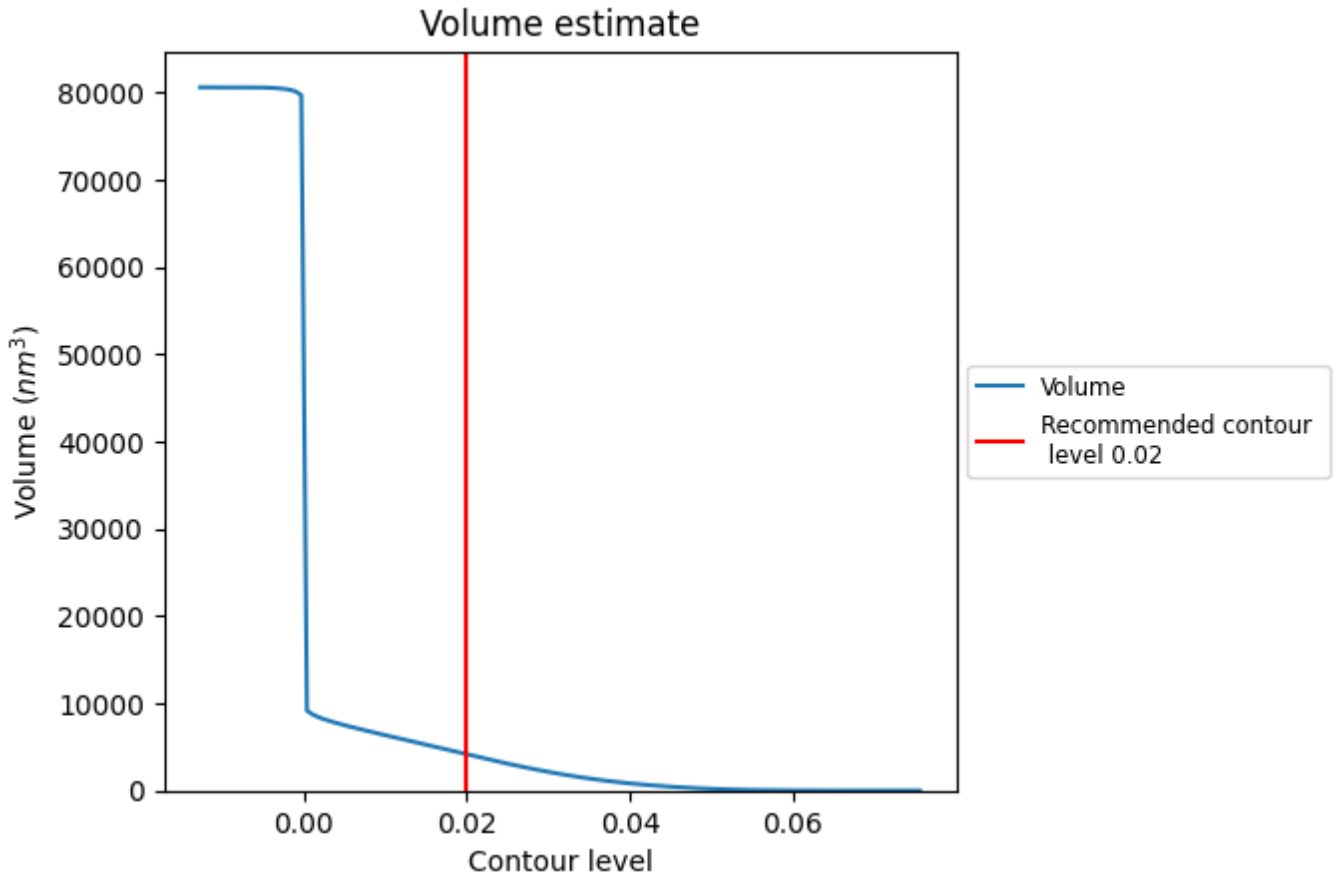
This section contains the results of statistical analysis of the map.

## 7.1 Map-value distribution




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.

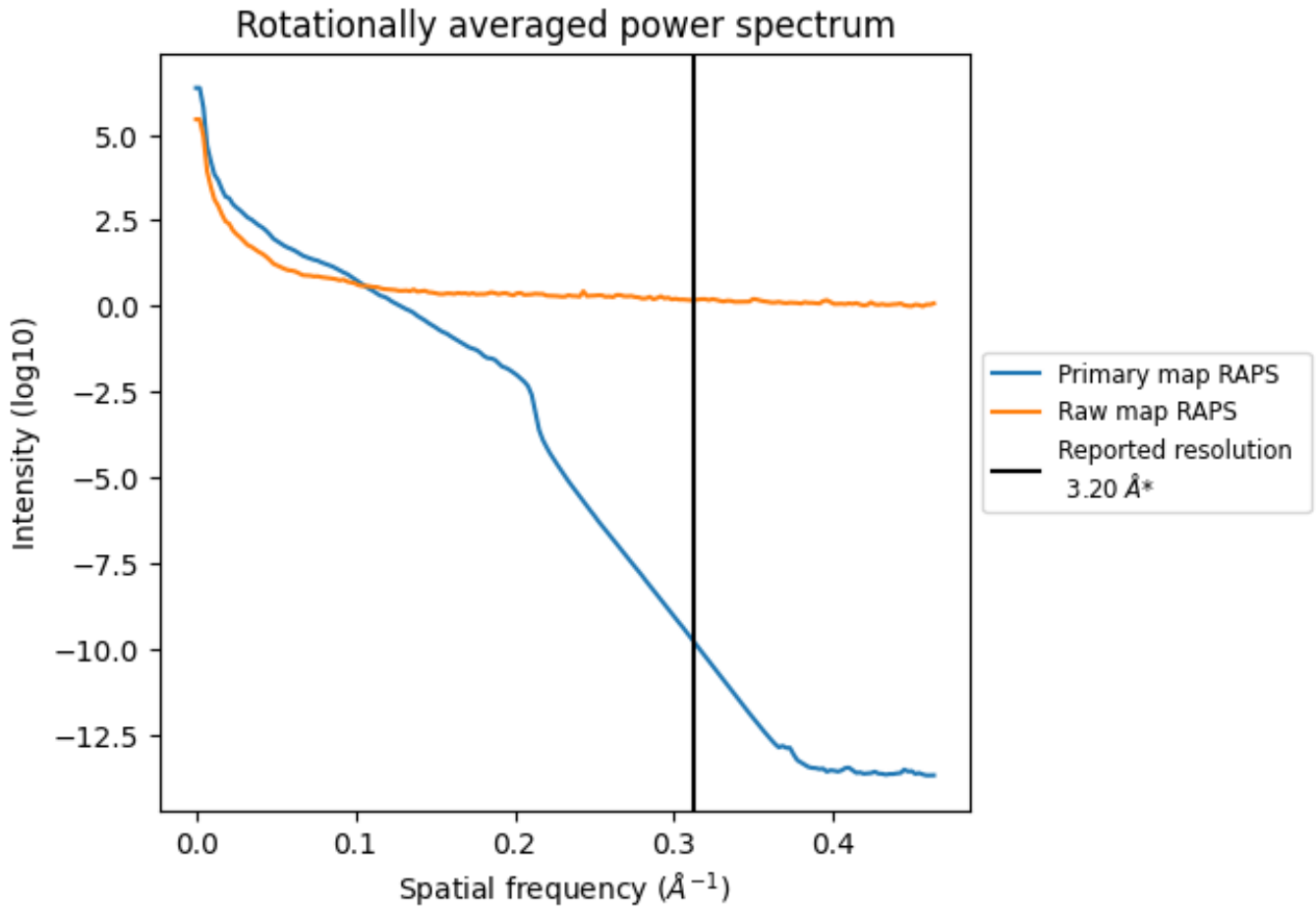
## 7.2 Volume estimate (i)




The volume at the recommended contour level is 4136 $nm^3$; this corresponds to an approximate mass of 3736 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)

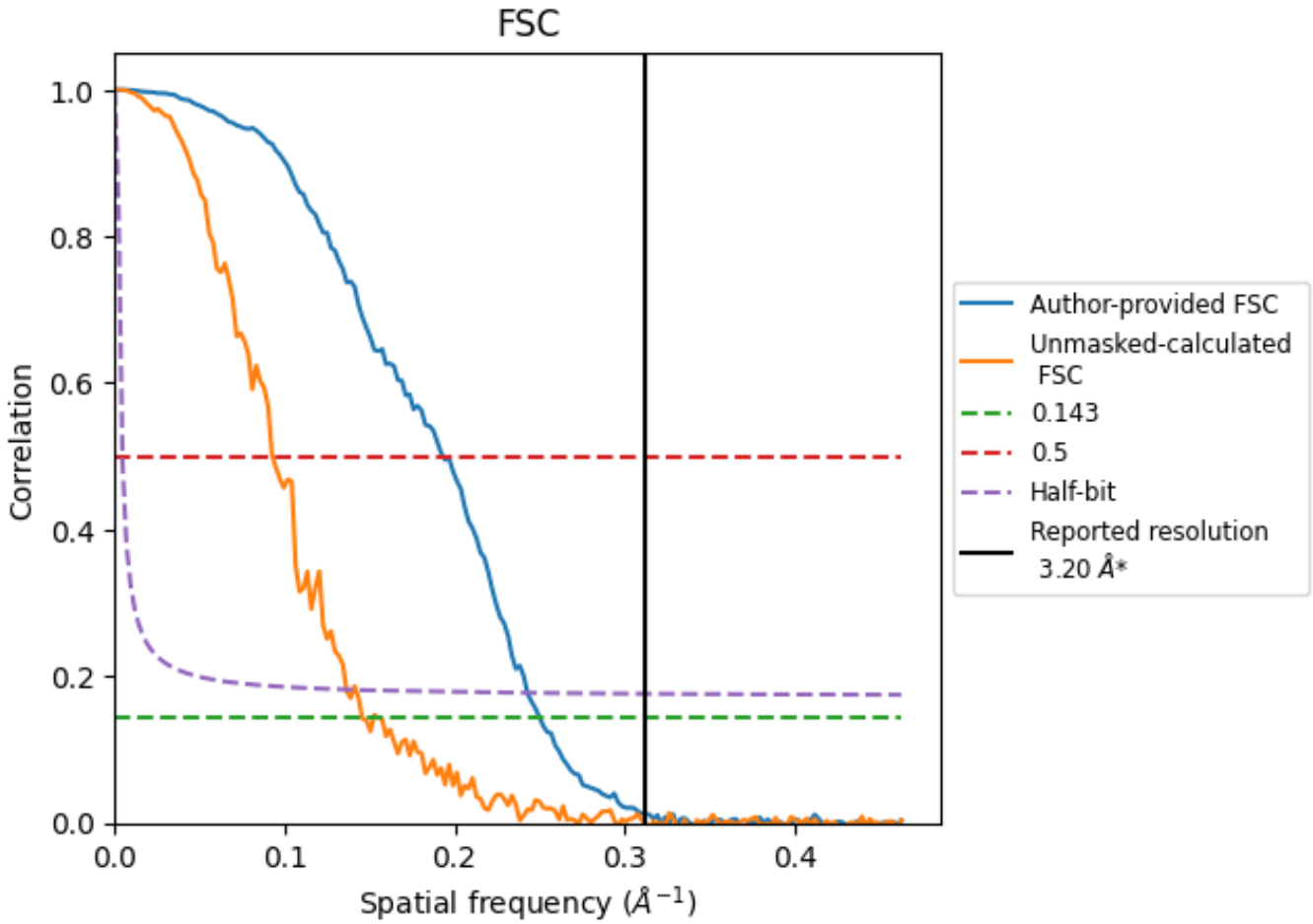



*Reported resolution corresponds to spatial frequency of 0.312 Å$^{-1}$

# 8 Fourier-Shell correlation

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

## 8.1 FSC




*Reported resolution corresponds to spatial frequency of 0.312 Å$^{-1}$

## 8.2 Resolution estimates (i)

| Resolution estimate (Å) | Estimation criterion (FSC cut-off) | | |
|---|---|---|---|
| | 0.143 | 0.5 | Half-bit |
| Reported by author | 3.20 | - | - |
| Author-provided FSC curve | 4.00 | 5.17 | 4.12 |
| Unmasked-calculated* | 6.86 | 10.79 | 7.33 |

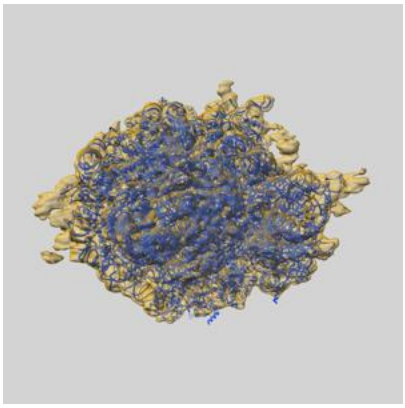
*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from author-provided FSC intersecting FSC 0.143 CUT-OFF 4.00 differs from the reported value 3.2 by more than 10 %

The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 6.86 differs from the reported value 3.2 by more than 10 %

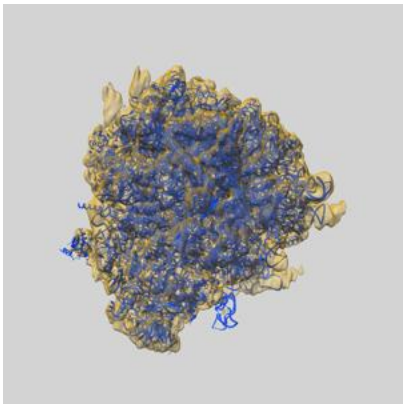
# 9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-7836 and PDB model 6D9J. Per-residue inclusion information can be found in section 3 on page 22.

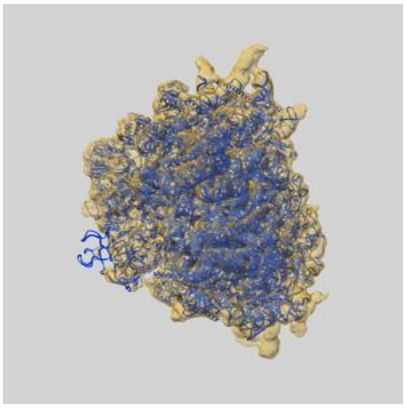
## 9.1 Map-model overlay



X



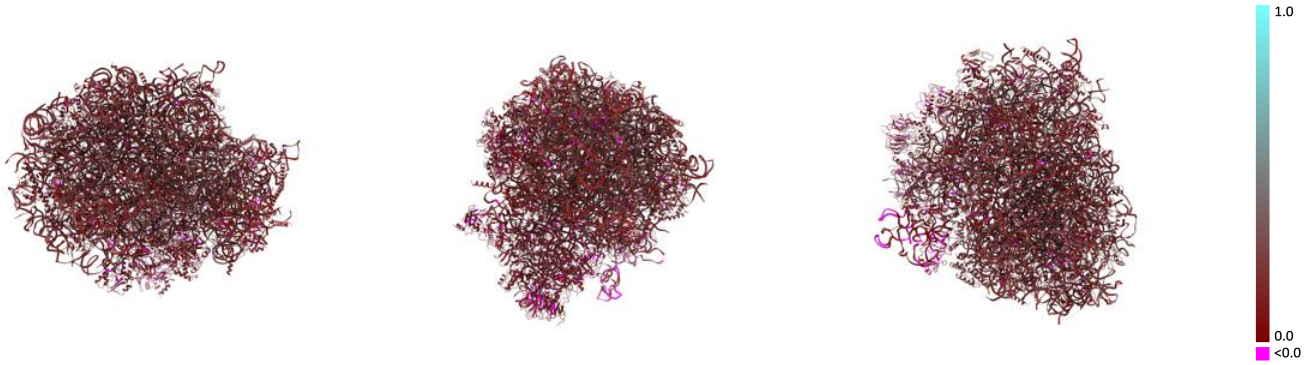
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.02 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.

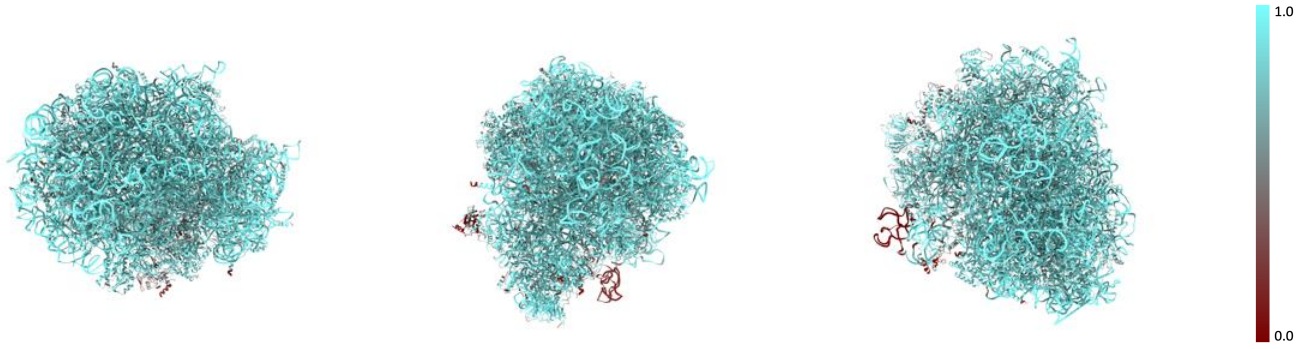
## 9.2 Q-score mapped to coordinate model




X Y Z

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.

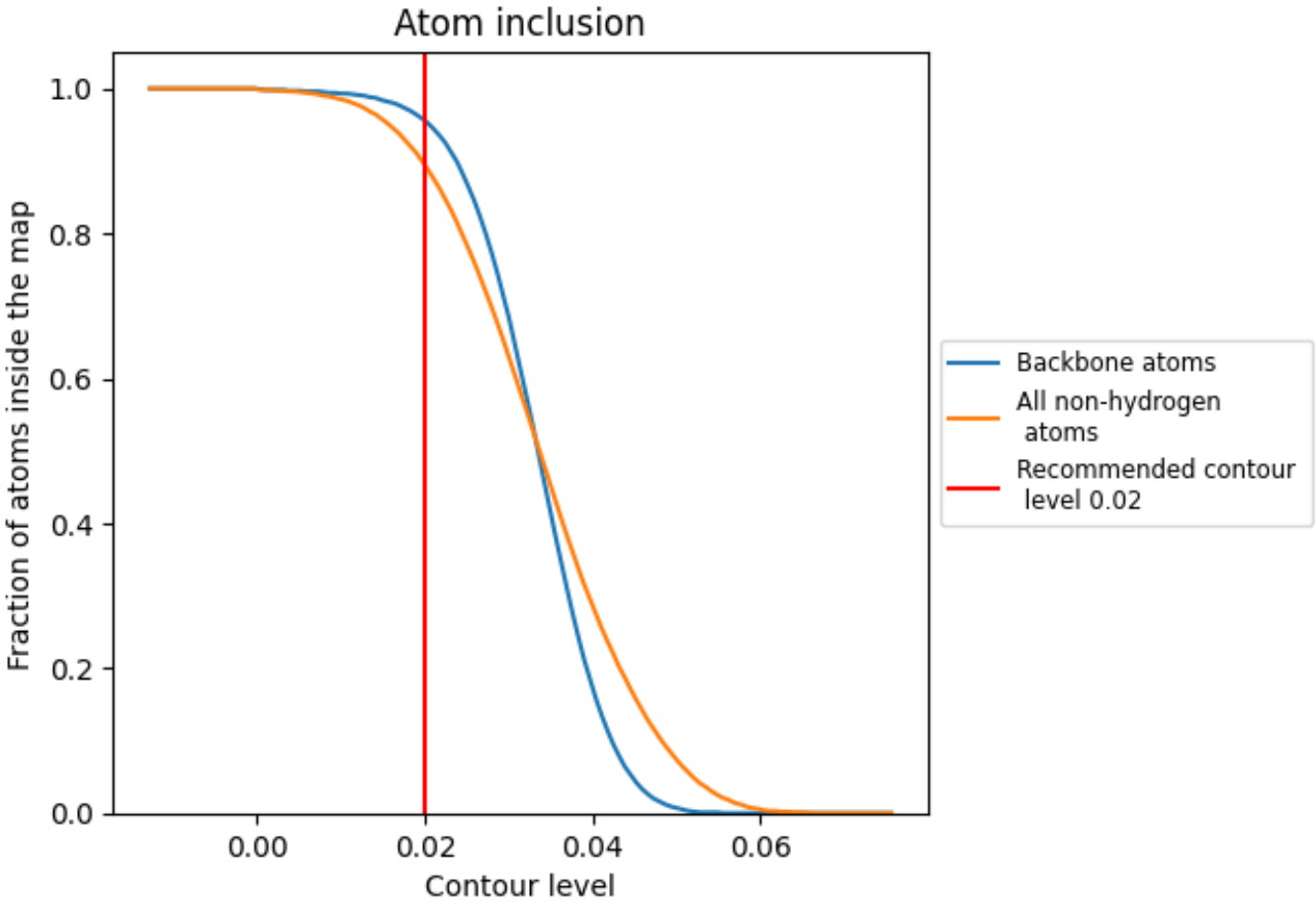
## 9.3 Atom inclusion mapped to coordinate model




X Y Z

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 (0.02).

## 9.4 Atom inclusion (i)




At the recommended contour level, 96% of all backbone atoms, 90% 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 (0.02) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion | Q-score |
|---|---|---|
| All | 0.8950 | 0.1880 |
| 2 | 0.9770 | 0.2060 |
| 3 | 0.7770 | 0.1720 |
| 4 | 0.5300 | 0.0620 |
| 5 | 0.9830 | 0.2280 |
| 7 | 0.9960 | 0.2340 |
| 8 | 0.9800 | 0.2140 |
| 9 | 0.7330 | 0.1480 |
| A | 0.8350 | 0.1770 |
| B | 0.8230 | 0.1750 |
| BB | 0.7880 | 0.1530 |
| C | 0.8350 | 0.1610 |
| CC | 0.8570 | 0.1640 |
| D | 0.8940 | 0.1680 |
| DD | 0.8000 | 0.1630 |
| E | 0.8520 | 0.1690 |
| EE | 0.7810 | 0.1540 |
| F | 0.7990 | 0.1610 |
| FF | 0.8580 | 0.1500 |
| G | 0.8270 | 0.1690 |
| GG | 0.8030 | 0.1470 |
| H | 0.8070 | 0.1740 |
| HH | 0.8570 | 0.1460 |
| I | 0.8200 | 0.1700 |
| II | 0.7960 | 0.1670 |
| J | 0.8450 | 0.1570 |
| JJ | 0.8490 | 0.1540 |
| K | 0.5690 | 0.0670 |
| KK | 0.8150 | 0.1510 |
| L | 0.8350 | 0.1780 |
| LL | 0.8610 | 0.1400 |
| M | 0.9020 | 0.1660 |
| MM | 0.8120 | 0.1870 |
| N | 0.8410 | 0.1420 |
| NN | 0.3300 | 0.0790 |


*Continued on next page...*

*Continued from previous page...*

| Chain | Atom inclusion | Q-score |
|---|---|---|
| O | 0.8030 | 0.1710 |
| OO | 0.8120 | 0.1750 |
| P | 0.8720 | 0.1570 |
| PP | 0.8460 | 0.1530 |
| Q | 0.8000 | 0.1630 |
| QQ | 0.8200 | 0.1090 |
| R | 0.8240 | 0.1720 |
| RR | 0.8210 | 0.1110 |
| S | 0.8490 | 0.1750 |
| SS | 0.5970 | 0.0840 |
| T | 0.8040 | 0.1790 |
| TT | 0.7460 | 0.1390 |
| U | 0.8410 | 0.1780 |
| UU | 0.8590 | 0.1220 |
| V | 0.7690 | 0.1790 |
| VV | 0.7840 | 0.1220 |
| W | 0.8390 | 0.1680 |
| WW | 0.7910 | 0.1510 |
| X | 0.8170 | 0.1620 |
| XX | 0.8150 | 0.1770 |
| Y | 0.8820 | 0.1560 |
| YY | 0.7550 | 0.1600 |
| Z | 0.8910 | 0.1650 |
| ZZ | 0.8790 | 0.1410 |
| a | 0.8810 | 0.1550 |
| aa | 0.7500 | 0.1480 |
| b | 0.8070 | 0.1590 |
| bb | 0.8250 | 0.1560 |
| c | 0.8670 | 0.1750 |
| cc | 0.8140 | 0.1780 |
| d | 0.8480 | 0.1750 |
| dd | 0.7400 | 0.1430 |
| e | 0.8280 | 0.1830 |
| ee | 0.9050 | 0.1340 |
| f | 0.8300 | 0.1700 |
| ff | 0.7840 | 0.1470 |
| g | 0.8480 | 0.1460 |
| gg | 0.5010 | 0.0810 |
| h | 0.8320 | 0.1750 |
| hh | 0.8710 | 0.1260 |
| i | 0.8130 | 0.1780 |
| j | 0.8720 | 0.1320 |

*Continued on next page...*

*Continued from previous page...*

| Chain | Atom inclusion | Q-score |
|---|---|---|
| k | 0.8260 | 0.1720 |
| l | 0.8340 | 0.1610 |
| m | 0.8070 | 0.1570 |
| n | 0.7660 | 0.1230 |
| o | 0.8750 | 0.1730 |
| p | 0.8200 | 0.1710 |
| r | 0.8450 | 0.1740 |
| s | 0.7700 | 0.1380 |
| t | 0.6520 | 0.0890 |