



Full wwPDB EM Validation Report ⓘ

Feb 22, 2023 – 09:18 am GMT

PDB ID : 7ZUW
EMDB ID : EMD-14978
Title : Structure of RQT (C1) bound to the stalled ribosome in a disome unit from *S. cerevisiae*
Authors : Best, K.M.; Ikeuchi, K.; Kater, L.; Best, D.M.; Musial, J.; Matsuo, Y.; Berninghausen, O.; Becker, T.; Inada, T.; Beckmann, R.
Deposited on : 2022-05-13
Resolution : 4.30 Å (reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

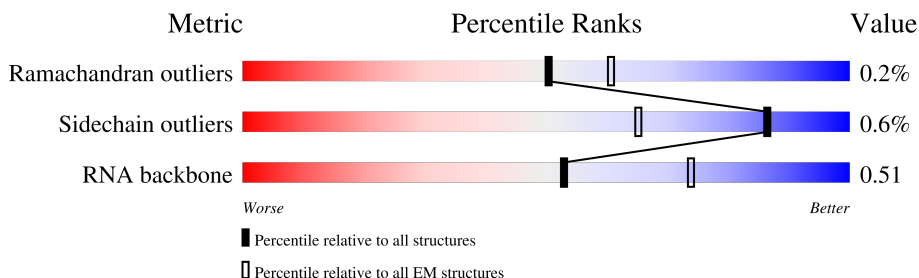
EMDB validation analysis : 0.0.1.dev43
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.9
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.32.1

1 Overall quality at a glance

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

The reported resolution of this entry is 4.30 Å.

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



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

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

| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 1 | 2 | 1800 | |
| 2 | 3 | 158 | |
| 3 | 4 | 121 | |
| 4 | 5 | 3396 | |
| 5 | 6 | 76 | |
| 6 | AA | 206 | |
| 7 | AB | 255 | |
| 8 | AC | 216 | |

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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 9 | AD | 222 | 5% 100% |
| 10 | AE | 258 | 98% |
| 11 | AF | 206 | 100% |
| 12 | AG | 228 | 98% |
| 13 | AH | 184 | 99% |
| 14 | AI | 200 | 92% 6% |
| 15 | AJ | 184 | 99% |
| 16 | AK | 92 | 100% |
| 17 | AL | 144 | 99% |
| 18 | AM | 121 | 10% 97% |
| 19 | AN | 150 | 100% |
| 20 | AO | 127 | 100% |
| 21 | AP | 117 | 99% |
| 22 | AQ | 141 | 99% |
| 23 | AR | 136 | 89% 11% |
| 24 | AS | 145 | 99% |
| 25 | AT | 143 | 99% |
| 26 | AU | 100 | 98% |
| 27 | AV | 87 | 97% |
| 28 | AW | 129 | 100% |
| 29 | AX | 144 | 99% |
| 30 | AY | 134 | 99% |
| 31 | AZ | 82 | 16% 100% |
| 32 | Aa | 97 | 98% |
| 33 | Ab | 81 | 100% |

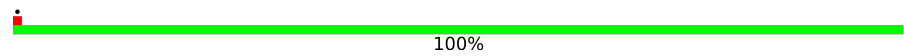
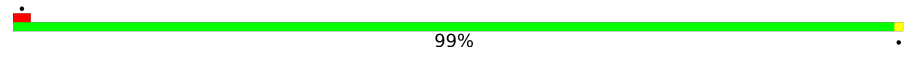
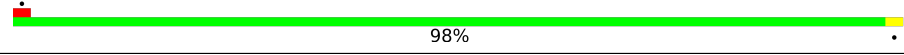
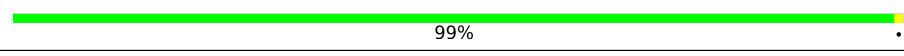
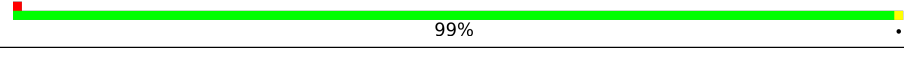
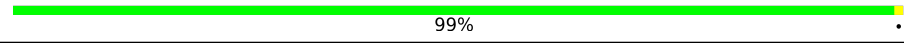
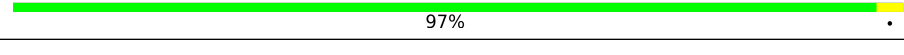
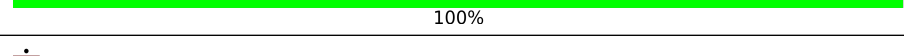
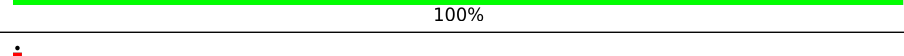
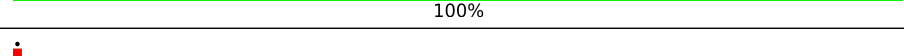
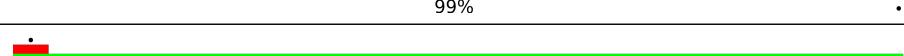
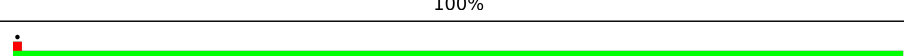
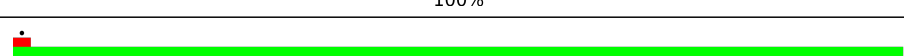
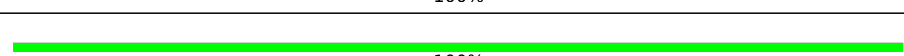
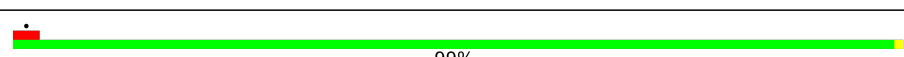
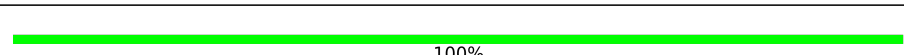


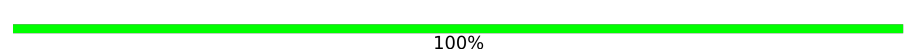
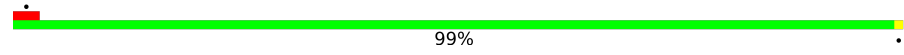
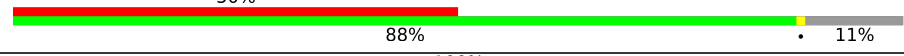
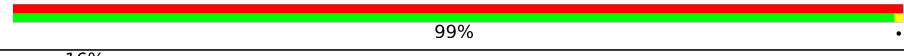


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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 34 | Ac | 63 | 5% 98% |
| 35 | Ad | 53 | 98% |
| 36 | Ae | 60 | 5% 98% |
| 37 | Af | 73 | 11% 99% |
| 38 | Ag | 312 | 96% 99% |
| 39 | BA | 251 | 100% |
| 40 | BB | 386 | 99% |
| 41 | BC | 361 | 99% |
| 42 | BD | 294 | 100% |
| 43 | BE | 176 | 94% 5% |
| 44 | BF | 222 | 100% |
| 45 | BG | 233 | 99% |
| 46 | BH | 191 | 100% |
| 47 | BI | 218 | 100% |
| 48 | BJ | 169 | 100% |
| 49 | BK | 193 | 97% |
| 50 | BL | 136 | 100% |
| 51 | BM | 203 | 100% |
| 52 | BN | 197 | 98% |
| 53 | BO | 183 | 100% |
| 54 | BP | 185 | 99% |
| 55 | BQ | 188 | 99% |
| 56 | BR | 171 | 100% |
| 57 | BS | 159 | 100% |
| 58 | BT | 100 | 99% |

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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|--|
| 59 | BU | 136 |  100% |
| 60 | BV | 126 |  99% |
| 61 | BW | 121 |  98% |
| 62 | BX | 125 |  99% |
| 63 | BY | 135 |  99% |
| 64 | BZ | 148 |  99% |
| 65 | Ba | 58 |  97% |
| 66 | Bb | 96 |  100% |
| 67 | Bc | 109 |  100% |
| 68 | Bd | 127 |  100% |
| 69 | Be | 106 |  99% |
| 70 | Bf | 112 |  100% |
| 71 | Bg | 119 |  100% |
| 72 | Bh | 99 |  100% |
| 73 | Bi | 85 |  100% |
| 74 | Bj | 77 |  99% |
| 75 | Bk | 50 |  100% |
| 76 | Bl | 52 |  100% |
| 77 | Bm | 25 |  100% |
| 78 | Bn | 103 |  100% |
| 79 | Bo | 91 |  99% |
| 80 | CA | 1967 |  50% 88% 11% |
| 81 | CB | 297 |  99% |
| 82 | CC | 530 |  16% 22% 78% |

2 Entry composition [i](#)

There are 84 unique types of molecules in this entry. The entry contains 218071 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a RNA chain called 18S ribosomal RNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-------|------|-------|------|---------|-------|
| | | | Total | C | N | O | P | | |
| 1 | 2 | 1771 | 37739 | 16872 | 6683 | 12413 | 1771 | 0 | 0 |

- Molecule 2 is a RNA chain called 5.8S ribosomal RNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|------|-----|---------|-------|
| | | | Total | C | N | O | P | | |
| 2 | 3 | 158 | 3353 | 1500 | 586 | 1109 | 158 | 0 | 0 |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|-----|---------|-------|
| | | | Total | C | N | O | P | | |
| 3 | 4 | 121 | 2579 | 1152 | 461 | 845 | 121 | 0 | 0 |

- Molecule 4 is a RNA chain called 25S ribosomal RNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-------|-------|-------|------|---------|-------|
| | | | Total | C | N | O | P | | |
| 4 | 5 | 3163 | 67650 | 30218 | 12191 | 22078 | 3163 | 0 | 0 |

- Molecule 5 is a RNA chain called tRNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|----|---------|-------|
| | | | Total | C | N | O | P | | |
| 5 | 6 | 76 | 1619 | 722 | 288 | 533 | 76 | 0 | 0 |

- Molecule 6 is a protein called 40S ribosomal protein S0-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 6 | AA | 206 | 1603 | 1030 | 284 | 287 | 2 | 0 | 0 |

- Molecule 7 is a protein called 40S ribosomal protein S1-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 7 | AB | 226 | 1798 | 1139 | 330 | 325 | 4 | 0 | 0 |

- Molecule 8 is a protein called RPS2 isoform 1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 8 | AC | 216 | 1626 | 1042 | 287 | 295 | 2 | 0 | 0 |

- Molecule 9 is a protein called RPS3 isoform 1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 9 | AD | 222 | 1729 | 1098 | 312 | 313 | 6 | 0 | 0 |

- Molecule 10 is a protein called 40S ribosomal protein S4-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 10 | AE | 258 | 2056 | 1308 | 387 | 358 | 3 | 0 | 0 |

- Molecule 11 is a protein called Rps5p.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 11 | AF | 206 | 1605 | 1005 | 299 | 298 | 3 | 0 | 0 |

- Molecule 12 is a protein called 40S ribosomal protein S6-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 12 | AG | 228 | 1815 | 1138 | 351 | 323 | 3 | 0 | 0 |

- Molecule 13 is a protein called 40S ribosomal protein S7-A.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| | | | Total | C | N | O | | |
| 13 | AH | 184 | 1473 | 946 | 263 | 264 | 0 | 0 |

- Molecule 14 is a protein called 40S ribosomal protein S8-B.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 14 | AI | 187 | 1476 | 916 | 295 | 263 | 2 | 0 | 0 |

- Molecule 15 is a protein called 40S ribosomal protein S9-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 15 | AJ | 184 | 1479 | 935 | 285 | 258 | 1 | 0 | 0 |

- Molecule 16 is a protein called 40S ribosomal protein S10-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 16 | AK | 92 | 752 | 487 | 122 | 141 | 2 | 0 | 0 |

- Molecule 17 is a protein called 40S ribosomal protein S11-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 17 | AL | 144 | 1159 | 742 | 219 | 195 | 3 | 0 | 0 |

- Molecule 18 is a protein called 40S ribosomal protein S12.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 18 | AM | 121 | 875 | 551 | 153 | 169 | 2 | 0 | 0 |

- Molecule 19 is a protein called 40S ribosomal protein S13.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 19 | AN | 150 | 1192 | 759 | 224 | 207 | 2 | 0 | 0 |

- Molecule 20 is a protein called 40S ribosomal protein S14-B.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 20 | AO | 127 | 926 | 569 | 185 | 169 | 3 | 0 | 0 |

- Molecule 21 is a protein called RPS15 isoform 1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 21 | AP | 117 | Total | C | N | O | S | 0 | 0 |
| | | | 916 | 583 | 171 | 155 | 7 | | |

- Molecule 22 is a protein called 40S ribosomal protein S16-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 22 | AQ | 141 | Total | C | N | O | S | 0 | 0 |
| | | | 1105 | 708 | 203 | 194 | | | |

- Molecule 23 is a protein called 40S ribosomal protein S17-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 23 | AR | 121 | Total | C | N | O | S | 0 | 0 |
| | | | 948 | 596 | 179 | 171 | 2 | | |

- Molecule 24 is a protein called 40S ribosomal protein S18-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 24 | AS | 145 | Total | C | N | O | S | 0 | 0 |
| | | | 1192 | 743 | 237 | 210 | 2 | | |

- Molecule 25 is a protein called 40S ribosomal protein S19-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 25 | AT | 143 | Total | C | N | O | S | 0 | 0 |
| | | | 1112 | 694 | 208 | 208 | 2 | | |

- Molecule 26 is a protein called RPS20 isoform 1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 26 | AU | 100 | Total | C | N | O | S | 0 | 0 |
| | | | 797 | 506 | 144 | 146 | 1 | | |

- Molecule 27 is a protein called 40S ribosomal protein S21-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 27 | AV | 87 | Total | C | N | O | S | 0 | 0 |
| | | | 673 | 415 | 125 | 131 | 2 | | |

- Molecule 28 is a protein called RPS22A isoform 1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 28 | AW | 129 | Total | C | N | O | S | 0 | 0 |
| | | | 1021 | 650 | 188 | 180 | 3 | | |

- Molecule 29 is a protein called 40S ribosomal protein S23-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 29 | AX | 144 | Total | C | N | O | S | 0 | 0 |
| | | | 1121 | 708 | 220 | 191 | 2 | | |

- Molecule 30 is a protein called 40S ribosomal protein S24-A.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| 30 | AY | 134 | Total | C | N | O | 0 | 0 |
| | | | 1073 | 676 | 208 | 189 | | |

- Molecule 31 is a protein called 40S ribosomal protein S25.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| 31 | AZ | 82 | Total | C | N | O | 0 | 0 |
| | | | 651 | 416 | 123 | 112 | | |

- Molecule 32 is a protein called 40S ribosomal protein S26.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 32 | Aa | 97 | Total | C | N | O | S | 0 | 0 |
| | | | 769 | 475 | 160 | 129 | 5 | | |

- Molecule 33 is a protein called 40S ribosomal protein S27-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 33 | Ab | 81 | Total | C | N | O | S | 0 | 0 |
| | | | 610 | 382 | 110 | 113 | 5 | | |

- Molecule 34 is a protein called RPS28A isoform 1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 34 | Ac | 63 | Total | C | N | O | S | 0 | 0 |
| | | | 491 | 303 | 96 | 91 | 1 | | |

- Molecule 35 is a protein called RPS29A isoform 1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 35 | Ad | 53 | Total | C | N | O | S | 0 | 0 |
| | | | 442 | 274 | 92 | 72 | 4 | | |

- Molecule 36 is a protein called 40S ribosomal protein S30-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 36 | Ae | 60 | Total | C | N | O | S | 0 | 0 |
| | | | 472 | 298 | 97 | 76 | 1 | | |

- Molecule 37 is a protein called RPS31 isoform 1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|----|---|---------|-------|
| 37 | Af | 73 | Total | C | N | O | S | 0 | 0 |
| | | | 556 | 352 | 105 | 95 | 4 | | |

- Molecule 38 is a protein called Guanine nucleotide-binding protein subunit beta-like protein.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 38 | Ag | 312 | Total | C | N | O | S | 0 | 0 |
| | | | 2383 | 1514 | 409 | 452 | 8 | | |

- Molecule 39 is a protein called 60S ribosomal protein L2-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 39 | BA | 251 | Total | C | N | O | S | 0 | 0 |
| | | | 1899 | 1182 | 385 | 331 | 1 | | |

- Molecule 40 is a protein called 60S ribosomal protein L3.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 40 | BB | 386 | Total | C | N | O | S | 0 | 0 |
| | | | 3075 | 1950 | 584 | 533 | 8 | | |

- Molecule 41 is a protein called RPL4A isoform 1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 41 | BC | 361 | Total | C | N | O | S | 0 | 0 |
| | | | 2748 | 1729 | 522 | 494 | 3 | | |

- Molecule 42 is a protein called RPL5 isoform 1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 42 | BD | 294 | Total | C | N | O | S | 0 | 0 |
| | | | 2351 | 1484 | 410 | 455 | 2 | | |

- Molecule 43 is a protein called 60S ribosomal protein L6-B.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 43 | BE | 167 | Total | C | N | O | S | 0 | 0 |
| | | | 1305 | 841 | 234 | 229 | 1 | | |

There are 2 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|----------|------------|
| BE | 146 | ILE | LEU | conflict | UNP P05739 |
| BE | 173 | MET | LEU | conflict | UNP P05739 |

- Molecule 44 is a protein called 60S ribosomal protein L7-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 44 | BF | 222 | Total | C | N | O | S | 0 | 0 |
| | | | 1784 | 1151 | 324 | 308 | 1 | | |

- Molecule 45 is a protein called 60S ribosomal protein L8.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 45 | BG | 233 | Total | C | N | O | S | 0 | 0 |
| | | | 1804 | 1151 | 323 | 327 | 3 | | |

- Molecule 46 is a protein called RPL9A isoform 1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 46 | BH | 191 | Total | C | N | O | S | 0 | 0 |
| | | | 1508 | 957 | 274 | 273 | 4 | | |

- Molecule 47 is a protein called RPL10 isoform 1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 47 | BI | 218 | Total | C | N | O | S | 0 | 0 |
| | | | 1764 | 1117 | 334 | 306 | 7 | | |

- Molecule 48 is a protein called RPL11B isoform 1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 48 | BJ | 169 | 1350 | 846 | 253 | 247 | 4 | 0 | 0 |

- Molecule 49 is a protein called 60S ribosomal protein L13-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 49 | BK | 193 | 1543 | 962 | 315 | 266 | | 0 | 0 |

- Molecule 50 is a protein called 60S ribosomal protein L14-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 50 | BL | 136 | 1053 | 675 | 199 | 177 | 2 | 0 | 0 |

- Molecule 51 is a protein called Ribosomal protein L15.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 51 | BM | 203 | 1720 | 1077 | 361 | 281 | 1 | 0 | 0 |

- Molecule 52 is a protein called 60S ribosomal protein L16-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 52 | BN | 197 | 1555 | 1003 | 289 | 262 | 1 | 197 | 0 |

- Molecule 53 is a protein called 60S ribosomal protein L17-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 53 | BO | 183 | 1416 | 879 | 284 | 253 | | 0 | 0 |

- Molecule 54 is a protein called 60S ribosomal protein L18-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 54 | BP | 185 | 1441 | 908 | 290 | 241 | 2 | 0 | 0 |

- Molecule 55 is a protein called 60S ribosomal protein L19-A.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| | | | Total | C | N | O | | |
| 55 | BQ | 188 | 1515 | 932 | 323 | 260 | 0 | 0 |

- Molecule 56 is a protein called 60S ribosomal protein L20-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 56 | BR | 171 | 1437 | 925 | 266 | 243 | 3 | 0 | 0 |

- Molecule 57 is a protein called 60S ribosomal protein L21-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 57 | BS | 159 | 1276 | 805 | 246 | 221 | 4 | 0 | 0 |

- Molecule 58 is a protein called 60S ribosomal protein L22-A.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| | | | Total | C | N | O | | |
| 58 | BT | 100 | 796 | 516 | 131 | 149 | 0 | 0 |

- Molecule 59 is a protein called 60S ribosomal protein L23-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 59 | BU | 136 | 1003 | 628 | 189 | 179 | 7 | 0 | 0 |

- Molecule 60 is a protein called RPL24A isoform 1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 60 | BV | 126 | 836 | 525 | 165 | 145 | 1 | 0 | 0 |

There are 4 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|----------|----------------|
| BV | 104 | GLN | ASN | conflict | UNP A0A6A5PY83 |
| BV | 109 | GLN | LEU | conflict | UNP A0A6A5PY83 |
| BV | 112 | ASP | ASN | conflict | UNP A0A6A5PY83 |
| BV | 119 | ALA | GLU | conflict | UNP A0A6A5PY83 |

- Molecule 61 is a protein called 60S ribosomal protein L25.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 61 | BW | 121 | 964 | 620 | 169 | 173 | 2 | 0 | 0 |

- Molecule 62 is a protein called 60S ribosomal protein L26-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 62 | BX | 125 | 984 | 620 | 191 | 173 | | 0 | 0 |

- Molecule 63 is a protein called 60S ribosomal protein L27-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 63 | BY | 135 | 1092 | 710 | 202 | 180 | | 0 | 0 |

- Molecule 64 is a protein called 60S ribosomal protein L28.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 64 | BZ | 148 | 1173 | 749 | 231 | 190 | 3 | 0 | 0 |

- Molecule 65 is a protein called 60S ribosomal protein L29.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 65 | Ba | 58 | 462 | 289 | 100 | 73 | | 0 | 0 |

- Molecule 66 is a protein called 60S ribosomal protein L30.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 66 | Bb | 96 | 737 | 476 | 123 | 137 | 1 | 0 | 0 |

- Molecule 67 is a protein called 60S ribosomal protein L31-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 67 | Bc | 109 | 876 | 556 | 167 | 152 | 1 | 0 | 0 |

- Molecule 68 is a protein called RPL32 isoform 1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 68 | Bd | 127 | 1017 | 644 | 205 | 167 | 1 | 0 | 0 |

- Molecule 69 is a protein called 60S ribosomal protein L33-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 69 | Be | 106 | 850 | 540 | 165 | 144 | 1 | 0 | 0 |

- Molecule 70 is a protein called 60S ribosomal protein L34-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 70 | Bf | 112 | 880 | 545 | 179 | 152 | 4 | 0 | 0 |

- Molecule 71 is a protein called 60S ribosomal protein L35-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 71 | Bg | 119 | 969 | 615 | 186 | 167 | 1 | 0 | 0 |

- Molecule 72 is a protein called 60S ribosomal protein L36-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 72 | Bh | 99 | 766 | 478 | 154 | 132 | 2 | 0 | 0 |

- Molecule 73 is a protein called 60S ribosomal protein L37-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 73 | Bi | 85 | 670 | 408 | 146 | 111 | 5 | 0 | 0 |

- Molecule 74 is a protein called RPL38 isoform 1.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| | | | Total | C | N | O | | |
| 74 | Bj | 77 | 612 | 391 | 115 | 106 | | 0 |

- Molecule 75 is a protein called 60S ribosomal protein L39.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 75 | Bk | 50 | Total | C | N | O | S | 0 | 0 |
| | | | 436 | 272 | 97 | 65 | 2 | | |

- Molecule 76 is a protein called 60S ribosomal protein L40-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 76 | Bl | 52 | Total | C | N | O | S | 0 | 0 |
| | | | 417 | 259 | 86 | 67 | 5 | | |

- Molecule 77 is a protein called 60S ribosomal protein L41.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 77 | Bm | 25 | Total | C | N | O | S | 0 | 0 |
| | | | 229 | 139 | 62 | 27 | 1 | | |

- Molecule 78 is a protein called 60S ribosomal protein L42-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 78 | Bn | 103 | Total | C | N | O | S | 0 | 0 |
| | | | 824 | 517 | 167 | 135 | 5 | | |

- Molecule 79 is a protein called 60S ribosomal protein L43-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 79 | Bo | 91 | Total | C | N | O | S | 0 | 0 |
| | | | 694 | 429 | 138 | 121 | 6 | | |

- Molecule 80 is a protein called RQC trigger complex helicase SLH1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|----|---------|-------|
| 80 | CA | 1742 | Total | C | N | O | S | 0 | 0 |
| | | | 14008 | 8959 | 2378 | 2596 | 75 | | |

- Molecule 81 is a protein called CUE3 isoform 1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 81 | CB | 297 | Total | C | N | O | S | 0 | 0 |
| | | | 2415 | 1568 | 414 | 427 | 6 | | |

- Molecule 82 is a protein called RQC trigger complex subunit RQT4.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 82 | CC | 114 | Total | C | N | O | S | 0 | 0 |
| | | | 886 | 539 | 167 | 172 | 8 | | |

- Molecule 83 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

| Mol | Chain | Residues | Atoms | | AltConf |
|-----|-------|----------|-------|----|---------|
| 83 | 2 | 84 | Total | Mg | 0 |
| | | | 84 | 84 | |
| 83 | AC | 1 | Total | Mg | 0 |
| | | | 1 | 1 | |
| 83 | AQ | 1 | Total | Mg | 0 |
| | | | 1 | 1 | |

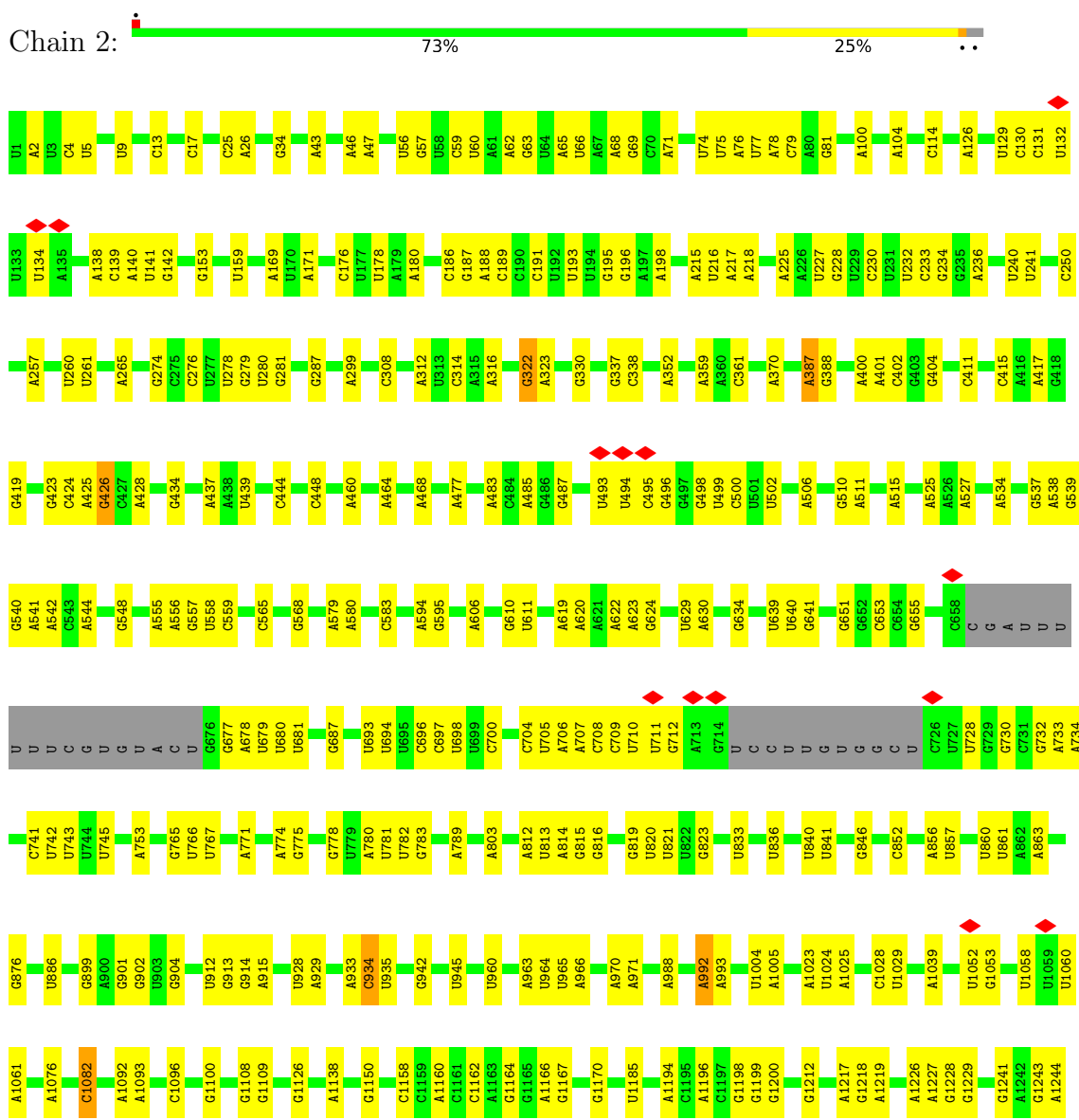
- Molecule 84 is ZINC ION (three-letter code: ZN) (formula: Zn).

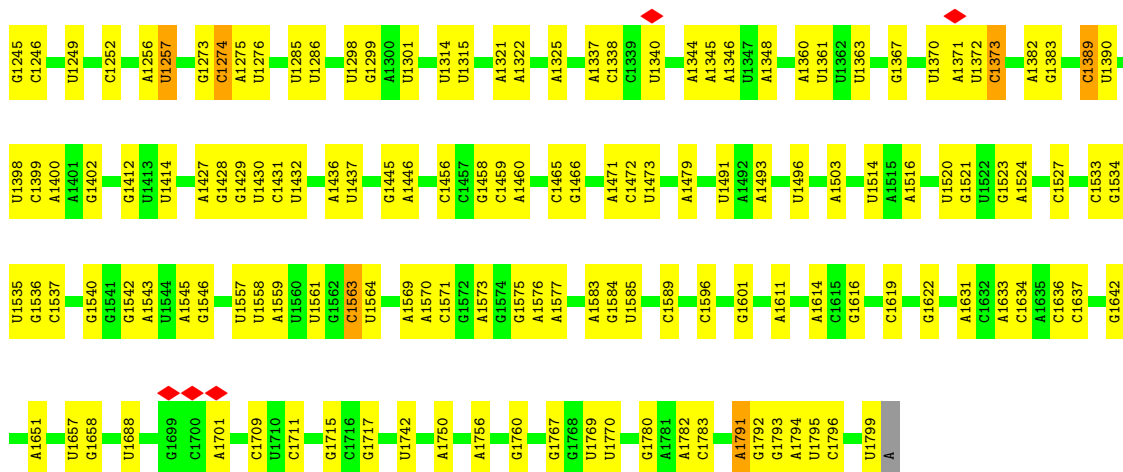
| Mol | Chain | Residues | Atoms | | AltConf |
|-----|-------|----------|-------|----|---------|
| 84 | Ad | 1 | Total | Zn | 0 |
| | | | 1 | 1 | |
| 84 | Af | 1 | Total | Zn | 0 |
| | | | 1 | 1 | |
| 84 | Bf | 1 | Total | Zn | 0 |
| | | | 1 | 1 | |
| 84 | Bi | 1 | Total | Zn | 0 |
| | | | 1 | 1 | |
| 84 | Bl | 1 | Total | Zn | 0 |
| | | | 1 | 1 | |
| 84 | Bn | 1 | Total | Zn | 0 |
| | | | 1 | 1 | |
| 84 | Bo | 1 | Total | Zn | 0 |
| | | | 1 | 1 | |
| 84 | CC | 2 | Total | Zn | 0 |
| | | | 2 | 2 | |

3 Residue-property plots i

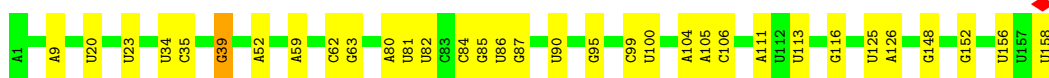
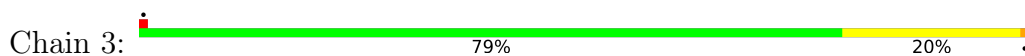
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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: 18S ribosomal RNA

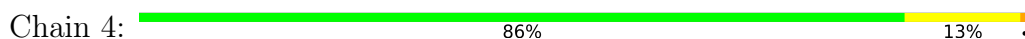




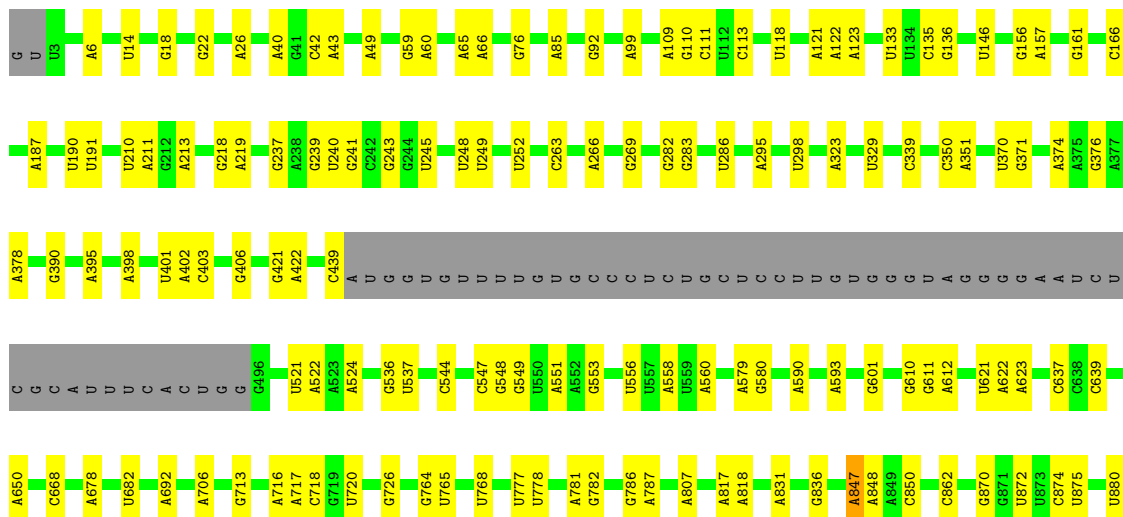
• Molecule 2: 5.8S ribosomal RNA



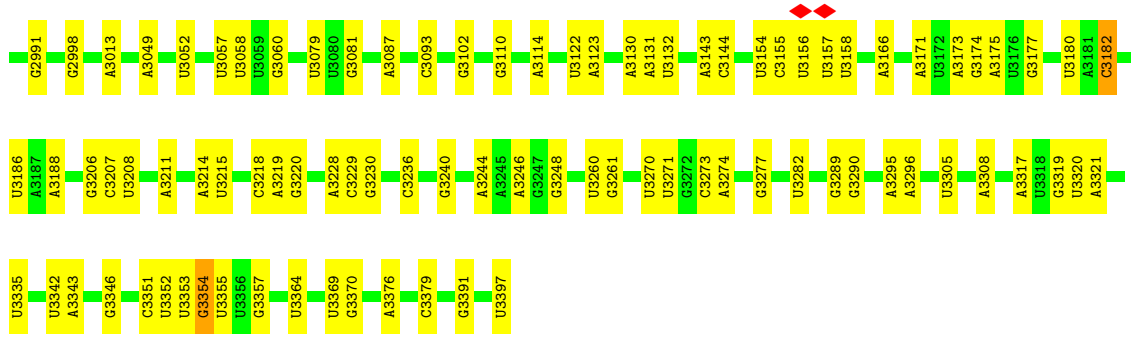
• Molecule 3: 5S ribosomal RNA



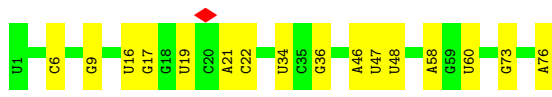
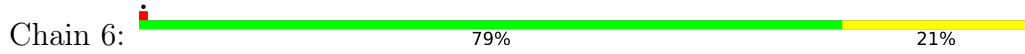
• Molecule 4: 25S ribosomal RNA



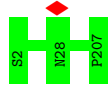
| | | | | | | | | | | | | |
|-------|-------|-------|-------|---|---|-------|-------|-------|-------|-------|-------|-------|
| A2804 | U2618 | C2408 | U2226 | C | G | A1798 | C1664 | G1346 | A1218 | A1065 | A1066 | A889 |
| C2811 | A2627 | U2412 | C2238 | U | G | A1815 | U1568 | U1349 | A1218 | A1066 | A1066 | A896 |
| G2815 | U2630 | G2419 | A2245 | C | C | U1816 | U1569 | G1350 | G1223 | G1073 | G1073 | A897 |
| G2816 | A2495 | A2420 | C2246 | A | U | A1817 | U1570 | A1351 | A1226 | U1082 | U1082 | G908 |
| G2817 | A2637 | A | G2247 | A | U | A1818 | U1573 | U1352 | G1227 | A1094 | A1094 | G909 |
| A2818 | G2640 | G2436 | G2250 | U | U | U1819 | U1574 | U1353 | C1228 | U1095 | U1095 | A915 |
| C2822 | U2499 | A2440 | A2253 | A | G | U1820 | G1575 | U1354 | G1231 | U1096 | U1096 | A916 |
| C2837 | U2500 | G2443 | A2257 | G | C | U1821 | C1576 | U1355 | U1231 | U1097 | U1097 | G917 |
| U2843 | U2506 | A2444 | C2258 | C | A | U1822 | A1577 | U1356 | C1233 | G1098 | G1098 | A918 |
| C2845 | U2507 | A2446 | G2273 | C | C | A1840 | A1581 | U1357 | G1237 | A1099 | A1099 | C919 |
| A2846 | U2507 | A2448 | G2274 | C | A | A1843 | A1584 | U1358 | A1241 | A1104 | A1104 | A922 |
| U2847 | C3508 | U2448 | C2282 | U | U | C1847 | A1588 | G1392 | U1242 | G1105 | G1105 | U923 |
| A2848 | U2509 | G2449 | U2283 | G | C | A1851 | A1589 | A1400 | G1243 | G1116 | G1116 | C924 |
| G2849 | U2515 | A2450 | G2284 | U | U | A1865 | A1594 | G1401 | A1246 | G1117 | G1117 | G995 |
| C2857 | A2516 | G2451 | U2288 | G | C | C1867 | A1595 | A1419 | G1247 | G1118 | G1118 | A926 |
| U2861 | G2523 | G2452 | G2289 | A | G | A1868 | U1596 | A1420 | U1254 | G1127 | G1127 | G938 |
| G2872 | C2552 | U | G2308 | G | A | U1872 | C1597 | G1435 | C1255 | A1130 | A1130 | U940 |
| A2873 | U2553 | U2141 | U | U | A | G1605 | G1605 | C1438 | C1256 | A1131 | A1131 | C945 |
| U2874 | G2534 | U2142 | U2311 | C | C | A1879 | A1606 | A1447 | U1259 | G1132 | G1132 | C960 |
| G2875 | U2538 | A2143 | A2314 | G | G | U1880 | A1606 | G1448 | G1263 | C1133 | C1133 | U961 |
| U2876 | U2539 | A2144 | U2315 | C | C | U1881 | U1621 | U1449 | A1264 | A1144 | A1144 | G975 |
| U2887 | C2540 | A2145 | G2316 | U | U | A1884 | U1630 | U1451 | U1266 | U1145 | U1145 | U980 |
| A2888 | A2541 | A2146 | U2335 | U | C | U1895 | U1640 | G1467 | G1267 | A1154 | A1154 | G995 |
| C2889 | U2542 | A2149 | G2336 | G | G | G1907 | A1643 | A1482 | U1270 | A1155 | A1155 | U996 |
| G2899 | U2543 | U2171 | U2337 | U | U | G1908 | A1644 | A1483 | A1271 | C1156 | C1156 | A1003 |
| A2912 | C2547 | G2172 | U2351 | G | G | A1909 | G1645 | G1484 | A1272 | A1160 | A1160 | G1011 |
| U2924 | G2550 | A2183 | A2357 | U | U | U1926 | U1718 | U1495 | A1274 | G1175 | G1175 | U1016 |
| C2929 | U2551 | G2186 | C2367 | C | C | U1931 | U1725 | U1496 | A1275 | A1180 | A1180 | C1017 |
| U2936 | C2552 | U2187 | A2368 | C | C | U1932 | C1726 | C1497 | C1280 | A1181 | A1181 | G1025 |
| G2938 | A2562 | G2188 | A2373 | U | U | A1933 | A1742 | C1509 | C1281 | U1182 | U1182 | A1026 |
| C2939 | U2570 | A2189 | C2374 | C | C | G1936 | U1751 | U1524 | G1286 | A1191 | A1191 | U1029 |
| C2943 | U2571 | C2193 | A2375 | G | G | C1952 | G1752 | U1534 | A1287 | U1192 | U1192 | G1030 |
| G2951 | C2573 | G2205 | C2376 | C | C | G1953 | U1765 | G1537 | A1288 | C1183 | C1183 | C1033 |
| C2952 | G2574 | U2206 | G2389 | C | C | G1954 | U1766 | A1540 | G1296 | A1194 | A1194 | A1037 |
| A2972 | U2586 | G2207 | C2394 | C | C | U1955 | G1767 | A1540 | U1306 | C1187 | C1187 | U1042 |
| G2973 | U2588 | A2208 | A2398 | U | U | A | G1771 | C1557 | U1310 | A1200 | A1200 | A1048 |
| C2984 | A2584 | U2210 | A2403 | C | C | U | G1776 | A1558 | G1314 | C1202 | C1202 | A1049 |
| G2985 | U2607 | G2211 | U2404 | U | U | G | G1781 | A1559 | A1331 | A1203 | A1203 | G1050 |
| | G2615 | A2224 | A2405 | U | U | G | G1797 | G1562 | U1332 | G1207 | G1207 | |
| | | A2225 | | C | C | | | C1563 | | U1209 | U1209 | |



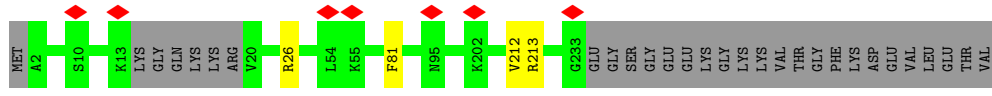
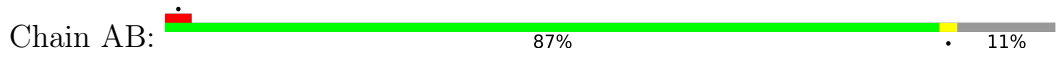
• Molecule 5: tRNA



• Molecule 6: 40S ribosomal protein S0-A



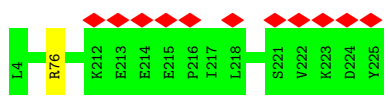
• Molecule 7: 40S ribosomal protein S1-A



• Molecule 8: RPS2 isoform 1



• Molecule 9: RPS3 isoform 1



• Molecule 10: 40S ribosomal protein S4-A

Chain AE:  98%



- Molecule 11: Rps5p

Chain AF:  100%



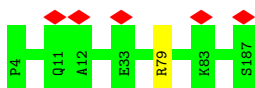
- Molecule 12: 40S ribosomal protein S6-A

Chain AG:  98%



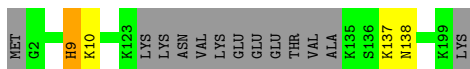
- Molecule 13: 40S ribosomal protein S7-A

Chain AH:  99%



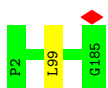
- Molecule 14: 40S ribosomal protein S8-B

Chain AI:  92% 6%



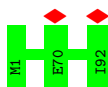
- Molecule 15: 40S ribosomal protein S9-A

Chain AJ:  99%

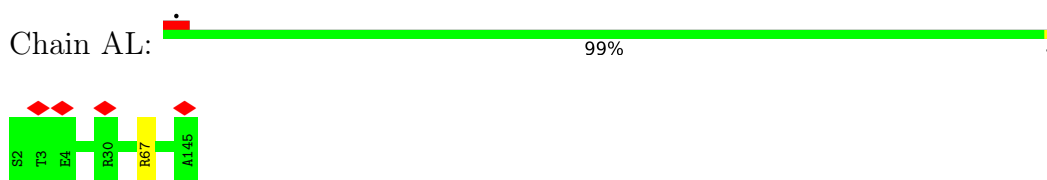


- Molecule 16: 40S ribosomal protein S10-A

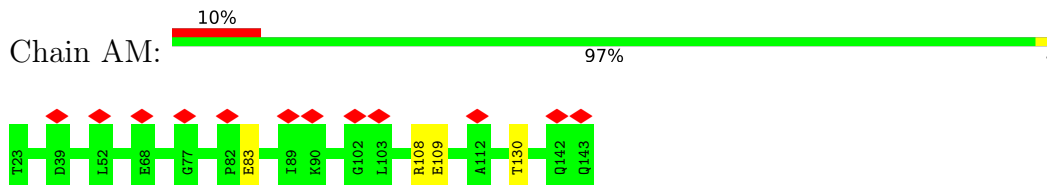
Chain AK:  100%



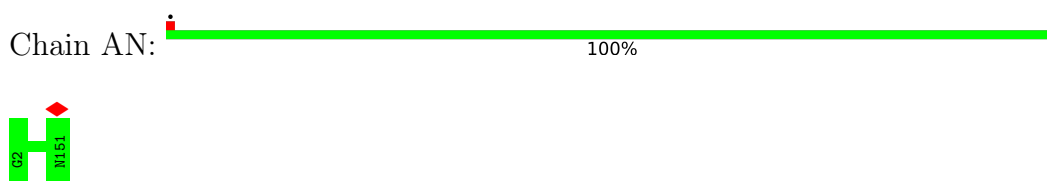
- Molecule 17: 40S ribosomal protein S11-A



- Molecule 18: 40S ribosomal protein S12



- Molecule 19: 40S ribosomal protein S13

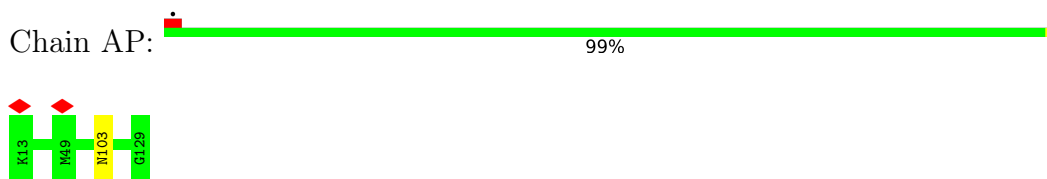


- Molecule 20: 40S ribosomal protein S14-B

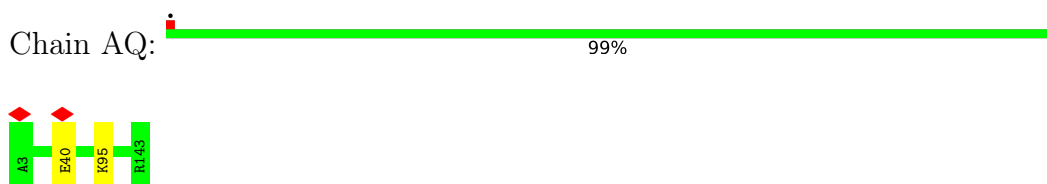


There are no outlier residues recorded for this chain.

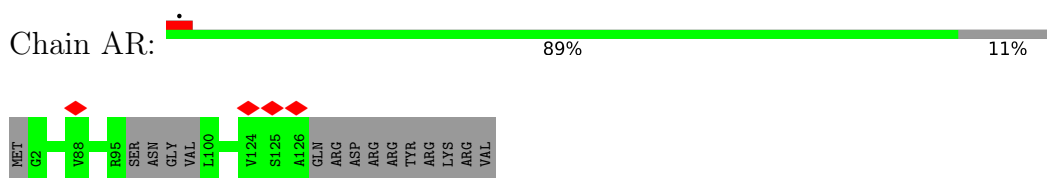
- Molecule 21: RPS15 isoform 1



- Molecule 22: 40S ribosomal protein S16-A

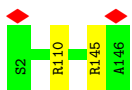


- Molecule 23: 40S ribosomal protein S17-A



- Molecule 24: 40S ribosomal protein S18-A

Chain AS:  99%



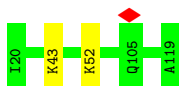
- Molecule 25: 40S ribosomal protein S19-A

Chain AT:  99%



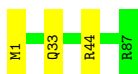
- Molecule 26: RPS20 isoform 1

Chain AU:  98%



- Molecule 27: 40S ribosomal protein S21-A

Chain AV:  97%



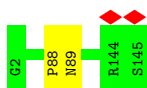
- Molecule 28: RPS22A isoform 1

Chain AW:  100%

There are no outlier residues recorded for this chain.

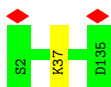
- Molecule 29: 40S ribosomal protein S23-A

Chain AX:  99%

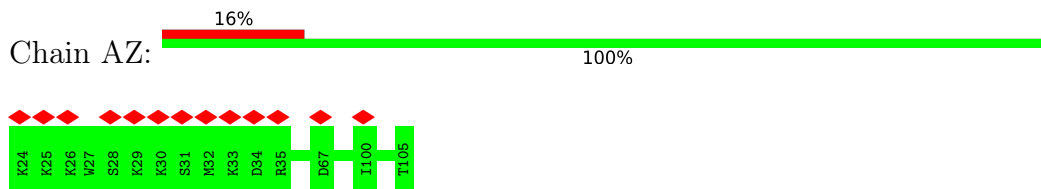


- Molecule 30: 40S ribosomal protein S24-A

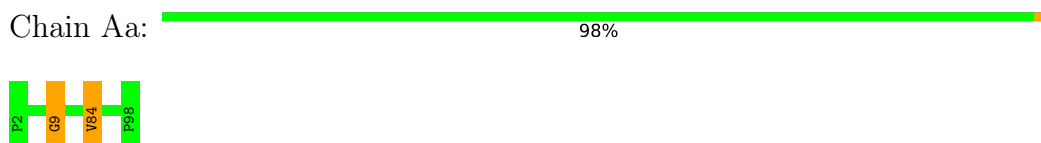
Chain AY:  99%



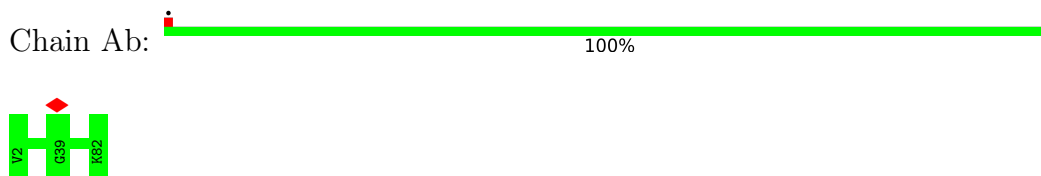
- Molecule 31: 40S ribosomal protein S25



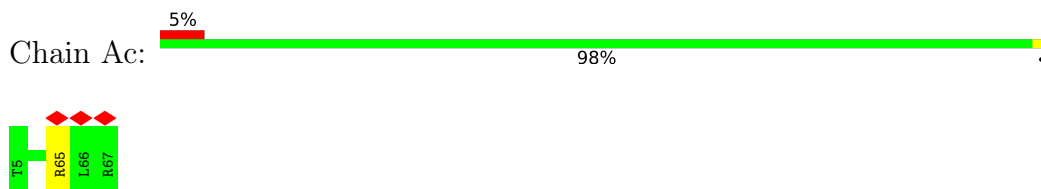
- Molecule 32: 40S ribosomal protein S26



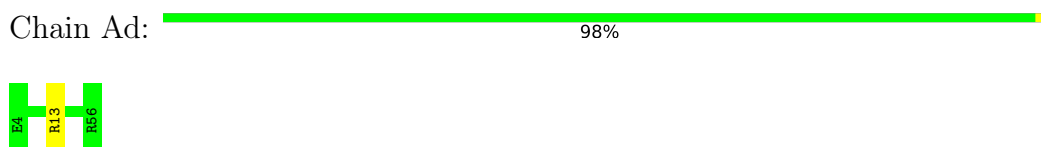
- Molecule 33: 40S ribosomal protein S27-A



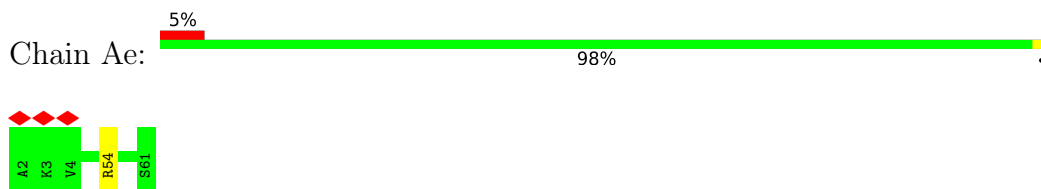
- Molecule 34: RPS28A isoform 1



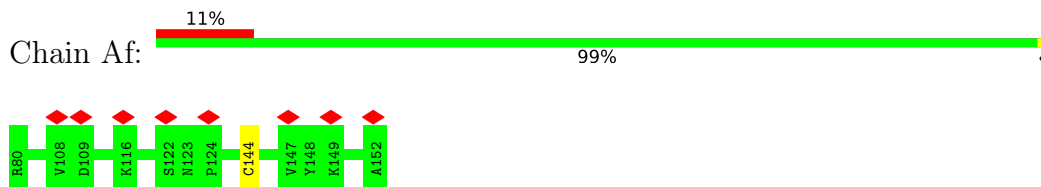
- Molecule 35: RPS29A isoform 1



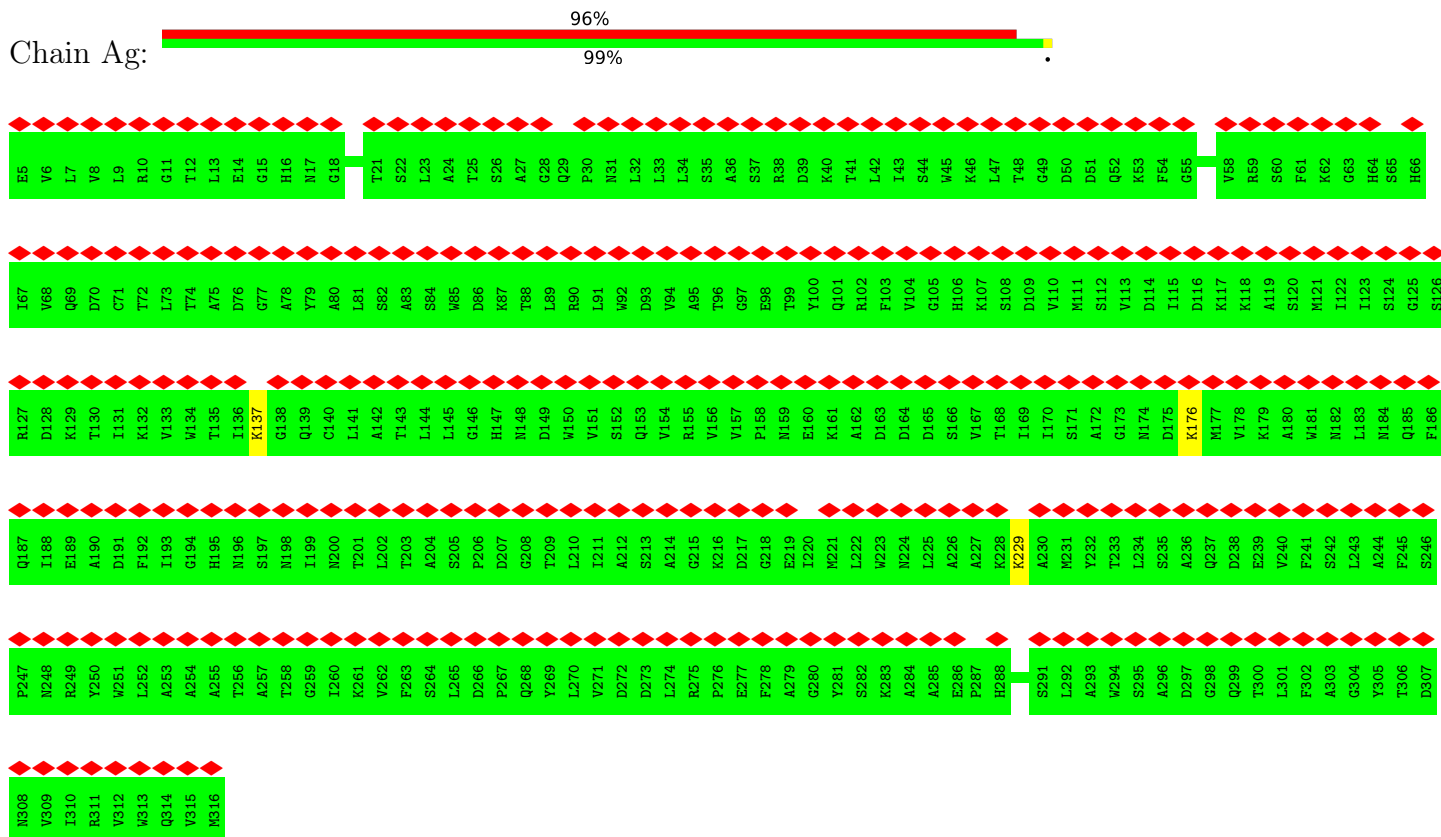
- Molecule 36: 40S ribosomal protein S30-A



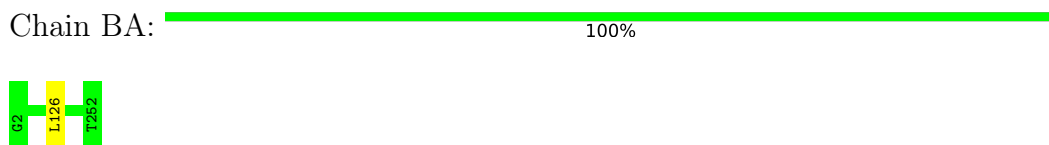
- Molecule 37: RPS31 isoform 1



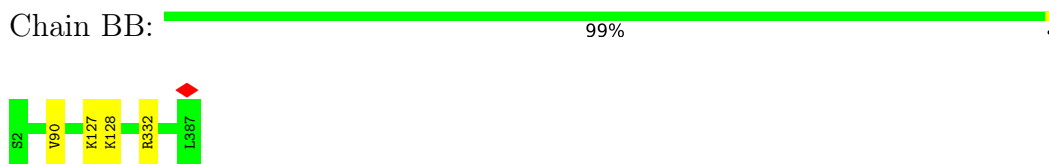
• Molecule 38: Guanine nucleotide-binding protein subunit beta-like protein



• Molecule 39: 60S ribosomal protein L2-A



• Molecule 40: 60S ribosomal protein L3



• Molecule 41: RPL4A isoform 1



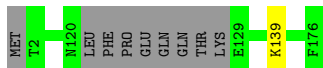
• Molecule 42: RPL5 isoform 1





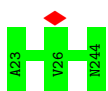
- Molecule 43: 60S ribosomal protein L6-B

Chain BE: 94% 5%



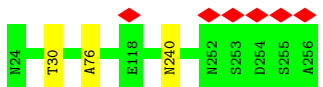
- Molecule 44: 60S ribosomal protein L7-A

Chain BF: 100%



- Molecule 45: 60S ribosomal protein L8

Chain BG: 99%



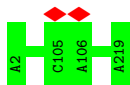
- Molecule 46: RPL9A isoform 1

Chain BH: 100%



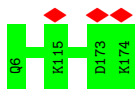
- Molecule 47: RPL10 isoform 1

Chain BI: 100%



- Molecule 48: RPL11B isoform 1

Chain BJ: 100%



- Molecule 49: 60S ribosomal protein L13-A

Chain BK:  97%



- Molecule 50: 60S ribosomal protein L14-A

Chain BL:  100%



- Molecule 51: Ribosomal protein L15

Chain BM:  100%



- Molecule 52: 60S ribosomal protein L16-A

Chain BN:  98%



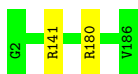
- Molecule 53: 60S ribosomal protein L17-A

Chain BO:  100%



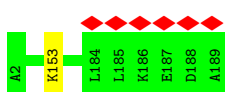
- Molecule 54: 60S ribosomal protein L18-A

Chain BP:  99%



- Molecule 55: 60S ribosomal protein L19-A

Chain BQ:  99%



- Molecule 56: 60S ribosomal protein L20-A

Chain BR:  100%

There are no outlier residues recorded for this chain.

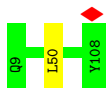
- Molecule 57: 60S ribosomal protein L21-A

Chain BS:  100%

There are no outlier residues recorded for this chain.

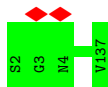
- Molecule 58: 60S ribosomal protein L22-A

Chain BT:  99%



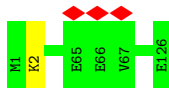
- Molecule 59: 60S ribosomal protein L23-A

Chain BU:  100%



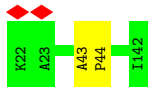
- Molecule 60: RPL24A isoform 1

Chain BV:  99%



- Molecule 61: 60S ribosomal protein L25

Chain BW:  98%



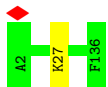
- Molecule 62: 60S ribosomal protein L26-A

Chain BX:  99%



- Molecule 63: 60S ribosomal protein L27-A

Chain BY:  99%



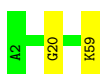
- Molecule 64: 60S ribosomal protein L28

Chain BZ: 99%



- Molecule 65: 60S ribosomal protein L29

Chain Ba: 97%



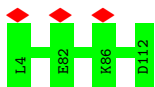
- Molecule 66: 60S ribosomal protein L30

Chain Bb: 100%

There are no outlier residues recorded for this chain.

- Molecule 67: 60S ribosomal protein L31-A

Chain Bc: 100%



- Molecule 68: RPL32 isoform 1

Chain Bd: 100%



- Molecule 69: 60S ribosomal protein L33-A

Chain Be: 99%



- Molecule 70: 60S ribosomal protein L34-A

Chain Bf: 100%



- Molecule 71: 60S ribosomal protein L35-A



- Molecule 72: 60S ribosomal protein L36-A

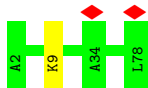


- Molecule 73: 60S ribosomal protein L37-A



There are no outlier residues recorded for this chain.

- Molecule 74: RPL38 isoform 1



- Molecule 75: 60S ribosomal protein L39



There are no outlier residues recorded for this chain.

- Molecule 76: 60S ribosomal protein L40-A

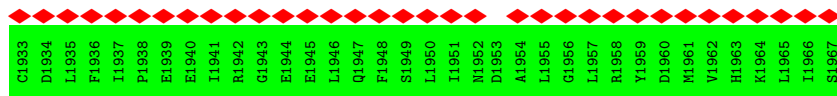


- Molecule 77: 60S ribosomal protein L41

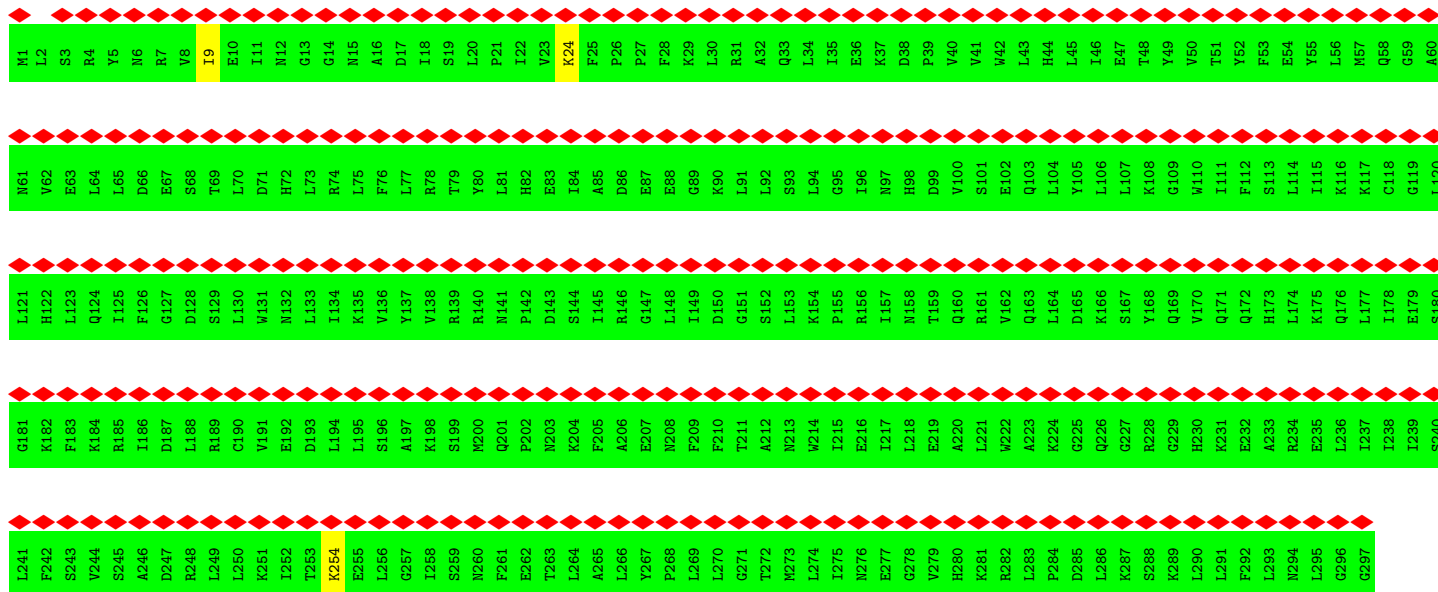


There are no outlier residues recorded for this chain.

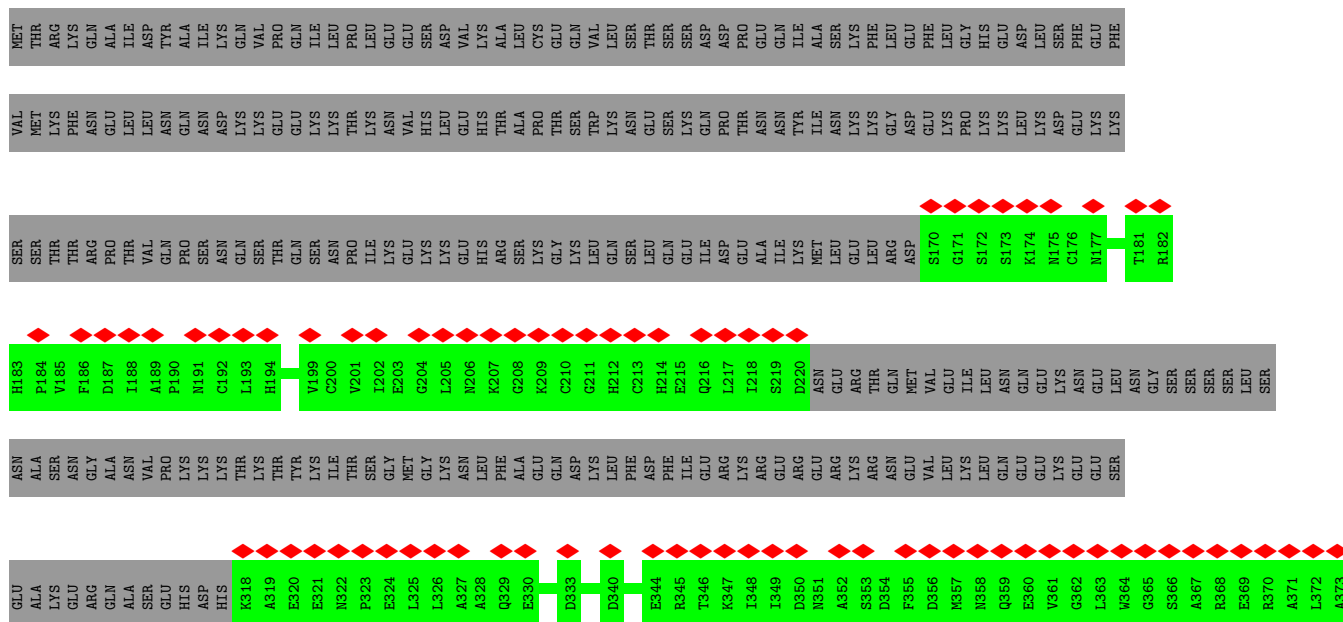
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|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| G708 | S709 | K710 | D713 | S720 | L721 | D728 | E729 | A730 | E731 | L734 | M739 | F740 | R744 | K745 | T749 | Y750 | G751 | W754 | W759 | Q762 | L763 | Y764 | E765 | R766 | R767 | R768 | K769 | M770 | R777 | L778 | H779 | A780 | L781 | F786 | D787 | E788 | F793 | F805 | Y806 | L807 | L808 | E813 | C819 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R822 | A823 | A826 | L829 | M834 | F838 | D839 | G840 | I841 | K842 | R844 | E845 | E846 | R849 | K852 | S855 | D856 | I863 | C864 | S865 | D866 | F888 | D889 | S890 | R968 | D959 | T960 | K961 | E977 | L1048 | L1060 | S1073 | D1074 | T1113 | K1114 | L1115 | L1116 | L1117 | L1118 | R1119 | P1120 | L1121 | P1122 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| T1123 | S1124 | A1125 | L1126 | Q1127 | N1128 | P1129 | L1130 | I1131 | E1132 | S1133 | I1134 | Y1135 | P1136 | F1137 | K1138 | M1146 | T1147 | F1148 | N1155 | F1159 | T1164 | G1165 | S1166 | G1167 | K1168 | A1172 | E1173 | H1178 | A1179 | F1180 | K1181 | T1182 | F1183 | P1184 | K1185 | G1186 | K1187 | I1188 | Y1189 | V1190 | I1191 | A1192 | P1193 | L1197 | D1203 | D1204 | W1205 | R1206 | K1207 | I1209 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| T1210 | P1211 | V1212 | T1213 | K1214 | D1215 | K1216 | V1217 | V1218 | E1219 | L1220 | T1221 | G1222 | S1224 | L1225 | P1226 | D1227 | P1228 | K1229 | D1230 | V1231 | H1232 | D1233 | A1234 | L1235 | I1236 | V1237 | I1238 | P1241 | F1244 | I1247 | W1251 | Q1252 | T1253 | R1254 | K1255 | F1256 | V1257 | Q1258 | D1259 | V1260 | S1261 | L1262 | I1263 | M1265 | E1267 | I1268 | A1272 | S1273 | D1274 | R1275 | G1276 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M1281 | R1285 | T1283 | K1284 | Q1285 | P1286 | V1287 | R1288 | L1289 | L1300 | V1306 | K1319 | D1320 | L1323 | P1327 | S1328 | S1329 | V1330 | R1331 | P1332 | V1333 | P1334 | I1339 | D1340 | G1341 | F1342 | P1343 | D1344 | A1347 | F1348 | K1353 | T1354 | M1355 | F1360 | M1361 | Q1365 | H1366 | D1369 | K1370 | P1371 | L1373 | I1374 | F1375 | V1376 | A1377 | S1378 | Q1381 | R1382 | T1385 | L1392 | M1395 | E1396 | D1397 | N1398 | P1399 | R1400 | F1402 | L1403 | N1404 | I1405 | D1406 | D1407 | E1408 | E1409 | E1410 | L1411 | Q1412 | Y1413 | Y1414 | L1415 | S1416 | Q1417 | V1418 | F1419 | T1420 | L1427 | I1431 | L1432 | H1434 | H1435 | A1436 | L1438 | V1439 | K1441 | D1442 | R1443 | I1444 | F1450 | Q1451 | K1452 | N1453 | K1454 | I1457 |
| L1458 | I1459 | A1460 | T1461 | S1462 | T1463 | L1464 | A1465 | G1466 | G1467 | V1468 | N1469 | L1470 | P1471 | A1472 | H1473 | K1478 | G1479 | T1480 | K1481 | F1482 | F1483 | D1484 | A1485 | K1486 | I1487 | E1488 | D1489 | Y1490 | R1491 | D1492 | M1493 | D1494 | L1495 | T1496 | L1499 | Q1500 | M1501 | M1502 | G1503 | R1504 | A1505 | A1509 | T1512 | T1513 | G1514 | I1515 | A1516 | S1523 | K1524 | K1525 | Y1528 | V1534 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S1540 | H1543 | K1544 | V1545 | L1546 | D1547 | D1548 | H1549 | L1550 | G1551 | A1552 | E1553 | S1556 | G1557 | S1558 | I1559 | T1560 | M1561 | K1562 | Q1563 | W1571 | Y1585 | D1589 | D1590 | T1591 | S1592 | T1593 | A1594 | E1598 | H1599 | D1605 | L1608 | E1609 | M1610 | L1611 | R1612 | E1613 | S1614 | G1616 | L1617 | L1618 | L1619 | H1620 | G1621 | D1622 | D1623 | A1626 | T1627 | P1628 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| F1629 | L1630 | S1631 | I1632 | S1633 | Y1636 | I1637 | I1638 | S1639 | H1640 | L1641 | T1642 | I1643 | R1644 | Q1645 | L1646 | L1647 | K1648 | Q1649 | I1650 | H1651 | D1652 | H1653 | F1656 | Q1657 | E1658 | V1659 | L1660 | R1661 | W1662 | L1663 | S1664 | L1665 | A1666 | V1667 | E1668 | Y1669 | M1670 | E1671 | L1672 | P1673 | V1674 | R1675 | G1676 | G1677 | E1678 | I1679 | I1680 | M1681 | M1682 | E1683 | E1684 | M1685 | S1686 | Q1687 | Q1688 | Y1691 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S1692 | V1693 | E1694 | S1695 | T1696 | F1697 | T1698 | D1699 | E1700 | F1701 | E1702 | L1703 | P1704 | M1705 | W1706 | D1707 | P1708 | H1709 | V1710 | K1711 | T1712 | F1713 | L1714 | L1715 | L1716 | Q1717 | A1718 | H1719 | L1720 | S1721 | R1722 | V1723 | D1724 | L1725 | P1726 | I1727 | A1728 | D1729 | Y1730 | I1731 | Q1732 | D1733 | T1734 | V1735 | S1736 | L1737 | L1738 | D1739 | L1742 | R1743 | I1744 | L1745 | Q1746 | A1747 | I1748 | I1749 | D1750 | V1751 | A1752 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S1753 | E1754 | L1755 | G1756 | Y1757 | F1758 | H1759 | T1760 | V1761 | L1762 | T1763 | M1764 | I1765 | K1766 | M1767 | M1768 | Q1769 | C1770 | I1771 | K1772 | Q1773 | G1774 | Y1775 | W1776 | Y1777 | E1778 | D1779 | L1780 | P1781 | V1782 | S1783 | Y1784 | L1785 | P1786 | G1787 | L1788 | Q1789 | L1790 | R1791 | R1792 | I1793 | K1794 | L1795 | Y1796 | T1797 | F1798 | S1799 | E1800 | Q1801 | G1802 | I1804 | E1805 | M1806 | T1807 | P1808 | Q1809 | Q1810 | K1811 | K1812 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| K1813 | K1814 | L1815 | L1816 | L1817 | L1818 | E1819 | E1820 | I1821 | G1822 | R1823 | F1824 | G1825 | Y1826 | K1827 | K1828 | L1829 | L1830 | M1831 | V1832 | F1833 | G1834 | Y1835 | L1836 | L1837 | F1838 | G1839 | M1840 | T1841 | E1842 | S1843 | E1844 | D1845 | L1846 | K1847 | K1848 | R1849 | F1850 | V1851 | S1852 | V1853 | C1854 | Q1855 | R1856 | L1857 | P1858 | V1859 | L1860 | E1861 | F1862 | M1863 | K1864 | F1865 | M1866 | N1867 | P1868 | E1869 | N1871 | E1872 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L1873 | L1874 | T1875 | F1876 | S1877 | L1878 | K1879 | H1880 | L1881 | S1882 | S1883 | K1884 | H1885 | N1886 | N1887 | K1888 | F1889 | E1890 | V1891 | Y1892 | C1893 | D1894 | K1895 | F1896 | R1897 | K1898 | I1899 | Q1900 | E1901 | L1902 | L1903 | W1904 | F1905 | L1906 | I1907 | G1908 | H1909 | G1910 | V1911 | D1912 | E1913 | L1914 | L1915 | M1916 | I1917 | K1918 | R1919 | Q1920 | Q1921 | P1922 | K1923 | Q1924 | M1925 | N1926 | K1927 | E1928 | V1929 | I1930 | I1931 | I1932 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



• Molecule 81: CUE3 isoform 1



• Molecule 82: RQC trigger complex subunit RQT4



4 Experimental information

| Property | Value | Source |
|--------------------------------------|---|-----------|
| EM reconstruction method | SINGLE PARTICLE | Depositor |
| Imposed symmetry | POINT, Not provided | |
| Number of particles used | 17885 | Depositor |
| Resolution determination method | FSC 0.143 CUT-OFF | Depositor |
| CTF correction method | PHASE FLIPPING AND AMPLITUDE CORRECTION | Depositor |
| Microscope | FEI TITAN KRIOS | Depositor |
| Voltage (kV) | 300 | Depositor |
| Electron dose ($e^-/\text{\AA}^2$) | 44 | Depositor |
| Minimum defocus (nm) | 500 | Depositor |
| Maximum defocus (nm) | 3000 | Depositor |
| Magnification | Not provided | |
| Image detector | GATAN K2 SUMMIT (4k x 4k) | Depositor |
| Maximum map value | 4.383 | Depositor |
| Minimum map value | -1.015 | Depositor |
| Average map value | 0.020 | Depositor |
| Map value standard deviation | 0.109 | Depositor |
| Recommended contour level | 0.3 | Depositor |
| Map size (Å) | 585.19995, 585.19995, 585.19995 | wwPDB |
| Map dimensions | 560, 560, 560 | wwPDB |
| Map angles (°) | 90.0, 90.0, 90.0 | wwPDB |
| Pixel spacing (Å) | 1.045, 1.045, 1.045 | Depositor |

5 Model quality i

5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: 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 | 2 | 0.93 | 1/42211 (0.0%) | 0.94 | 40/65773 (0.1%) |
| 2 | 3 | 1.07 | 0/3746 | 0.93 | 2/5832 (0.0%) |
| 3 | 4 | 0.92 | 0/2883 | 0.95 | 5/4491 (0.1%) |
| 4 | 5 | 1.16 | 6/75723 (0.0%) | 0.97 | 50/118057 (0.0%) |
| 5 | 6 | 0.66 | 0/1808 | 0.86 | 2/2816 (0.1%) |
| 6 | AA | 0.39 | 0/1644 | 0.56 | 0/2249 |
| 7 | AB | 0.39 | 0/1823 | 0.60 | 0/2447 |
| 8 | AC | 0.47 | 0/1656 | 0.58 | 0/2251 |
| 9 | AD | 0.40 | 0/1754 | 0.58 | 0/2361 |
| 10 | AE | 0.45 | 0/2097 | 0.60 | 1/2823 (0.0%) |
| 11 | AF | 0.37 | 0/1625 | 0.59 | 0/2197 |
| 12 | AG | 0.37 | 0/1839 | 0.60 | 1/2460 (0.0%) |
| 13 | AH | 0.34 | 0/1498 | 0.56 | 0/2019 |
| 14 | AI | 0.49 | 0/1501 | 0.66 | 0/2006 |
| 15 | AJ | 0.44 | 0/1504 | 0.61 | 0/2016 |
| 16 | AK | 0.40 | 0/769 | 0.62 | 0/1039 |
| 17 | AL | 0.52 | 0/1185 | 0.57 | 0/1598 |
| 18 | AM | 0.28 | 0/883 | 0.59 | 0/1199 |
| 19 | AN | 0.46 | 0/1215 | 0.60 | 0/1638 |
| 20 | AO | 0.42 | 0/937 | 0.68 | 0/1261 |
| 21 | AP | 0.33 | 0/936 | 0.59 | 0/1259 |
| 22 | AQ | 0.40 | 0/1125 | 0.61 | 0/1510 |
| 23 | AR | 0.34 | 0/957 | 0.61 | 0/1283 |
| 24 | AS | 0.36 | 0/1211 | 0.61 | 0/1628 |
| 25 | AT | 0.35 | 0/1130 | 0.62 | 1/1517 (0.1%) |
| 26 | AU | 0.39 | 0/807 | 0.56 | 0/1091 |
| 27 | AV | 0.45 | 0/682 | 0.62 | 0/921 |
| 28 | AW | 0.47 | 0/1038 | 0.63 | 0/1395 |
| 29 | AX | 0.52 | 0/1139 | 0.63 | 0/1518 |
| 30 | AY | 0.42 | 0/1087 | 0.59 | 0/1449 |
| 31 | AZ | 0.31 | 0/661 | 0.64 | 0/888 |
| 32 | Aa | 0.45 | 0/782 | 0.68 | 0/1047 |

| Mol | Chain | Bond lengths | | Bond angles | |
|-----|-------|--------------|---------|-------------|---------------|
| | | RMSZ | # Z >5 | RMSZ | # Z >5 |
| 33 | Ab | 0.40 | 0/620 | 0.62 | 0/838 |
| 34 | Ac | 0.39 | 0/493 | 0.73 | 0/663 |
| 35 | Ad | 0.46 | 0/452 | 0.64 | 0/600 |
| 36 | Ae | 0.37 | 0/480 | 0.62 | 0/639 |
| 37 | Af | 0.31 | 0/567 | 0.59 | 0/764 |
| 38 | Ag | 0.27 | 0/2436 | 0.55 | 0/3318 |
| 39 | BA | 0.56 | 0/1933 | 0.64 | 0/2598 |
| 40 | BB | 0.52 | 0/3146 | 0.60 | 0/4228 |
| 41 | BC | 0.52 | 0/2800 | 0.61 | 0/3790 |
| 42 | BD | 0.43 | 0/2400 | 0.55 | 0/3239 |
| 43 | BE | 0.40 | 0/1327 | 0.53 | 0/1790 |
| 44 | BF | 0.53 | 0/1821 | 0.55 | 0/2451 |
| 45 | BG | 0.39 | 0/1836 | 0.54 | 0/2481 |
| 46 | BH | 0.45 | 0/1529 | 0.58 | 0/2060 |
| 47 | BI | 0.52 | 0/1801 | 0.60 | 0/2416 |
| 48 | BJ | 0.39 | 0/1371 | 0.60 | 0/1838 |
| 49 | BK | 0.45 | 0/1568 | 0.63 | 0/2106 |
| 50 | BL | 0.39 | 0/1068 | 0.57 | 0/1438 |
| 51 | BM | 0.57 | 0/1757 | 0.63 | 0/2354 |
| 52 | BN | 0.54 | 0/1585 | 0.58 | 0/2128 |
| 53 | BO | 0.57 | 0/1439 | 0.62 | 0/1938 |
| 54 | BP | 0.52 | 0/1465 | 0.64 | 0/1965 |
| 55 | BQ | 0.47 | 0/1532 | 0.60 | 0/2043 |
| 56 | BR | 0.53 | 0/1473 | 0.61 | 0/1980 |
| 57 | BS | 0.52 | 0/1300 | 0.59 | 0/1743 |
| 58 | BT | 0.45 | 0/812 | 0.62 | 1/1099 (0.1%) |
| 59 | BU | 0.57 | 0/1018 | 0.61 | 0/1369 |
| 60 | BV | 0.45 | 0/850 | 0.55 | 0/1152 |
| 61 | BW | 0.48 | 0/979 | 0.60 | 0/1321 |
| 62 | BX | 0.47 | 0/995 | 0.61 | 0/1329 |
| 63 | BY | 0.41 | 0/1118 | 0.55 | 0/1497 |
| 64 | BZ | 0.57 | 0/1204 | 0.62 | 0/1612 |
| 65 | Ba | 0.41 | 0/473 | 0.55 | 0/629 |
| 66 | Bb | 0.46 | 0/745 | 0.50 | 0/1001 |
| 67 | Bc | 0.52 | 0/890 | 0.63 | 0/1196 |
| 68 | Bd | 0.54 | 0/1038 | 0.61 | 0/1390 |
| 69 | Be | 0.58 | 0/868 | 0.61 | 0/1168 |
| 70 | Bf | 0.50 | 0/890 | 0.61 | 0/1189 |
| 71 | Bg | 0.42 | 0/978 | 0.57 | 0/1301 |
| 72 | Bh | 0.37 | 0/772 | 0.60 | 0/1026 |
| 73 | Bi | 0.59 | 0/685 | 0.65 | 0/908 |
| 74 | Bj | 0.37 | 0/618 | 0.58 | 0/826 |
| 75 | Bk | 0.51 | 0/443 | 0.64 | 0/588 |

| Mol | Chain | Bond lengths | | Bond angles | |
|-----|-------|--------------|-----------------|-------------|-------------------|
| | | RMSZ | # Z >5 | RMSZ | # Z >5 |
| 76 | Bl | 0.48 | 0/423 | 0.64 | 0/562 |
| 77 | Bm | 0.51 | 0/230 | 0.77 | 0/296 |
| 78 | Bn | 0.49 | 0/836 | 0.60 | 0/1104 |
| 79 | Bo | 0.58 | 0/701 | 0.62 | 0/934 |
| 80 | CA | 0.27 | 0/14309 | 0.49 | 0/19348 |
| 81 | CB | 0.23 | 0/2463 | 0.46 | 0/3324 |
| 82 | CC | 0.24 | 0/897 | 0.53 | 0/1203 |
| All | All | 0.84 | 7/233290 (0.0%) | 0.82 | 103/340819 (0.0%) |

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

| Mol | Chain | #Chirality outliers | #Planarity outliers |
|-----|-------|---------------------|---------------------|
| 7 | AB | 0 | 1 |
| 10 | AE | 0 | 1 |
| 12 | AG | 0 | 1 |
| 14 | AI | 0 | 1 |
| 18 | AM | 0 | 3 |
| 22 | AQ | 0 | 1 |
| 29 | AX | 0 | 1 |
| 32 | Aa | 0 | 2 |
| 37 | Af | 0 | 1 |
| 38 | Ag | 0 | 1 |
| 40 | BB | 0 | 1 |
| 41 | BC | 0 | 1 |
| 45 | BG | 0 | 2 |
| 49 | BK | 0 | 1 |
| 52 | BN | 0 | 1 |
| 61 | BW | 0 | 1 |
| 64 | BZ | 0 | 1 |
| 65 | Ba | 0 | 1 |
| All | All | 0 | 22 |

All (7) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|-----|-------|------|------|-------|-------|-------------|----------|
| 4 | 5 | 2408 | C | N1-C6 | -6.41 | 1.33 | 1.37 |
| 4 | 5 | 1134 | A | N9-C4 | -6.33 | 1.34 | 1.37 |
| 4 | 5 | 2183 | A | N9-C4 | -6.12 | 1.34 | 1.37 |
| 4 | 5 | 889 | A | N9-C4 | -6.04 | 1.34 | 1.37 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|-----|-------|------|------|-------|-------|-------------|----------|
| 4 | 5 | 2186 | G | C5-C4 | -5.39 | 1.34 | 1.38 |
| 4 | 5 | 919 | C | N1-C6 | -5.26 | 1.33 | 1.37 |
| 1 | 2 | 13 | C | N1-C6 | -5.07 | 1.34 | 1.37 |

All (103) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 1 | 2 | 934 | C | C2-N1-C1' | 8.82 | 128.50 | 118.80 |
| 1 | 2 | 1533 | C | N3-C2-O2 | -7.92 | 116.35 | 121.90 |
| 4 | 5 | 3058 | U | N3-C2-O2 | -7.83 | 116.72 | 122.20 |
| 1 | 2 | 1527 | C | C2-N1-C1' | 7.82 | 127.40 | 118.80 |
| 1 | 2 | 934 | C | N1-C2-O2 | 7.45 | 123.37 | 118.90 |
| 1 | 2 | 1257 | U | C2-N1-C1' | 7.42 | 126.61 | 117.70 |
| 1 | 2 | 1527 | C | C6-N1-C1' | -7.34 | 111.99 | 120.80 |
| 4 | 5 | 2816 | G | N1-C6-O6 | -7.25 | 115.55 | 119.90 |
| 1 | 2 | 1389 | C | C2-N1-C1' | 7.17 | 126.69 | 118.80 |
| 4 | 5 | 2715 | G | N3-C4-C5 | 7.09 | 132.15 | 128.60 |
| 1 | 2 | 934 | C | C6-N1-C1' | -6.77 | 112.68 | 120.80 |
| 4 | 5 | 1497 | C | C2-N1-C1' | 6.74 | 126.21 | 118.80 |
| 4 | 5 | 3154 | U | N1-C2-O2 | 6.67 | 127.47 | 122.80 |
| 1 | 2 | 583 | C | C2-N1-C1' | 6.60 | 126.06 | 118.80 |
| 4 | 5 | 42 | C | C6-N1-C2 | -6.47 | 117.71 | 120.30 |
| 4 | 5 | 3049 | A | O4'-C1'-N9 | 6.39 | 113.32 | 108.20 |
| 4 | 5 | 923 | U | C2-N1-C1' | 6.38 | 125.35 | 117.70 |
| 4 | 5 | 406 | G | O4'-C1'-N9 | 6.32 | 113.25 | 108.20 |
| 4 | 5 | 1605 | G | C4-N9-C1' | 6.26 | 134.64 | 126.50 |
| 1 | 2 | 610 | G | C4-N9-C1' | 6.24 | 134.61 | 126.50 |
| 58 | BT | 50 | LEU | CA-CB-CG | 6.14 | 129.43 | 115.30 |
| 4 | 5 | 1497 | C | C6-N1-C2 | -6.14 | 117.84 | 120.30 |
| 4 | 5 | 3154 | U | C2-N1-C1' | 6.07 | 124.99 | 117.70 |
| 1 | 2 | 426 | G | C4-N9-C1' | 6.00 | 134.29 | 126.50 |
| 1 | 2 | 1533 | C | N1-C2-O2 | 5.99 | 122.49 | 118.90 |
| 4 | 5 | 2985 | C | C6-N1-C2 | -5.98 | 117.91 | 120.30 |
| 2 | 3 | 39 | G | O4'-C1'-N9 | 5.97 | 112.97 | 108.20 |
| 1 | 2 | 1791 | A | P-O3'-C3' | 5.93 | 126.82 | 119.70 |
| 1 | 2 | 965 | U | C2-N1-C1' | 5.85 | 124.72 | 117.70 |
| 1 | 2 | 1274 | C | P-O3'-C3' | 5.82 | 126.69 | 119.70 |
| 4 | 5 | 3214 | A | N1-C2-N3 | 5.82 | 132.21 | 129.30 |
| 4 | 5 | 1127 | G | N9-C4-C5 | -5.81 | 103.08 | 105.40 |
| 1 | 2 | 322 | G | P-O3'-C3' | 5.80 | 126.66 | 119.70 |
| 1 | 2 | 1642 | G | C8-N9-C4 | 5.80 | 108.72 | 106.40 |
| 4 | 5 | 1175 | G | C4-N9-C1' | 5.80 | 134.04 | 126.50 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 1 | 2 | 1082 | C | C2-N1-C1' | 5.71 | 125.08 | 118.80 |
| 4 | 5 | 847 | A | C2-N3-C4 | 5.71 | 113.45 | 110.60 |
| 4 | 5 | 1175 | G | C8-N9-C1' | -5.70 | 119.60 | 127.00 |
| 4 | 5 | 42 | C | N1-C2-O2 | 5.66 | 122.30 | 118.90 |
| 1 | 2 | 610 | G | C8-N9-C1' | -5.59 | 119.74 | 127.00 |
| 1 | 2 | 1274 | C | N3-C2-O2 | -5.59 | 117.99 | 121.90 |
| 4 | 5 | 3215 | U | C2-N1-C1' | 5.58 | 124.39 | 117.70 |
| 4 | 5 | 3058 | U | N1-C2-O2 | 5.57 | 126.70 | 122.80 |
| 4 | 5 | 3154 | U | N3-C2-O2 | -5.50 | 118.35 | 122.20 |
| 1 | 2 | 1571 | C | N3-C2-O2 | -5.50 | 118.05 | 121.90 |
| 1 | 2 | 934 | C | N3-C2-O2 | -5.46 | 118.08 | 121.90 |
| 1 | 2 | 426 | G | C8-N9-C1' | -5.42 | 119.95 | 127.00 |
| 4 | 5 | 2618 | U | N3-C2-O2 | -5.40 | 118.42 | 122.20 |
| 4 | 5 | 1605 | G | C8-N9-C1' | -5.39 | 119.99 | 127.00 |
| 4 | 5 | 2730 | U | N3-C2-O2 | -5.38 | 118.43 | 122.20 |
| 4 | 5 | 2874 | U | N3-C2-O2 | -5.38 | 118.44 | 122.20 |
| 3 | 4 | 77 | G | C4-N9-C1' | -5.38 | 119.51 | 126.50 |
| 4 | 5 | 2837 | C | N3-C2-O2 | -5.37 | 118.14 | 121.90 |
| 4 | 5 | 1127 | G | N3-C4-N9 | 5.36 | 129.22 | 126.00 |
| 4 | 5 | 1116 | G | C4-N9-C1' | 5.36 | 133.46 | 126.50 |
| 1 | 2 | 1162 | C | C2-N1-C1' | 5.35 | 124.69 | 118.80 |
| 4 | 5 | 2238 | C | N3-C2-O2 | -5.34 | 118.17 | 121.90 |
| 4 | 5 | 1496 | U | C5-C6-N1 | -5.33 | 120.03 | 122.70 |
| 4 | 5 | 2247 | G | C4-C5-N7 | 5.33 | 112.93 | 110.80 |
| 4 | 5 | 2727 | C | C6-N1-C2 | -5.32 | 118.17 | 120.30 |
| 4 | 5 | 2951 | G | O4'-C1'-N9 | 5.32 | 112.45 | 108.20 |
| 1 | 2 | 767 | U | N3-C2-O2 | -5.31 | 118.48 | 122.20 |
| 12 | AG | 68 | LEU | CA-CB-CG | 5.31 | 127.51 | 115.30 |
| 1 | 2 | 1082 | C | N1-C2-O2 | 5.28 | 122.07 | 118.90 |
| 3 | 4 | 77 | G | N3-C4-N9 | -5.26 | 122.84 | 126.00 |
| 4 | 5 | 2816 | G | C6-C5-N7 | 5.23 | 133.54 | 130.40 |
| 4 | 5 | 847 | A | N3-C4-C5 | -5.23 | 123.14 | 126.80 |
| 1 | 2 | 992 | A | N1-C2-N3 | 5.20 | 131.90 | 129.30 |
| 4 | 5 | 836 | G | O4'-C1'-N9 | 5.18 | 112.34 | 108.20 |
| 4 | 5 | 1281 | C | N3-C2-O2 | -5.18 | 118.28 | 121.90 |
| 1 | 2 | 1596 | C | C2-N1-C1' | 5.17 | 124.49 | 118.80 |
| 25 | AT | 35 | ASP | CB-CG-OD1 | 5.17 | 122.95 | 118.30 |
| 4 | 5 | 1231 | G | N3-C4-N9 | -5.16 | 122.90 | 126.00 |
| 4 | 5 | 2238 | C | N1-C2-O2 | 5.16 | 121.99 | 118.90 |
| 4 | 5 | 1449 | U | N3-C2-O2 | -5.15 | 118.59 | 122.20 |
| 4 | 5 | 2367 | C | C2-N1-C1' | 5.15 | 124.47 | 118.80 |
| 3 | 4 | 77 | G | N3-C4-C5 | 5.15 | 131.18 | 128.60 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|------|------|-----------|-------|-------------|----------|
| 1 | 2 | 189 | C | N1-C2-O2 | 5.14 | 121.98 | 118.90 |
| 4 | 5 | 2715 | G | C2-N3-C4 | -5.13 | 109.34 | 111.90 |
| 3 | 4 | 78 | U | C2-N1-C1' | 5.13 | 123.85 | 117.70 |
| 4 | 5 | 917 | G | P-O3'-C3' | 5.11 | 125.84 | 119.70 |
| 1 | 2 | 1589 | C | C6-N1-C2 | 5.11 | 122.34 | 120.30 |
| 4 | 5 | 2715 | G | N3-C4-N9 | -5.10 | 122.94 | 126.00 |
| 1 | 2 | 1389 | C | N1-C2-O2 | 5.10 | 121.96 | 118.90 |
| 1 | 2 | 1527 | C | N1-C2-O2 | 5.10 | 121.96 | 118.90 |
| 10 | AE | 193 | GLY | N-CA-C | 5.09 | 125.83 | 113.10 |
| 1 | 2 | 1458 | G | C4-N9-C1' | 5.08 | 133.10 | 126.50 |
| 4 | 5 | 1200 | C | C2-N1-C1' | -5.08 | 113.22 | 118.80 |
| 1 | 2 | 583 | C | C6-N1-C1' | -5.06 | 114.72 | 120.80 |
| 4 | 5 | 3354 | G | N3-C4-C5 | 5.06 | 131.13 | 128.60 |
| 2 | 3 | 100 | U | C2-N1-C1' | 5.06 | 123.77 | 117.70 |
| 4 | 5 | 2404 | G | C6-C5-N7 | -5.04 | 127.38 | 130.40 |
| 5 | 6 | 34 | U | N3-C2-O2 | -5.04 | 118.67 | 122.20 |
| 1 | 2 | 1389 | C | C5-C6-N1 | 5.03 | 123.52 | 121.00 |
| 1 | 2 | 387 | A | P-O3'-C3' | 5.03 | 125.73 | 119.70 |
| 1 | 2 | 1389 | C | C6-N1-C2 | -5.03 | 118.29 | 120.30 |
| 1 | 2 | 1373 | C | C2-N1-C1' | 5.02 | 124.32 | 118.80 |
| 4 | 5 | 3354 | G | N3-C4-N9 | -5.02 | 122.99 | 126.00 |
| 1 | 2 | 426 | G | C6-C5-N7 | -5.02 | 127.39 | 130.40 |
| 3 | 4 | 39 | C | N3-C2-O2 | -5.02 | 118.39 | 121.90 |
| 4 | 5 | 3182 | C | N1-C2-O2 | 5.01 | 121.91 | 118.90 |
| 5 | 6 | 36 | G | N3-C4-C5 | -5.01 | 126.09 | 128.60 |
| 1 | 2 | 1563 | C | N1-C2-O2 | 5.00 | 121.90 | 118.90 |

There are no chirality outliers.

All (22) planarity outliers are listed below:

| Mol | Chain | Res | Type | Group |
|-----|-------|-----|------|---------|
| 7 | AB | 81 | PHE | Peptide |
| 10 | AE | 42 | LEU | Peptide |
| 12 | AG | 68 | LEU | Peptide |
| 14 | AI | 9 | HIS | Peptide |
| 18 | AM | 108 | ARG | Peptide |
| 18 | AM | 130 | THR | Peptide |
| 18 | AM | 83 | GLU | Peptide |
| 22 | AQ | 40 | GLU | Peptide |
| 29 | AX | 88 | PRO | Peptide |
| 32 | Aa | 84 | VAL | Peptide |
| 32 | Aa | 9 | GLY | Peptide |

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| Mol | Chain | Res | Type | Group |
|-----|-------|--------|------|---------|
| 37 | Af | 144 | CYS | Peptide |
| 38 | Ag | 176 | LYS | Peptide |
| 40 | BB | 127 | LYS | Peptide |
| 41 | BC | 3 | ARG | Peptide |
| 45 | BG | 30 | THR | Peptide |
| 45 | BG | 76 | ALA | Peptide |
| 49 | BK | 75 | PHE | Peptide |
| 52 | BN | 110[A] | PRO | Peptide |
| 61 | BW | 43 | ALA | Peptide |
| 64 | BZ | 115 | LYS | Peptide |
| 65 | Ba | 20 | GLY | 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 | |
|-----|-------|---------------|-----------|---------|----------|-------------|-----|
| 6 | AA | 204/206 (99%) | 186 (91%) | 18 (9%) | 0 | 100 | 100 |
| 7 | AB | 222/255 (87%) | 207 (93%) | 13 (6%) | 2 (1%) | 17 | 56 |
| 8 | AC | 214/216 (99%) | 204 (95%) | 10 (5%) | 0 | 100 | 100 |
| 9 | AD | 220/222 (99%) | 215 (98%) | 5 (2%) | 0 | 100 | 100 |
| 10 | AE | 256/258 (99%) | 237 (93%) | 18 (7%) | 1 (0%) | 34 | 72 |
| 11 | AF | 204/206 (99%) | 197 (97%) | 7 (3%) | 0 | 100 | 100 |
| 12 | AG | 226/228 (99%) | 212 (94%) | 13 (6%) | 1 (0%) | 34 | 72 |
| 13 | AH | 182/184 (99%) | 171 (94%) | 11 (6%) | 0 | 100 | 100 |
| 14 | AI | 183/200 (92%) | 167 (91%) | 14 (8%) | 2 (1%) | 14 | 52 |
| 15 | AJ | 182/184 (99%) | 171 (94%) | 10 (6%) | 1 (0%) | 29 | 68 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|-----|-------|----------------|-----------|----------|----------|-------------|-----|
| 16 | AK | 90/92 (98%) | 86 (96%) | 4 (4%) | 0 | 100 | 100 |
| 17 | AL | 142/144 (99%) | 134 (94%) | 8 (6%) | 0 | 100 | 100 |
| 18 | AM | 119/121 (98%) | 95 (80%) | 23 (19%) | 1 (1%) | 19 | 60 |
| 19 | AN | 148/150 (99%) | 141 (95%) | 7 (5%) | 0 | 100 | 100 |
| 20 | AO | 125/127 (98%) | 114 (91%) | 11 (9%) | 0 | 100 | 100 |
| 21 | AP | 115/117 (98%) | 112 (97%) | 3 (3%) | 0 | 100 | 100 |
| 22 | AQ | 139/141 (99%) | 127 (91%) | 12 (9%) | 0 | 100 | 100 |
| 23 | AR | 117/136 (86%) | 113 (97%) | 4 (3%) | 0 | 100 | 100 |
| 24 | AS | 143/145 (99%) | 130 (91%) | 13 (9%) | 0 | 100 | 100 |
| 25 | AT | 141/143 (99%) | 130 (92%) | 11 (8%) | 0 | 100 | 100 |
| 26 | AU | 98/100 (98%) | 96 (98%) | 2 (2%) | 0 | 100 | 100 |
| 27 | AV | 85/87 (98%) | 72 (85%) | 13 (15%) | 0 | 100 | 100 |
| 28 | AW | 127/129 (98%) | 121 (95%) | 6 (5%) | 0 | 100 | 100 |
| 29 | AX | 142/144 (99%) | 129 (91%) | 12 (8%) | 1 (1%) | 22 | 62 |
| 30 | AY | 132/134 (98%) | 124 (94%) | 7 (5%) | 1 (1%) | 19 | 60 |
| 31 | AZ | 80/82 (98%) | 75 (94%) | 5 (6%) | 0 | 100 | 100 |
| 32 | Aa | 95/97 (98%) | 77 (81%) | 16 (17%) | 2 (2%) | 7 | 39 |
| 33 | Ab | 79/81 (98%) | 72 (91%) | 7 (9%) | 0 | 100 | 100 |
| 34 | Ac | 61/63 (97%) | 59 (97%) | 2 (3%) | 0 | 100 | 100 |
| 35 | Ad | 51/53 (96%) | 49 (96%) | 2 (4%) | 0 | 100 | 100 |
| 36 | Ae | 58/60 (97%) | 54 (93%) | 4 (7%) | 0 | 100 | 100 |
| 37 | Af | 71/73 (97%) | 62 (87%) | 9 (13%) | 0 | 100 | 100 |
| 38 | Ag | 310/312 (99%) | 300 (97%) | 10 (3%) | 0 | 100 | 100 |
| 39 | BA | 249/251 (99%) | 236 (95%) | 12 (5%) | 1 (0%) | 34 | 72 |
| 40 | BB | 384/386 (100%) | 361 (94%) | 22 (6%) | 1 (0%) | 41 | 76 |
| 41 | BC | 359/361 (99%) | 338 (94%) | 19 (5%) | 2 (1%) | 25 | 65 |
| 42 | BD | 292/294 (99%) | 280 (96%) | 11 (4%) | 1 (0%) | 41 | 76 |
| 43 | BE | 163/176 (93%) | 158 (97%) | 5 (3%) | 0 | 100 | 100 |
| 44 | BF | 220/222 (99%) | 209 (95%) | 11 (5%) | 0 | 100 | 100 |
| 45 | BG | 231/233 (99%) | 217 (94%) | 14 (6%) | 0 | 100 | 100 |
| 46 | BH | 189/191 (99%) | 183 (97%) | 6 (3%) | 0 | 100 | 100 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|-----|-------|---------------|-----------|---------|----------|-------------|-----|
| 47 | BI | 216/218 (99%) | 210 (97%) | 6 (3%) | 0 | 100 | 100 |
| 48 | BJ | 167/169 (99%) | 154 (92%) | 13 (8%) | 0 | 100 | 100 |
| 49 | BK | 191/193 (99%) | 176 (92%) | 13 (7%) | 2 (1%) | 15 | 54 |
| 50 | BL | 134/136 (98%) | 126 (94%) | 8 (6%) | 0 | 100 | 100 |
| 51 | BM | 201/203 (99%) | 189 (94%) | 12 (6%) | 0 | 100 | 100 |
| 52 | BN | 195/197 (99%) | 189 (97%) | 4 (2%) | 2 (1%) | 15 | 54 |
| 53 | BO | 181/183 (99%) | 172 (95%) | 9 (5%) | 0 | 100 | 100 |
| 54 | BP | 183/185 (99%) | 174 (95%) | 9 (5%) | 0 | 100 | 100 |
| 55 | BQ | 186/188 (99%) | 177 (95%) | 9 (5%) | 0 | 100 | 100 |
| 56 | BR | 169/171 (99%) | 165 (98%) | 4 (2%) | 0 | 100 | 100 |
| 57 | BS | 157/159 (99%) | 147 (94%) | 10 (6%) | 0 | 100 | 100 |
| 58 | BT | 98/100 (98%) | 93 (95%) | 5 (5%) | 0 | 100 | 100 |
| 59 | BU | 134/136 (98%) | 130 (97%) | 4 (3%) | 0 | 100 | 100 |
| 60 | BV | 124/126 (98%) | 122 (98%) | 2 (2%) | 0 | 100 | 100 |
| 61 | BW | 119/121 (98%) | 114 (96%) | 4 (3%) | 1 (1%) | 19 | 60 |
| 62 | BX | 123/125 (98%) | 121 (98%) | 2 (2%) | 0 | 100 | 100 |
| 63 | BY | 133/135 (98%) | 129 (97%) | 4 (3%) | 0 | 100 | 100 |
| 64 | BZ | 146/148 (99%) | 135 (92%) | 10 (7%) | 1 (1%) | 22 | 62 |
| 65 | Ba | 56/58 (97%) | 49 (88%) | 7 (12%) | 0 | 100 | 100 |
| 66 | Bb | 94/96 (98%) | 93 (99%) | 1 (1%) | 0 | 100 | 100 |
| 67 | Bc | 107/109 (98%) | 99 (92%) | 8 (8%) | 0 | 100 | 100 |
| 68 | Bd | 125/127 (98%) | 120 (96%) | 5 (4%) | 0 | 100 | 100 |
| 69 | Be | 104/106 (98%) | 102 (98%) | 2 (2%) | 0 | 100 | 100 |
| 70 | Bf | 110/112 (98%) | 107 (97%) | 3 (3%) | 0 | 100 | 100 |
| 71 | Bg | 117/119 (98%) | 113 (97%) | 4 (3%) | 0 | 100 | 100 |
| 72 | Bh | 97/99 (98%) | 96 (99%) | 1 (1%) | 0 | 100 | 100 |
| 73 | Bi | 83/85 (98%) | 80 (96%) | 3 (4%) | 0 | 100 | 100 |
| 74 | Bj | 75/77 (97%) | 74 (99%) | 1 (1%) | 0 | 100 | 100 |
| 75 | Bk | 48/50 (96%) | 47 (98%) | 1 (2%) | 0 | 100 | 100 |
| 76 | Bl | 50/52 (96%) | 48 (96%) | 2 (4%) | 0 | 100 | 100 |
| 77 | Bm | 23/25 (92%) | 23 (100%) | 0 | 0 | 100 | 100 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|-----|-------|-------------------|-------------|----------|----------|-------------|-----|
| 78 | Bn | 101/103 (98%) | 97 (96%) | 4 (4%) | 0 | 100 | 100 |
| 79 | Bo | 89/91 (98%) | 85 (96%) | 4 (4%) | 0 | 100 | 100 |
| 80 | CA | 1738/1967 (88%) | 1664 (96%) | 70 (4%) | 4 (0%) | 47 | 81 |
| 81 | CB | 295/297 (99%) | 291 (99%) | 3 (1%) | 1 (0%) | 41 | 76 |
| 82 | CC | 110/530 (21%) | 107 (97%) | 3 (3%) | 0 | 100 | 100 |
| All | All | 13127/14000 (94%) | 12439 (95%) | 660 (5%) | 28 (0%) | 50 | 81 |

All (28) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|--------|------|
| 14 | AI | 10 | LYS |
| 32 | Aa | 84 | VAL |
| 52 | BN | 111[A] | PRO |
| 80 | CA | 224 | THR |
| 80 | CA | 621 | VAL |
| 81 | CB | 9 | ILE |
| 49 | BK | 63 | VAL |
| 7 | AB | 212 | VAL |
| 10 | AE | 43 | PRO |
| 18 | AM | 109 | GLU |
| 40 | BB | 128 | LYS |
| 52 | BN | 110[A] | PRO |
| 61 | BW | 44 | PRO |
| 80 | CA | 1148 | PHE |
| 12 | AG | 173 | PRO |
| 30 | AY | 37 | LYS |
| 64 | BZ | 78 | LEU |
| 7 | AB | 213 | ARG |
| 14 | AI | 9 | HIS |
| 15 | AJ | 99 | LEU |
| 29 | AX | 89 | ASN |
| 39 | BA | 126 | LEU |
| 41 | BC | 292 | SER |
| 32 | Aa | 9 | GLY |
| 41 | BC | 4 | PRO |
| 42 | BD | 20 | PHE |
| 49 | BK | 77 | LEU |
| 80 | CA | 507 | LYS |

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 | |
|-----|-------|----------------|------------|----------|-------------|-----|
| 6 | AA | 170/173 (98%) | 170 (100%) | 0 | 100 | 100 |
| 7 | AB | 200/224 (89%) | 199 (100%) | 1 (0%) | 88 | 93 |
| 8 | AC | 175/175 (100%) | 175 (100%) | 0 | 100 | 100 |
| 9 | AD | 182/182 (100%) | 181 (100%) | 1 (0%) | 88 | 93 |
| 10 | AE | 220/220 (100%) | 218 (99%) | 2 (1%) | 78 | 88 |
| 11 | AF | 172/173 (99%) | 171 (99%) | 1 (1%) | 86 | 92 |
| 12 | AG | 189/195 (97%) | 186 (98%) | 3 (2%) | 62 | 79 |
| 13 | AH | 163/165 (99%) | 162 (99%) | 1 (1%) | 86 | 92 |
| 14 | AI | 148/161 (92%) | 146 (99%) | 2 (1%) | 67 | 81 |
| 15 | AJ | 156/157 (99%) | 156 (100%) | 0 | 100 | 100 |
| 16 | AK | 77/85 (91%) | 77 (100%) | 0 | 100 | 100 |
| 17 | AL | 129/129 (100%) | 128 (99%) | 1 (1%) | 81 | 89 |
| 18 | AM | 88/98 (90%) | 88 (100%) | 0 | 100 | 100 |
| 19 | AN | 127/127 (100%) | 127 (100%) | 0 | 100 | 100 |
| 20 | AO | 91/96 (95%) | 91 (100%) | 0 | 100 | 100 |
| 21 | AP | 95/98 (97%) | 94 (99%) | 1 (1%) | 73 | 85 |
| 22 | AQ | 117/117 (100%) | 116 (99%) | 1 (1%) | 78 | 88 |
| 23 | AR | 101/124 (82%) | 101 (100%) | 0 | 100 | 100 |
| 24 | AS | 128/128 (100%) | 126 (98%) | 2 (2%) | 62 | 79 |
| 25 | AT | 115/115 (100%) | 114 (99%) | 1 (1%) | 78 | 88 |
| 26 | AU | 93/93 (100%) | 91 (98%) | 2 (2%) | 52 | 71 |
| 27 | AV | 71/74 (96%) | 68 (96%) | 3 (4%) | 30 | 55 |
| 28 | AW | 110/110 (100%) | 110 (100%) | 0 | 100 | 100 |
| 29 | AX | 119/119 (100%) | 119 (100%) | 0 | 100 | 100 |
| 30 | AY | 112/112 (100%) | 112 (100%) | 0 | 100 | 100 |
| 31 | AZ | 67/73 (92%) | 67 (100%) | 0 | 100 | 100 |

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| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles | |
|-----|-------|----------------|------------|----------|-------------|-----|
| 32 | Aa | 83/83 (100%) | 83 (100%) | 0 | 100 | 100 |
| 33 | Ab | 70/70 (100%) | 70 (100%) | 0 | 100 | 100 |
| 34 | Ac | 55/56 (98%) | 54 (98%) | 1 (2%) | 59 | 77 |
| 35 | Ad | 47/47 (100%) | 46 (98%) | 1 (2%) | 53 | 72 |
| 36 | Ae | 50/51 (98%) | 49 (98%) | 1 (2%) | 55 | 73 |
| 37 | Af | 56/64 (88%) | 56 (100%) | 0 | 100 | 100 |
| 38 | Ag | 250/257 (97%) | 248 (99%) | 2 (1%) | 81 | 89 |
| 39 | BA | 190/193 (98%) | 190 (100%) | 0 | 100 | 100 |
| 40 | BB | 321/322 (100%) | 319 (99%) | 2 (1%) | 86 | 92 |
| 41 | BC | 288/288 (100%) | 288 (100%) | 0 | 100 | 100 |
| 42 | BD | 241/243 (99%) | 241 (100%) | 0 | 100 | 100 |
| 43 | BE | 138/155 (89%) | 137 (99%) | 1 (1%) | 84 | 90 |
| 44 | BF | 186/186 (100%) | 186 (100%) | 0 | 100 | 100 |
| 45 | BG | 187/191 (98%) | 186 (100%) | 1 (0%) | 88 | 93 |
| 46 | BH | 168/171 (98%) | 168 (100%) | 0 | 100 | 100 |
| 47 | BI | 185/185 (100%) | 185 (100%) | 0 | 100 | 100 |
| 48 | BJ | 146/147 (99%) | 146 (100%) | 0 | 100 | 100 |
| 49 | BK | 154/154 (100%) | 152 (99%) | 2 (1%) | 69 | 82 |
| 50 | BL | 107/107 (100%) | 107 (100%) | 0 | 100 | 100 |
| 51 | BM | 175/175 (100%) | 174 (99%) | 1 (1%) | 86 | 92 |
| 52 | BN | 160/160 (100%) | 158 (99%) | 2 (1%) | 69 | 82 |
| 53 | BO | 138/145 (95%) | 138 (100%) | 0 | 100 | 100 |
| 54 | BP | 150/150 (100%) | 148 (99%) | 2 (1%) | 69 | 82 |
| 55 | BQ | 152/153 (99%) | 151 (99%) | 1 (1%) | 84 | 90 |
| 56 | BR | 155/155 (100%) | 155 (100%) | 0 | 100 | 100 |
| 57 | BS | 136/136 (100%) | 136 (100%) | 0 | 100 | 100 |
| 58 | BT | 87/87 (100%) | 87 (100%) | 0 | 100 | 100 |
| 59 | BU | 104/104 (100%) | 104 (100%) | 0 | 100 | 100 |
| 60 | BV | 56/107 (52%) | 55 (98%) | 1 (2%) | 59 | 77 |
| 61 | BW | 104/105 (99%) | 104 (100%) | 0 | 100 | 100 |
| 62 | BX | 108/108 (100%) | 107 (99%) | 1 (1%) | 78 | 88 |

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| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles | |
|-----|-------|-------------------|-------------|----------|-------------|-----|
| 63 | BY | 115/115 (100%) | 114 (99%) | 1 (1%) | 78 | 88 |
| 64 | BZ | 118/118 (100%) | 118 (100%) | 0 | 100 | 100 |
| 65 | Ba | 46/46 (100%) | 45 (98%) | 1 (2%) | 52 | 71 |
| 66 | Bb | 81/81 (100%) | 81 (100%) | 0 | 100 | 100 |
| 67 | Bc | 92/96 (96%) | 92 (100%) | 0 | 100 | 100 |
| 68 | Bd | 108/109 (99%) | 108 (100%) | 0 | 100 | 100 |
| 69 | Be | 90/90 (100%) | 89 (99%) | 1 (1%) | 73 | 85 |
| 70 | Bf | 95/95 (100%) | 95 (100%) | 0 | 100 | 100 |
| 71 | Bg | 104/104 (100%) | 104 (100%) | 0 | 100 | 100 |
| 72 | Bh | 80/81 (99%) | 80 (100%) | 0 | 100 | 100 |
| 73 | Bi | 69/69 (100%) | 69 (100%) | 0 | 100 | 100 |
| 74 | Bj | 68/68 (100%) | 67 (98%) | 1 (2%) | 65 | 80 |
| 75 | Bk | 45/45 (100%) | 45 (100%) | 0 | 100 | 100 |
| 76 | Bl | 47/47 (100%) | 47 (100%) | 0 | 100 | 100 |
| 77 | Bm | 22/23 (96%) | 22 (100%) | 0 | 100 | 100 |
| 78 | Bn | 87/88 (99%) | 87 (100%) | 0 | 100 | 100 |
| 79 | Bo | 71/71 (100%) | 70 (99%) | 1 (1%) | 67 | 81 |
| 80 | CA | 1560/1770 (88%) | 1545 (99%) | 15 (1%) | 76 | 86 |
| 81 | CB | 266/266 (100%) | 264 (99%) | 2 (1%) | 81 | 89 |
| 82 | CC | 97/482 (20%) | 97 (100%) | 0 | 100 | 100 |
| All | All | 11123/11942 (93%) | 11060 (99%) | 63 (1%) | 86 | 92 |

All (63) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 7 | AB | 26 | ARG |
| 9 | AD | 76 | ARG |
| 10 | AE | 211 | LYS |
| 10 | AE | 233 | LYS |
| 11 | AF | 45 | LYS |
| 12 | AG | 51 | LYS |
| 12 | AG | 98 | ARG |
| 12 | AG | 164 | LYS |
| 13 | AH | 79 | ARG |
| 14 | AI | 137 | LYS |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 14 | AI | 138 | ASN |
| 17 | AL | 67 | ARG |
| 21 | AP | 103 | ASN |
| 22 | AQ | 95 | LYS |
| 24 | AS | 110 | ARG |
| 24 | AS | 145 | ARG |
| 25 | AT | 78 | LYS |
| 26 | AU | 43 | LYS |
| 26 | AU | 52 | LYS |
| 27 | AV | 1 | MET |
| 27 | AV | 33 | GLN |
| 27 | AV | 44 | ARG |
| 34 | Ac | 65 | ARG |
| 35 | Ad | 13 | ARG |
| 36 | Ae | 54 | ARG |
| 38 | Ag | 137 | LYS |
| 38 | Ag | 229 | LYS |
| 40 | BB | 90 | VAL |
| 40 | BB | 332 | ARG |
| 43 | BE | 139 | LYS |
| 45 | BG | 240 | ASN |
| 49 | BK | 6 | ASN |
| 49 | BK | 21 | ARG |
| 51 | BM | 138 | GLN |
| 52 | BN | 50[A] | ASN |
| 52 | BN | 117[A] | ARG |
| 54 | BP | 141 | ARG |
| 54 | BP | 180 | ARG |
| 55 | BQ | 153 | LYS |
| 60 | BV | 2 | LYS |
| 62 | BX | 3 | LYS |
| 63 | BY | 27 | LYS |
| 65 | Ba | 59 | LYS |
| 69 | Be | 21 | ARG |
| 74 | Bj | 9 | LYS |
| 79 | Bo | 4 | ARG |
| 80 | CA | 218 | LYS |
| 80 | CA | 233 | LYS |
| 80 | CA | 378 | ARG |
| 80 | CA | 384 | MET |
| 80 | CA | 410 | LYS |
| 80 | CA | 612 | LYS |

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| Mol | Chain | Res | Type |
|-----|-------|------|------|
| 80 | CA | 689 | ARG |
| 80 | CA | 706 | ARG |
| 80 | CA | 849 | LYS |
| 80 | CA | 1146 | MET |
| 80 | CA | 1187 | LYS |
| 80 | CA | 1229 | LYS |
| 80 | CA | 1319 | LYS |
| 80 | CA | 1441 | LYS |
| 80 | CA | 1443 | ARG |
| 81 | CB | 24 | LYS |
| 81 | CB | 254 | LYS |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (35) such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 7 | AB | 149 | GLN |
| 7 | AB | 183 | GLN |
| 10 | AE | 36 | HIS |
| 10 | AE | 98 | ASN |
| 10 | AE | 201 | HIS |
| 16 | AK | 39 | ASN |
| 16 | AK | 62 | GLN |
| 24 | AS | 122 | HIS |
| 28 | AW | 42 | GLN |
| 28 | AW | 66 | ASN |
| 30 | AY | 22 | GLN |
| 33 | Ab | 19 | HIS |
| 41 | BC | 221 | ASN |
| 45 | BG | 240 | ASN |
| 46 | BH | 157 | ASN |
| 47 | BI | 208 | ASN |
| 49 | BK | 112 | ASN |
| 50 | BL | 105 | GLN |
| 51 | BM | 70 | ASN |
| 56 | BR | 8 | GLN |
| 56 | BR | 62 | ASN |
| 56 | BR | 138 | GLN |
| 63 | BY | 127 | ASN |
| 64 | BZ | 64 | GLN |
| 67 | Bc | 57 | GLN |
| 71 | Bg | 62 | GLN |
| 78 | Bn | 22 | GLN |

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| Mol | Chain | Res | Type |
|-----|-------|------|------|
| 80 | CA | 258 | GLN |
| 80 | CA | 261 | ASN |
| 80 | CA | 1096 | HIS |
| 80 | CA | 1144 | GLN |
| 80 | CA | 1435 | HIS |
| 80 | CA | 1773 | GLN |
| 81 | CB | 103 | GLN |
| 82 | CC | 212 | HIS |

5.3.3 RNA [i](#)

| Mol | Chain | Analysed | Backbone Outliers | Pucker Outliers |
|-----|-------|-----------------|-------------------|-----------------|
| 1 | 2 | 1768/1800 (98%) | 433 (24%) | 36 (2%) |
| 2 | 3 | 157/158 (99%) | 31 (19%) | 1 (0%) |
| 3 | 4 | 120/121 (99%) | 14 (11%) | 1 (0%) |
| 4 | 5 | 3159/3396 (93%) | 584 (18%) | 32 (1%) |
| 5 | 6 | 75/76 (98%) | 14 (18%) | 0 |
| All | All | 5279/5551 (95%) | 1076 (20%) | 70 (1%) |

All (1076) RNA backbone outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | 2 | 2 | A |
| 1 | 2 | 4 | C |
| 1 | 2 | 5 | U |
| 1 | 2 | 9 | U |
| 1 | 2 | 17 | C |
| 1 | 2 | 25 | C |
| 1 | 2 | 26 | A |
| 1 | 2 | 34 | G |
| 1 | 2 | 43 | A |
| 1 | 2 | 46 | A |
| 1 | 2 | 47 | A |
| 1 | 2 | 56 | U |
| 1 | 2 | 57 | G |
| 1 | 2 | 60 | U |
| 1 | 2 | 62 | A |
| 1 | 2 | 63 | G |
| 1 | 2 | 65 | A |
| 1 | 2 | 66 | U |
| 1 | 2 | 68 | A |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | 2 | 69 | G |
| 1 | 2 | 71 | A |
| 1 | 2 | 74 | U |
| 1 | 2 | 75 | U |
| 1 | 2 | 76 | A |
| 1 | 2 | 78 | A |
| 1 | 2 | 79 | C |
| 1 | 2 | 81 | G |
| 1 | 2 | 100 | A |
| 1 | 2 | 104 | A |
| 1 | 2 | 114 | C |
| 1 | 2 | 126 | A |
| 1 | 2 | 129 | U |
| 1 | 2 | 130 | C |
| 1 | 2 | 131 | C |
| 1 | 2 | 132 | U |
| 1 | 2 | 134 | U |
| 1 | 2 | 138 | A |
| 1 | 2 | 140 | A |
| 1 | 2 | 141 | U |
| 1 | 2 | 142 | G |
| 1 | 2 | 153 | G |
| 1 | 2 | 159 | U |
| 1 | 2 | 169 | A |
| 1 | 2 | 171 | A |
| 1 | 2 | 176 | C |
| 1 | 2 | 178 | U |
| 1 | 2 | 180 | A |
| 1 | 2 | 186 | C |
| 1 | 2 | 187 | G |
| 1 | 2 | 188 | A |
| 1 | 2 | 191 | C |
| 1 | 2 | 193 | U |
| 1 | 2 | 195 | G |
| 1 | 2 | 196 | G |
| 1 | 2 | 198 | A |
| 1 | 2 | 215 | A |
| 1 | 2 | 216 | U |
| 1 | 2 | 217 | A |
| 1 | 2 | 218 | A |
| 1 | 2 | 225 | A |
| 1 | 2 | 227 | U |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | 2 | 228 | G |
| 1 | 2 | 230 | C |
| 1 | 2 | 232 | U |
| 1 | 2 | 233 | C |
| 1 | 2 | 234 | G |
| 1 | 2 | 236 | A |
| 1 | 2 | 240 | U |
| 1 | 2 | 241 | U |
| 1 | 2 | 250 | C |
| 1 | 2 | 257 | A |
| 1 | 2 | 260 | U |
| 1 | 2 | 261 | U |
| 1 | 2 | 265 | A |
| 1 | 2 | 274 | G |
| 1 | 2 | 276 | C |
| 1 | 2 | 278 | U |
| 1 | 2 | 279 | G |
| 1 | 2 | 280 | U |
| 1 | 2 | 281 | G |
| 1 | 2 | 287 | G |
| 1 | 2 | 299 | A |
| 1 | 2 | 308 | C |
| 1 | 2 | 312 | A |
| 1 | 2 | 314 | C |
| 1 | 2 | 316 | A |
| 1 | 2 | 322 | G |
| 1 | 2 | 323 | A |
| 1 | 2 | 330 | G |
| 1 | 2 | 337 | G |
| 1 | 2 | 338 | C |
| 1 | 2 | 352 | A |
| 1 | 2 | 359 | A |
| 1 | 2 | 361 | C |
| 1 | 2 | 370 | A |
| 1 | 2 | 388 | G |
| 1 | 2 | 400 | A |
| 1 | 2 | 401 | A |
| 1 | 2 | 402 | C |
| 1 | 2 | 404 | G |
| 1 | 2 | 411 | C |
| 1 | 2 | 415 | C |
| 1 | 2 | 417 | A |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | 2 | 419 | G |
| 1 | 2 | 423 | G |
| 1 | 2 | 424 | C |
| 1 | 2 | 425 | A |
| 1 | 2 | 426 | G |
| 1 | 2 | 428 | A |
| 1 | 2 | 434 | G |
| 1 | 2 | 437 | A |
| 1 | 2 | 439 | U |
| 1 | 2 | 444 | C |
| 1 | 2 | 448 | C |
| 1 | 2 | 460 | A |
| 1 | 2 | 464 | A |
| 1 | 2 | 468 | A |
| 1 | 2 | 477 | A |
| 1 | 2 | 483 | A |
| 1 | 2 | 485 | A |
| 1 | 2 | 487 | G |
| 1 | 2 | 493 | U |
| 1 | 2 | 494 | U |
| 1 | 2 | 495 | C |
| 1 | 2 | 496 | G |
| 1 | 2 | 498 | G |
| 1 | 2 | 499 | U |
| 1 | 2 | 500 | C |
| 1 | 2 | 502 | U |
| 1 | 2 | 506 | A |
| 1 | 2 | 510 | G |
| 1 | 2 | 511 | A |
| 1 | 2 | 515 | A |
| 1 | 2 | 525 | A |
| 1 | 2 | 527 | A |
| 1 | 2 | 534 | A |
| 1 | 2 | 537 | G |
| 1 | 2 | 538 | A |
| 1 | 2 | 540 | G |
| 1 | 2 | 541 | A |
| 1 | 2 | 542 | A |
| 1 | 2 | 544 | A |
| 1 | 2 | 548 | G |
| 1 | 2 | 555 | A |
| 1 | 2 | 556 | A |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | 2 | 557 | G |
| 1 | 2 | 558 | U |
| 1 | 2 | 559 | C |
| 1 | 2 | 565 | C |
| 1 | 2 | 568 | G |
| 1 | 2 | 579 | A |
| 1 | 2 | 580 | A |
| 1 | 2 | 594 | A |
| 1 | 2 | 595 | G |
| 1 | 2 | 606 | A |
| 1 | 2 | 611 | U |
| 1 | 2 | 619 | A |
| 1 | 2 | 620 | A |
| 1 | 2 | 622 | A |
| 1 | 2 | 623 | A |
| 1 | 2 | 624 | G |
| 1 | 2 | 629 | U |
| 1 | 2 | 630 | A |
| 1 | 2 | 634 | G |
| 1 | 2 | 639 | U |
| 1 | 2 | 640 | U |
| 1 | 2 | 641 | G |
| 1 | 2 | 651 | G |
| 1 | 2 | 653 | C |
| 1 | 2 | 655 | G |
| 1 | 2 | 677 | G |
| 1 | 2 | 678 | A |
| 1 | 2 | 679 | U |
| 1 | 2 | 680 | U |
| 1 | 2 | 681 | U |
| 1 | 2 | 687 | G |
| 1 | 2 | 693 | U |
| 1 | 2 | 694 | U |
| 1 | 2 | 696 | C |
| 1 | 2 | 697 | C |
| 1 | 2 | 698 | U |
| 1 | 2 | 700 | C |
| 1 | 2 | 704 | C |
| 1 | 2 | 705 | U |
| 1 | 2 | 706 | A |
| 1 | 2 | 707 | A |
| 1 | 2 | 708 | C |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | 2 | 709 | C |
| 1 | 2 | 710 | U |
| 1 | 2 | 711 | U |
| 1 | 2 | 712 | G |
| 1 | 2 | 728 | U |
| 1 | 2 | 730 | G |
| 1 | 2 | 732 | G |
| 1 | 2 | 733 | A |
| 1 | 2 | 734 | A |
| 1 | 2 | 741 | C |
| 1 | 2 | 742 | U |
| 1 | 2 | 743 | U |
| 1 | 2 | 745 | U |
| 1 | 2 | 753 | A |
| 1 | 2 | 765 | G |
| 1 | 2 | 766 | U |
| 1 | 2 | 771 | A |
| 1 | 2 | 774 | A |
| 1 | 2 | 775 | G |
| 1 | 2 | 778 | G |
| 1 | 2 | 780 | A |
| 1 | 2 | 781 | U |
| 1 | 2 | 782 | U |
| 1 | 2 | 783 | G |
| 1 | 2 | 789 | A |
| 1 | 2 | 803 | A |
| 1 | 2 | 812 | A |
| 1 | 2 | 813 | U |
| 1 | 2 | 814 | A |
| 1 | 2 | 815 | G |
| 1 | 2 | 816 | G |
| 1 | 2 | 820 | U |
| 1 | 2 | 821 | U |
| 1 | 2 | 823 | G |
| 1 | 2 | 833 | U |
| 1 | 2 | 836 | U |
| 1 | 2 | 840 | U |
| 1 | 2 | 841 | U |
| 1 | 2 | 846 | G |
| 1 | 2 | 852 | C |
| 1 | 2 | 856 | A |
| 1 | 2 | 857 | U |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | 2 | 860 | U |
| 1 | 2 | 861 | U |
| 1 | 2 | 863 | A |
| 1 | 2 | 876 | G |
| 1 | 2 | 886 | U |
| 1 | 2 | 899 | G |
| 1 | 2 | 901 | G |
| 1 | 2 | 902 | G |
| 1 | 2 | 904 | G |
| 1 | 2 | 912 | U |
| 1 | 2 | 913 | G |
| 1 | 2 | 914 | G |
| 1 | 2 | 915 | A |
| 1 | 2 | 929 | A |
| 1 | 2 | 933 | A |
| 1 | 2 | 934 | C |
| 1 | 2 | 935 | U |
| 1 | 2 | 942 | G |
| 1 | 2 | 945 | U |
| 1 | 2 | 960 | U |
| 1 | 2 | 964 | U |
| 1 | 2 | 966 | A |
| 1 | 2 | 970 | A |
| 1 | 2 | 971 | A |
| 1 | 2 | 988 | A |
| 1 | 2 | 992 | A |
| 1 | 2 | 993 | A |
| 1 | 2 | 1004 | U |
| 1 | 2 | 1005 | A |
| 1 | 2 | 1023 | A |
| 1 | 2 | 1024 | U |
| 1 | 2 | 1025 | A |
| 1 | 2 | 1028 | C |
| 1 | 2 | 1029 | U |
| 1 | 2 | 1039 | A |
| 1 | 2 | 1052 | U |
| 1 | 2 | 1053 | G |
| 1 | 2 | 1058 | U |
| 1 | 2 | 1060 | U |
| 1 | 2 | 1061 | A |
| 1 | 2 | 1076 | A |
| 1 | 2 | 1082 | C |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | 2 | 1092 | A |
| 1 | 2 | 1093 | A |
| 1 | 2 | 1096 | C |
| 1 | 2 | 1100 | G |
| 1 | 2 | 1108 | G |
| 1 | 2 | 1109 | G |
| 1 | 2 | 1126 | G |
| 1 | 2 | 1138 | A |
| 1 | 2 | 1150 | G |
| 1 | 2 | 1158 | C |
| 1 | 2 | 1160 | A |
| 1 | 2 | 1164 | G |
| 1 | 2 | 1166 | A |
| 1 | 2 | 1167 | G |
| 1 | 2 | 1170 | G |
| 1 | 2 | 1185 | U |
| 1 | 2 | 1194 | A |
| 1 | 2 | 1196 | A |
| 1 | 2 | 1198 | G |
| 1 | 2 | 1199 | G |
| 1 | 2 | 1200 | G |
| 1 | 2 | 1212 | G |
| 1 | 2 | 1217 | A |
| 1 | 2 | 1218 | G |
| 1 | 2 | 1219 | A |
| 1 | 2 | 1227 | A |
| 1 | 2 | 1228 | G |
| 1 | 2 | 1229 | G |
| 1 | 2 | 1241 | G |
| 1 | 2 | 1243 | G |
| 1 | 2 | 1244 | A |
| 1 | 2 | 1245 | G |
| 1 | 2 | 1246 | C |
| 1 | 2 | 1249 | U |
| 1 | 2 | 1252 | C |
| 1 | 2 | 1256 | A |
| 1 | 2 | 1257 | U |
| 1 | 2 | 1274 | C |
| 1 | 2 | 1275 | A |
| 1 | 2 | 1276 | U |
| 1 | 2 | 1285 | U |
| 1 | 2 | 1286 | U |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | 2 | 1298 | U |
| 1 | 2 | 1299 | G |
| 1 | 2 | 1301 | U |
| 1 | 2 | 1314 | U |
| 1 | 2 | 1315 | U |
| 1 | 2 | 1321 | A |
| 1 | 2 | 1322 | A |
| 1 | 2 | 1325 | A |
| 1 | 2 | 1337 | A |
| 1 | 2 | 1338 | C |
| 1 | 2 | 1340 | U |
| 1 | 2 | 1344 | A |
| 1 | 2 | 1345 | A |
| 1 | 2 | 1346 | A |
| 1 | 2 | 1348 | A |
| 1 | 2 | 1360 | A |
| 1 | 2 | 1361 | U |
| 1 | 2 | 1363 | U |
| 1 | 2 | 1367 | G |
| 1 | 2 | 1370 | U |
| 1 | 2 | 1371 | A |
| 1 | 2 | 1372 | U |
| 1 | 2 | 1373 | C |
| 1 | 2 | 1382 | A |
| 1 | 2 | 1383 | G |
| 1 | 2 | 1389 | C |
| 1 | 2 | 1390 | U |
| 1 | 2 | 1398 | U |
| 1 | 2 | 1399 | C |
| 1 | 2 | 1400 | A |
| 1 | 2 | 1402 | G |
| 1 | 2 | 1412 | G |
| 1 | 2 | 1414 | U |
| 1 | 2 | 1427 | A |
| 1 | 2 | 1428 | G |
| 1 | 2 | 1429 | G |
| 1 | 2 | 1431 | C |
| 1 | 2 | 1432 | U |
| 1 | 2 | 1436 | A |
| 1 | 2 | 1437 | U |
| 1 | 2 | 1445 | G |
| 1 | 2 | 1446 | A |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | 2 | 1456 | C |
| 1 | 2 | 1459 | C |
| 1 | 2 | 1460 | A |
| 1 | 2 | 1465 | C |
| 1 | 2 | 1466 | G |
| 1 | 2 | 1471 | A |
| 1 | 2 | 1472 | C |
| 1 | 2 | 1473 | U |
| 1 | 2 | 1479 | A |
| 1 | 2 | 1491 | U |
| 1 | 2 | 1493 | A |
| 1 | 2 | 1496 | U |
| 1 | 2 | 1503 | A |
| 1 | 2 | 1514 | U |
| 1 | 2 | 1516 | A |
| 1 | 2 | 1520 | U |
| 1 | 2 | 1521 | G |
| 1 | 2 | 1523 | G |
| 1 | 2 | 1524 | A |
| 1 | 2 | 1535 | U |
| 1 | 2 | 1536 | G |
| 1 | 2 | 1537 | C |
| 1 | 2 | 1540 | G |
| 1 | 2 | 1542 | G |
| 1 | 2 | 1543 | A |
| 1 | 2 | 1545 | A |
| 1 | 2 | 1546 | G |
| 1 | 2 | 1557 | U |
| 1 | 2 | 1558 | U |
| 1 | 2 | 1559 | A |
| 1 | 2 | 1561 | U |
| 1 | 2 | 1563 | C |
| 1 | 2 | 1564 | U |
| 1 | 2 | 1569 | A |
| 1 | 2 | 1570 | A |
| 1 | 2 | 1573 | A |
| 1 | 2 | 1575 | G |
| 1 | 2 | 1576 | A |
| 1 | 2 | 1577 | A |
| 1 | 2 | 1583 | A |
| 1 | 2 | 1584 | G |
| 1 | 2 | 1585 | U |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | 2 | 1601 | G |
| 1 | 2 | 1611 | A |
| 1 | 2 | 1614 | A |
| 1 | 2 | 1616 | G |
| 1 | 2 | 1619 | C |
| 1 | 2 | 1622 | G |
| 1 | 2 | 1631 | A |
| 1 | 2 | 1634 | C |
| 1 | 2 | 1636 | C |
| 1 | 2 | 1637 | C |
| 1 | 2 | 1651 | A |
| 1 | 2 | 1657 | U |
| 1 | 2 | 1658 | G |
| 1 | 2 | 1688 | U |
| 1 | 2 | 1701 | A |
| 1 | 2 | 1709 | C |
| 1 | 2 | 1711 | C |
| 1 | 2 | 1715 | G |
| 1 | 2 | 1717 | G |
| 1 | 2 | 1742 | U |
| 1 | 2 | 1750 | A |
| 1 | 2 | 1756 | A |
| 1 | 2 | 1760 | G |
| 1 | 2 | 1767 | G |
| 1 | 2 | 1769 | U |
| 1 | 2 | 1770 | U |
| 1 | 2 | 1780 | G |
| 1 | 2 | 1782 | A |
| 1 | 2 | 1783 | C |
| 1 | 2 | 1791 | A |
| 1 | 2 | 1792 | G |
| 1 | 2 | 1793 | G |
| 1 | 2 | 1794 | A |
| 1 | 2 | 1795 | U |
| 1 | 2 | 1796 | C |
| 1 | 2 | 1799 | U |
| 2 | 3 | 9 | A |
| 2 | 3 | 20 | U |
| 2 | 3 | 23 | U |
| 2 | 3 | 34 | U |
| 2 | 3 | 35 | C |
| 2 | 3 | 39 | G |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 2 | 3 | 52 | A |
| 2 | 3 | 59 | A |
| 2 | 3 | 62 | C |
| 2 | 3 | 63 | G |
| 2 | 3 | 80 | A |
| 2 | 3 | 81 | U |
| 2 | 3 | 82 | U |
| 2 | 3 | 84 | C |
| 2 | 3 | 86 | U |
| 2 | 3 | 87 | G |
| 2 | 3 | 90 | U |
| 2 | 3 | 95 | G |
| 2 | 3 | 99 | C |
| 2 | 3 | 104 | A |
| 2 | 3 | 105 | A |
| 2 | 3 | 106 | C |
| 2 | 3 | 111 | A |
| 2 | 3 | 113 | U |
| 2 | 3 | 116 | G |
| 2 | 3 | 125 | U |
| 2 | 3 | 126 | A |
| 2 | 3 | 148 | G |
| 2 | 3 | 152 | G |
| 2 | 3 | 156 | U |
| 2 | 3 | 158 | U |
| 3 | 4 | 7 | G |
| 3 | 4 | 11 | A |
| 3 | 4 | 29 | C |
| 3 | 4 | 53 | U |
| 3 | 4 | 54 | U |
| 3 | 4 | 55 | A |
| 3 | 4 | 65 | G |
| 3 | 4 | 74 | C |
| 3 | 4 | 76 | A |
| 3 | 4 | 77 | G |
| 3 | 4 | 101 | G |
| 3 | 4 | 102 | A |
| 3 | 4 | 112 | G |
| 3 | 4 | 121 | U |
| 4 | 5 | 6 | A |
| 4 | 5 | 14 | U |
| 4 | 5 | 18 | G |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 4 | 5 | 22 | G |
| 4 | 5 | 26 | A |
| 4 | 5 | 40 | A |
| 4 | 5 | 43 | A |
| 4 | 5 | 49 | A |
| 4 | 5 | 59 | G |
| 4 | 5 | 60 | A |
| 4 | 5 | 65 | A |
| 4 | 5 | 66 | A |
| 4 | 5 | 76 | G |
| 4 | 5 | 85 | A |
| 4 | 5 | 92 | G |
| 4 | 5 | 99 | A |
| 4 | 5 | 109 | A |
| 4 | 5 | 110 | G |
| 4 | 5 | 111 | C |
| 4 | 5 | 113 | C |
| 4 | 5 | 118 | U |
| 4 | 5 | 121 | A |
| 4 | 5 | 122 | A |
| 4 | 5 | 123 | A |
| 4 | 5 | 133 | U |
| 4 | 5 | 135 | C |
| 4 | 5 | 136 | G |
| 4 | 5 | 146 | U |
| 4 | 5 | 156 | G |
| 4 | 5 | 157 | A |
| 4 | 5 | 161 | G |
| 4 | 5 | 166 | C |
| 4 | 5 | 187 | A |
| 4 | 5 | 190 | U |
| 4 | 5 | 191 | U |
| 4 | 5 | 210 | U |
| 4 | 5 | 211 | A |
| 4 | 5 | 213 | A |
| 4 | 5 | 218 | G |
| 4 | 5 | 219 | A |
| 4 | 5 | 237 | G |
| 4 | 5 | 240 | U |
| 4 | 5 | 241 | G |
| 4 | 5 | 243 | G |
| 4 | 5 | 245 | U |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 4 | 5 | 248 | U |
| 4 | 5 | 249 | U |
| 4 | 5 | 252 | U |
| 4 | 5 | 263 | C |
| 4 | 5 | 266 | A |
| 4 | 5 | 269 | G |
| 4 | 5 | 282 | G |
| 4 | 5 | 283 | G |
| 4 | 5 | 286 | U |
| 4 | 5 | 295 | A |
| 4 | 5 | 298 | U |
| 4 | 5 | 323 | A |
| 4 | 5 | 329 | U |
| 4 | 5 | 339 | C |
| 4 | 5 | 350 | C |
| 4 | 5 | 351 | A |
| 4 | 5 | 370 | U |
| 4 | 5 | 371 | G |
| 4 | 5 | 374 | A |
| 4 | 5 | 376 | G |
| 4 | 5 | 378 | A |
| 4 | 5 | 390 | G |
| 4 | 5 | 395 | A |
| 4 | 5 | 398 | A |
| 4 | 5 | 401 | U |
| 4 | 5 | 402 | A |
| 4 | 5 | 403 | C |
| 4 | 5 | 421 | G |
| 4 | 5 | 422 | A |
| 4 | 5 | 439 | C |
| 4 | 5 | 521 | U |
| 4 | 5 | 522 | A |
| 4 | 5 | 524 | A |
| 4 | 5 | 536 | G |
| 4 | 5 | 537 | U |
| 4 | 5 | 544 | C |
| 4 | 5 | 547 | C |
| 4 | 5 | 548 | G |
| 4 | 5 | 549 | G |
| 4 | 5 | 551 | A |
| 4 | 5 | 553 | G |
| 4 | 5 | 556 | U |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 4 | 5 | 558 | A |
| 4 | 5 | 560 | A |
| 4 | 5 | 579 | A |
| 4 | 5 | 580 | G |
| 4 | 5 | 590 | A |
| 4 | 5 | 593 | A |
| 4 | 5 | 601 | G |
| 4 | 5 | 610 | G |
| 4 | 5 | 611 | G |
| 4 | 5 | 612 | A |
| 4 | 5 | 621 | U |
| 4 | 5 | 622 | A |
| 4 | 5 | 623 | A |
| 4 | 5 | 637 | C |
| 4 | 5 | 639 | C |
| 4 | 5 | 650 | A |
| 4 | 5 | 668 | C |
| 4 | 5 | 678 | A |
| 4 | 5 | 682 | U |
| 4 | 5 | 692 | A |
| 4 | 5 | 706 | A |
| 4 | 5 | 713 | G |
| 4 | 5 | 716 | A |
| 4 | 5 | 717 | A |
| 4 | 5 | 718 | C |
| 4 | 5 | 720 | U |
| 4 | 5 | 726 | G |
| 4 | 5 | 765 | U |
| 4 | 5 | 768 | U |
| 4 | 5 | 777 | U |
| 4 | 5 | 778 | U |
| 4 | 5 | 781 | A |
| 4 | 5 | 782 | G |
| 4 | 5 | 786 | G |
| 4 | 5 | 787 | A |
| 4 | 5 | 807 | A |
| 4 | 5 | 817 | A |
| 4 | 5 | 818 | A |
| 4 | 5 | 831 | A |
| 4 | 5 | 847 | A |
| 4 | 5 | 848 | A |
| 4 | 5 | 850 | C |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 4 | 5 | 862 | C |
| 4 | 5 | 870 | G |
| 4 | 5 | 872 | U |
| 4 | 5 | 875 | U |
| 4 | 5 | 880 | U |
| 4 | 5 | 896 | A |
| 4 | 5 | 897 | A |
| 4 | 5 | 908 | G |
| 4 | 5 | 909 | G |
| 4 | 5 | 915 | A |
| 4 | 5 | 917 | G |
| 4 | 5 | 918 | A |
| 4 | 5 | 922 | A |
| 4 | 5 | 924 | C |
| 4 | 5 | 926 | A |
| 4 | 5 | 938 | G |
| 4 | 5 | 940 | U |
| 4 | 5 | 945 | C |
| 4 | 5 | 960 | C |
| 4 | 5 | 961 | U |
| 4 | 5 | 975 | G |
| 4 | 5 | 980 | U |
| 4 | 5 | 995 | G |
| 4 | 5 | 996 | U |
| 4 | 5 | 1003 | A |
| 4 | 5 | 1011 | G |
| 4 | 5 | 1016 | U |
| 4 | 5 | 1025 | G |
| 4 | 5 | 1026 | A |
| 4 | 5 | 1029 | U |
| 4 | 5 | 1030 | G |
| 4 | 5 | 1033 | C |
| 4 | 5 | 1037 | A |
| 4 | 5 | 1042 | U |
| 4 | 5 | 1048 | A |
| 4 | 5 | 1050 | C |
| 4 | 5 | 1065 | A |
| 4 | 5 | 1066 | A |
| 4 | 5 | 1073 | G |
| 4 | 5 | 1082 | U |
| 4 | 5 | 1094 | A |
| 4 | 5 | 1095 | U |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 4 | 5 | 1096 | U |
| 4 | 5 | 1098 | G |
| 4 | 5 | 1099 | A |
| 4 | 5 | 1104 | A |
| 4 | 5 | 1105 | G |
| 4 | 5 | 1118 | G |
| 4 | 5 | 1130 | A |
| 4 | 5 | 1132 | G |
| 4 | 5 | 1144 | A |
| 4 | 5 | 1145 | U |
| 4 | 5 | 1154 | A |
| 4 | 5 | 1156 | C |
| 4 | 5 | 1160 | A |
| 4 | 5 | 1161 | C |
| 4 | 5 | 1180 | A |
| 4 | 5 | 1181 | A |
| 4 | 5 | 1182 | U |
| 4 | 5 | 1191 | A |
| 4 | 5 | 1193 | C |
| 4 | 5 | 1194 | A |
| 4 | 5 | 1197 | C |
| 4 | 5 | 1202 | C |
| 4 | 5 | 1203 | A |
| 4 | 5 | 1207 | G |
| 4 | 5 | 1209 | U |
| 4 | 5 | 1218 | A |
| 4 | 5 | 1223 | G |
| 4 | 5 | 1226 | A |
| 4 | 5 | 1227 | G |
| 4 | 5 | 1228 | C |
| 4 | 5 | 1232 | A |
| 4 | 5 | 1233 | C |
| 4 | 5 | 1237 | G |
| 4 | 5 | 1241 | A |
| 4 | 5 | 1243 | G |
| 4 | 5 | 1246 | A |
| 4 | 5 | 1247 | G |
| 4 | 5 | 1254 | U |
| 4 | 5 | 1255 | C |
| 4 | 5 | 1259 | U |
| 4 | 5 | 1263 | G |
| 4 | 5 | 1264 | A |

Continued on next page...

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 4 | 5 | 1265 | G |
| 4 | 5 | 1266 | U |
| 4 | 5 | 1267 | G |
| 4 | 5 | 1270 | U |
| 4 | 5 | 1271 | A |
| 4 | 5 | 1272 | A |
| 4 | 5 | 1273 | C |
| 4 | 5 | 1275 | A |
| 4 | 5 | 1279 | A |
| 4 | 5 | 1280 | C |
| 4 | 5 | 1286 | G |
| 4 | 5 | 1287 | A |
| 4 | 5 | 1288 | A |
| 4 | 5 | 1296 | G |
| 4 | 5 | 1306 | U |
| 4 | 5 | 1310 | U |
| 4 | 5 | 1314 | G |
| 4 | 5 | 1331 | A |
| 4 | 5 | 1332 | U |
| 4 | 5 | 1346 | G |
| 4 | 5 | 1349 | U |
| 4 | 5 | 1350 | G |
| 4 | 5 | 1352 | U |
| 4 | 5 | 1353 | A |
| 4 | 5 | 1355 | G |
| 4 | 5 | 1356 | A |
| 4 | 5 | 1357 | U |
| 4 | 5 | 1358 | G |
| 4 | 5 | 1387 | A |
| 4 | 5 | 1392 | C |
| 4 | 5 | 1400 | A |
| 4 | 5 | 1401 | G |
| 4 | 5 | 1419 | A |
| 4 | 5 | 1420 | A |
| 4 | 5 | 1435 | G |
| 4 | 5 | 1438 | C |
| 4 | 5 | 1447 | A |
| 4 | 5 | 1451 | G |
| 4 | 5 | 1467 | G |
| 4 | 5 | 1482 | A |
| 4 | 5 | 1483 | A |
| 4 | 5 | 1484 | G |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 4 | 5 | 1495 | U |
| 4 | 5 | 1496 | U |
| 4 | 5 | 1509 | C |
| 4 | 5 | 1524 | U |
| 4 | 5 | 1534 | U |
| 4 | 5 | 1537 | G |
| 4 | 5 | 1540 | A |
| 4 | 5 | 1557 | C |
| 4 | 5 | 1558 | A |
| 4 | 5 | 1559 | A |
| 4 | 5 | 1561 | G |
| 4 | 5 | 1563 | C |
| 4 | 5 | 1564 | C |
| 4 | 5 | 1568 | U |
| 4 | 5 | 1569 | U |
| 4 | 5 | 1570 | U |
| 4 | 5 | 1573 | U |
| 4 | 5 | 1574 | G |
| 4 | 5 | 1576 | A |
| 4 | 5 | 1577 | G |
| 4 | 5 | 1581 | A |
| 4 | 5 | 1584 | A |
| 4 | 5 | 1588 | A |
| 4 | 5 | 1589 | A |
| 4 | 5 | 1590 | A |
| 4 | 5 | 1594 | A |
| 4 | 5 | 1595 | A |
| 4 | 5 | 1597 | C |
| 4 | 5 | 1606 | A |
| 4 | 5 | 1621 | U |
| 4 | 5 | 1630 | U |
| 4 | 5 | 1640 | C |
| 4 | 5 | 1643 | A |
| 4 | 5 | 1644 | A |
| 4 | 5 | 1646 | U |
| 4 | 5 | 1718 | U |
| 4 | 5 | 1725 | U |
| 4 | 5 | 1726 | C |
| 4 | 5 | 1742 | A |
| 4 | 5 | 1751 | A |
| 4 | 5 | 1752 | G |
| 4 | 5 | 1766 | U |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 4 | 5 | 1767 | G |
| 4 | 5 | 1771 | G |
| 4 | 5 | 1776 | G |
| 4 | 5 | 1781 | G |
| 4 | 5 | 1797 | G |
| 4 | 5 | 1798 | A |
| 4 | 5 | 1815 | A |
| 4 | 5 | 1817 | A |
| 4 | 5 | 1818 | G |
| 4 | 5 | 1820 | U |
| 4 | 5 | 1821 | U |
| 4 | 5 | 1822 | U |
| 4 | 5 | 1840 | A |
| 4 | 5 | 1843 | A |
| 4 | 5 | 1847 | C |
| 4 | 5 | 1851 | A |
| 4 | 5 | 1865 | A |
| 4 | 5 | 1867 | C |
| 4 | 5 | 1868 | A |
| 4 | 5 | 1872 | U |
| 4 | 5 | 1879 | G |
| 4 | 5 | 1881 | U |
| 4 | 5 | 1894 | A |
| 4 | 5 | 1896 | A |
| 4 | 5 | 1907 | G |
| 4 | 5 | 1909 | A |
| 4 | 5 | 1926 | U |
| 4 | 5 | 1927 | C |
| 4 | 5 | 1931 | A |
| 4 | 5 | 1933 | A |
| 4 | 5 | 1936 | G |
| 4 | 5 | 1952 | C |
| 4 | 5 | 1953 | G |
| 4 | 5 | 1955 | G |
| 4 | 5 | 2102 | C |
| 4 | 5 | 2103 | U |
| 4 | 5 | 2114 | A |
| 4 | 5 | 2115 | C |
| 4 | 5 | 2122 | G |
| 4 | 5 | 2123 | G |
| 4 | 5 | 2127 | A |
| 4 | 5 | 2132 | A |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 4 | 5 | 2141 | U |
| 4 | 5 | 2143 | A |
| 4 | 5 | 2145 | A |
| 4 | 5 | 2146 | A |
| 4 | 5 | 2159 | A |
| 4 | 5 | 2170 | G |
| 4 | 5 | 2172 | G |
| 4 | 5 | 2188 | G |
| 4 | 5 | 2189 | A |
| 4 | 5 | 2193 | C |
| 4 | 5 | 2194 | U |
| 4 | 5 | 2205 | C |
| 4 | 5 | 2206 | U |
| 4 | 5 | 2207 | G |
| 4 | 5 | 2208 | A |
| 4 | 5 | 2210 | U |
| 4 | 5 | 2211 | G |
| 4 | 5 | 2223 | A |
| 4 | 5 | 2224 | A |
| 4 | 5 | 2226 | U |
| 4 | 5 | 2245 | A |
| 4 | 5 | 2247 | G |
| 4 | 5 | 2250 | G |
| 4 | 5 | 2253 | A |
| 4 | 5 | 2257 | A |
| 4 | 5 | 2258 | C |
| 4 | 5 | 2273 | G |
| 4 | 5 | 2274 | G |
| 4 | 5 | 2282 | A |
| 4 | 5 | 2283 | U |
| 4 | 5 | 2284 | G |
| 4 | 5 | 2288 | C |
| 4 | 5 | 2289 | G |
| 4 | 5 | 2308 | G |
| 4 | 5 | 2311 | U |
| 4 | 5 | 2314 | A |
| 4 | 5 | 2315 | U |
| 4 | 5 | 2316 | G |
| 4 | 5 | 2335 | U |
| 4 | 5 | 2337 | U |
| 4 | 5 | 2351 | C |
| 4 | 5 | 2357 | A |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 4 | 5 | 2368 | A |
| 4 | 5 | 2373 | A |
| 4 | 5 | 2374 | A |
| 4 | 5 | 2375 | C |
| 4 | 5 | 2376 | G |
| 4 | 5 | 2389 | U |
| 4 | 5 | 2390 | C |
| 4 | 5 | 2394 | G |
| 4 | 5 | 2398 | A |
| 4 | 5 | 2403 | A |
| 4 | 5 | 2404 | G |
| 4 | 5 | 2405 | A |
| 4 | 5 | 2412 | U |
| 4 | 5 | 2419 | G |
| 4 | 5 | 2420 | A |
| 4 | 5 | 2436 | G |
| 4 | 5 | 2440 | A |
| 4 | 5 | 2447 | U |
| 4 | 5 | 2448 | A |
| 4 | 5 | 2450 | A |
| 4 | 5 | 2453 | G |
| 4 | 5 | 2497 | C |
| 4 | 5 | 2499 | U |
| 4 | 5 | 2500 | U |
| 4 | 5 | 2502 | U |
| 4 | 5 | 2503 | A |
| 4 | 5 | 2506 | U |
| 4 | 5 | 2507 | U |
| 4 | 5 | 2508 | C |
| 4 | 5 | 2509 | U |
| 4 | 5 | 2515 | U |
| 4 | 5 | 2516 | A |
| 4 | 5 | 2523 | G |
| 4 | 5 | 2532 | C |
| 4 | 5 | 2534 | G |
| 4 | 5 | 2538 | U |
| 4 | 5 | 2539 | U |
| 4 | 5 | 2540 | C |
| 4 | 5 | 2541 | A |
| 4 | 5 | 2542 | U |
| 4 | 5 | 2543 | U |
| 4 | 5 | 2547 | C |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 4 | 5 | 2550 | G |
| 4 | 5 | 2551 | U |
| 4 | 5 | 2553 | C |
| 4 | 5 | 2562 | A |
| 4 | 5 | 2570 | A |
| 4 | 5 | 2571 | U |
| 4 | 5 | 2572 | U |
| 4 | 5 | 2573 | C |
| 4 | 5 | 2574 | G |
| 4 | 5 | 2586 | G |
| 4 | 5 | 2588 | U |
| 4 | 5 | 2594 | A |
| 4 | 5 | 2607 | G |
| 4 | 5 | 2608 | G |
| 4 | 5 | 2615 | G |
| 4 | 5 | 2627 | A |
| 4 | 5 | 2630 | U |
| 4 | 5 | 2637 | A |
| 4 | 5 | 2640 | G |
| 4 | 5 | 2653 | U |
| 4 | 5 | 2657 | A |
| 4 | 5 | 2658 | A |
| 4 | 5 | 2675 | A |
| 4 | 5 | 2678 | G |
| 4 | 5 | 2682 | U |
| 4 | 5 | 2690 | A |
| 4 | 5 | 2691 | G |
| 4 | 5 | 2692 | A |
| 4 | 5 | 2697 | A |
| 4 | 5 | 2700 | G |
| 4 | 5 | 2704 | A |
| 4 | 5 | 2705 | A |
| 4 | 5 | 2720 | U |
| 4 | 5 | 2729 | G |
| 4 | 5 | 2730 | U |
| 4 | 5 | 2738 | C |
| 4 | 5 | 2753 | U |
| 4 | 5 | 2754 | G |
| 4 | 5 | 2756 | C |
| 4 | 5 | 2769 | U |
| 4 | 5 | 2778 | G |
| 4 | 5 | 2779 | G |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 4 | 5 | 2797 | G |
| 4 | 5 | 2798 | C |
| 4 | 5 | 2800 | A |
| 4 | 5 | 2801 | G |
| 4 | 5 | 2802 | A |
| 4 | 5 | 2803 | A |
| 4 | 5 | 2804 | A |
| 4 | 5 | 2811 | C |
| 4 | 5 | 2815 | G |
| 4 | 5 | 2817 | G |
| 4 | 5 | 2818 | A |
| 4 | 5 | 2822 | C |
| 4 | 5 | 2843 | U |
| 4 | 5 | 2844 | U |
| 4 | 5 | 2845 | C |
| 4 | 5 | 2846 | A |
| 4 | 5 | 2847 | U |
| 4 | 5 | 2848 | A |
| 4 | 5 | 2850 | C |
| 4 | 5 | 2857 | G |
| 4 | 5 | 2861 | U |
| 4 | 5 | 2872 | G |
| 4 | 5 | 2873 | A |
| 4 | 5 | 2876 | U |
| 4 | 5 | 2887 | U |
| 4 | 5 | 2888 | A |
| 4 | 5 | 2890 | C |
| 4 | 5 | 2899 | G |
| 4 | 5 | 2912 | A |
| 4 | 5 | 2924 | U |
| 4 | 5 | 2929 | C |
| 4 | 5 | 2936 | U |
| 4 | 5 | 2937 | A |
| 4 | 5 | 2939 | G |
| 4 | 5 | 2943 | C |
| 4 | 5 | 2952 | G |
| 4 | 5 | 2972 | A |
| 4 | 5 | 2973 | G |
| 4 | 5 | 2984 | C |
| 4 | 5 | 2991 | G |
| 4 | 5 | 2998 | G |
| 4 | 5 | 3013 | A |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 4 | 5 | 3052 | U |
| 4 | 5 | 3057 | U |
| 4 | 5 | 3060 | G |
| 4 | 5 | 3079 | U |
| 4 | 5 | 3081 | G |
| 4 | 5 | 3087 | A |
| 4 | 5 | 3093 | C |
| 4 | 5 | 3102 | G |
| 4 | 5 | 3110 | G |
| 4 | 5 | 3114 | A |
| 4 | 5 | 3123 | A |
| 4 | 5 | 3130 | A |
| 4 | 5 | 3131 | A |
| 4 | 5 | 3132 | U |
| 4 | 5 | 3143 | A |
| 4 | 5 | 3144 | C |
| 4 | 5 | 3155 | C |
| 4 | 5 | 3156 | U |
| 4 | 5 | 3157 | U |
| 4 | 5 | 3158 | U |
| 4 | 5 | 3166 | A |
| 4 | 5 | 3171 | A |
| 4 | 5 | 3173 | A |
| 4 | 5 | 3174 | G |
| 4 | 5 | 3175 | A |
| 4 | 5 | 3177 | G |
| 4 | 5 | 3180 | U |
| 4 | 5 | 3182 | C |
| 4 | 5 | 3186 | U |
| 4 | 5 | 3188 | A |
| 4 | 5 | 3206 | G |
| 4 | 5 | 3207 | C |
| 4 | 5 | 3208 | U |
| 4 | 5 | 3211 | A |
| 4 | 5 | 3218 | C |
| 4 | 5 | 3219 | A |
| 4 | 5 | 3220 | G |
| 4 | 5 | 3228 | A |
| 4 | 5 | 3230 | G |
| 4 | 5 | 3236 | C |
| 4 | 5 | 3240 | G |
| 4 | 5 | 3244 | A |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 4 | 5 | 3246 | A |
| 4 | 5 | 3248 | G |
| 4 | 5 | 3260 | U |
| 4 | 5 | 3261 | G |
| 4 | 5 | 3271 | U |
| 4 | 5 | 3273 | C |
| 4 | 5 | 3274 | A |
| 4 | 5 | 3277 | G |
| 4 | 5 | 3282 | U |
| 4 | 5 | 3289 | G |
| 4 | 5 | 3290 | G |
| 4 | 5 | 3295 | A |
| 4 | 5 | 3296 | A |
| 4 | 5 | 3305 | U |
| 4 | 5 | 3308 | A |
| 4 | 5 | 3317 | A |
| 4 | 5 | 3319 | G |
| 4 | 5 | 3320 | U |
| 4 | 5 | 3321 | A |
| 4 | 5 | 3335 | U |
| 4 | 5 | 3342 | U |
| 4 | 5 | 3343 | A |
| 4 | 5 | 3346 | G |
| 4 | 5 | 3352 | U |
| 4 | 5 | 3353 | U |
| 4 | 5 | 3354 | G |
| 4 | 5 | 3355 | U |
| 4 | 5 | 3357 | G |
| 4 | 5 | 3364 | U |
| 4 | 5 | 3369 | U |
| 4 | 5 | 3370 | G |
| 4 | 5 | 3376 | A |
| 4 | 5 | 3379 | C |
| 4 | 5 | 3391 | G |
| 4 | 5 | 3397 | U |
| 5 | 6 | 6 | C |
| 5 | 6 | 9 | G |
| 5 | 6 | 16 | U |
| 5 | 6 | 17 | G |
| 5 | 6 | 19 | U |
| 5 | 6 | 21 | A |
| 5 | 6 | 22 | C |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 5 | 6 | 46 | A |
| 5 | 6 | 47 | U |
| 5 | 6 | 48 | U |
| 5 | 6 | 58 | A |
| 5 | 6 | 60 | U |
| 5 | 6 | 73 | G |
| 5 | 6 | 76 | A |

All (70) RNA pucker outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|------|------|
| 1 | 2 | 59 | C |
| 1 | 2 | 68 | A |
| 1 | 2 | 77 | U |
| 1 | 2 | 78 | A |
| 1 | 2 | 139 | C |
| 1 | 2 | 141 | U |
| 1 | 2 | 280 | U |
| 1 | 2 | 322 | G |
| 1 | 2 | 387 | A |
| 1 | 2 | 400 | A |
| 1 | 2 | 539 | G |
| 1 | 2 | 541 | A |
| 1 | 2 | 555 | A |
| 1 | 2 | 639 | U |
| 1 | 2 | 640 | U |
| 1 | 2 | 705 | U |
| 1 | 2 | 711 | U |
| 1 | 2 | 765 | G |
| 1 | 2 | 819 | G |
| 1 | 2 | 912 | U |
| 1 | 2 | 928 | U |
| 1 | 2 | 963 | A |
| 1 | 2 | 1023 | A |
| 1 | 2 | 1226 | A |
| 1 | 2 | 1256 | A |
| 1 | 2 | 1273 | G |
| 1 | 2 | 1274 | C |
| 1 | 2 | 1344 | A |
| 1 | 2 | 1382 | A |
| 1 | 2 | 1430 | U |
| 1 | 2 | 1471 | A |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | 2 | 1534 | G |
| 1 | 2 | 1584 | G |
| 1 | 2 | 1633 | A |
| 1 | 2 | 1636 | C |
| 1 | 2 | 1791 | A |
| 2 | 3 | 85 | G |
| 3 | 4 | 52 | G |
| 4 | 5 | 239 | G |
| 4 | 5 | 282 | G |
| 4 | 5 | 706 | A |
| 4 | 5 | 716 | A |
| 4 | 5 | 764 | G |
| 4 | 5 | 847 | A |
| 4 | 5 | 874 | C |
| 4 | 5 | 917 | G |
| 4 | 5 | 1065 | A |
| 4 | 5 | 1098 | G |
| 4 | 5 | 1356 | A |
| 4 | 5 | 1563 | C |
| 4 | 5 | 1816 | U |
| 4 | 5 | 1817 | A |
| 4 | 5 | 1821 | U |
| 4 | 5 | 2101 | A |
| 4 | 5 | 2102 | C |
| 4 | 5 | 2113 | U |
| 4 | 5 | 2447 | U |
| 4 | 5 | 2496 | C |
| 4 | 5 | 2501 | A |
| 4 | 5 | 2538 | U |
| 4 | 5 | 2542 | U |
| 4 | 5 | 2587 | G |
| 4 | 5 | 2802 | A |
| 4 | 5 | 3122 | U |
| 4 | 5 | 3219 | A |
| 4 | 5 | 3229 | C |
| 4 | 5 | 3270 | U |
| 4 | 5 | 3320 | U |
| 4 | 5 | 3351 | C |
| 4 | 5 | 3352 | U |

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 95 ligands modelled in this entry, 95 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

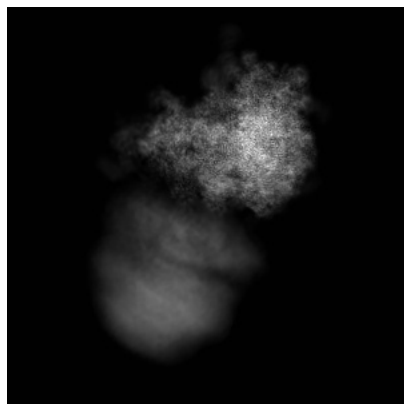
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-14978. These allow visual inspection of the internal detail of the map and identification of artifacts.

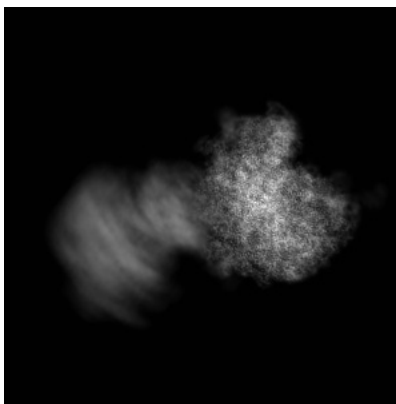
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

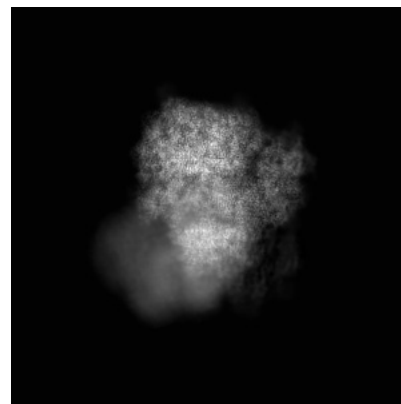
6.1.1 Primary map



X

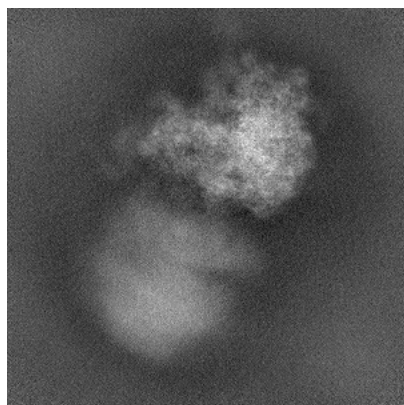


Y

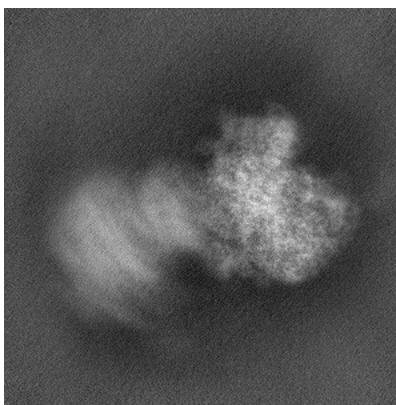


Z

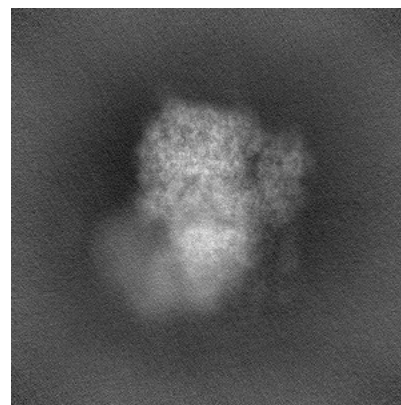
6.1.2 Raw map



X



Y

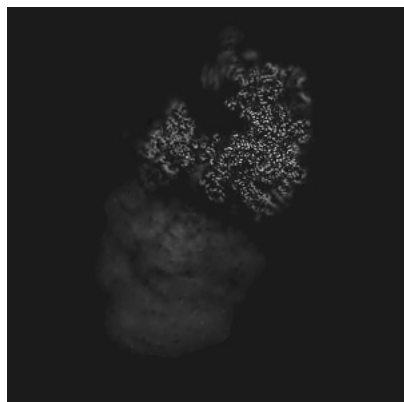


Z

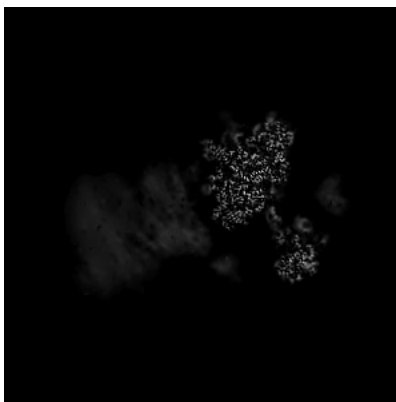
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

6.2.1 Primary map



X Index: 280

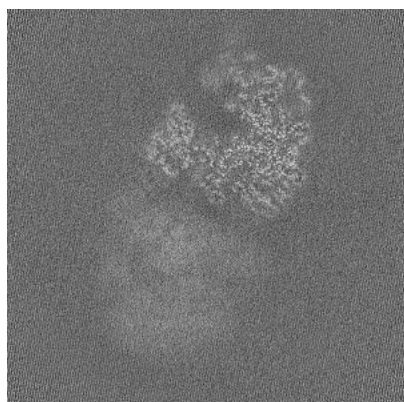


Y Index: 280

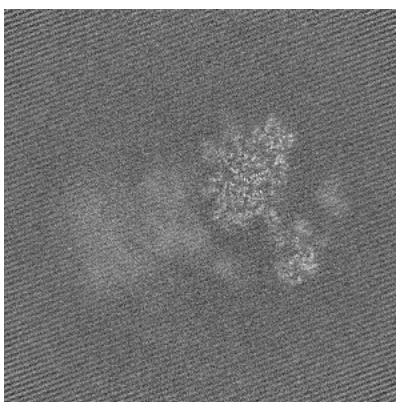


Z Index: 280

6.2.2 Raw map



X Index: 280



Y Index: 280

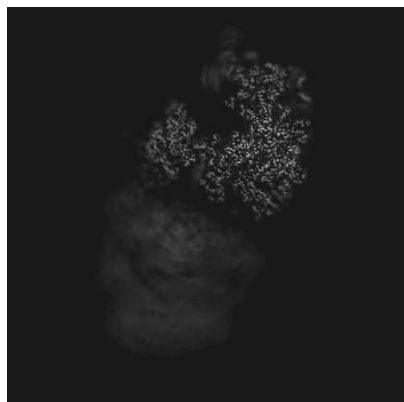


Z Index: 280

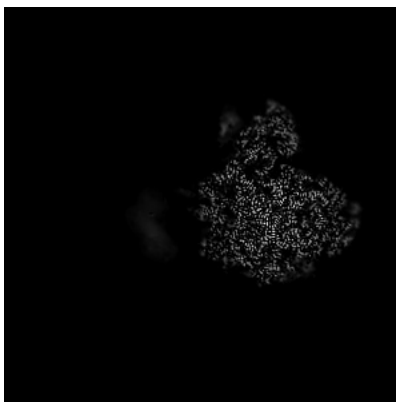
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

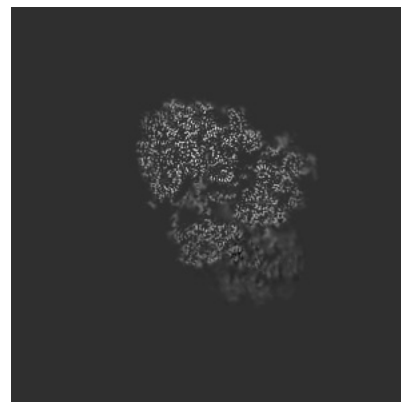
6.3.1 Primary map



X Index: 281

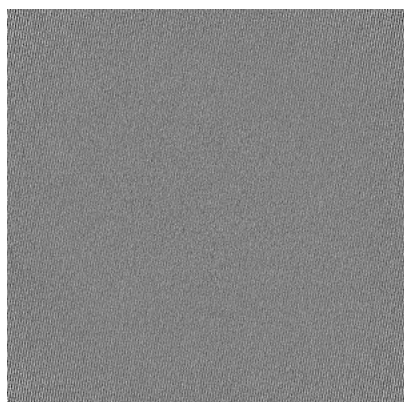


Y Index: 345

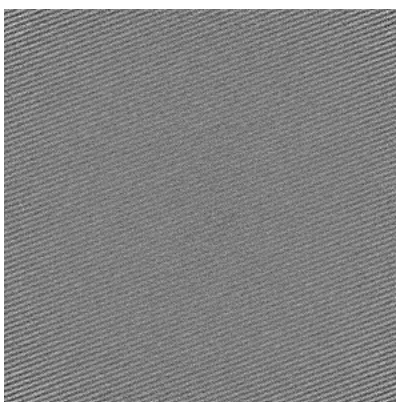


Z Index: 380

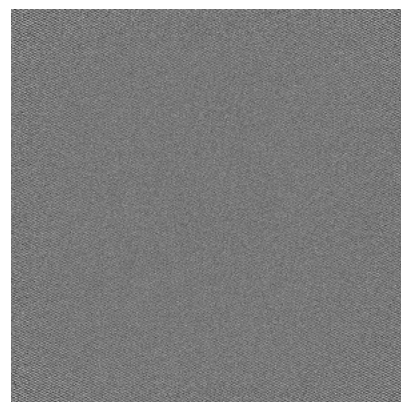
6.3.2 Raw map



X Index: 0



Y Index: 0



Z Index: 0

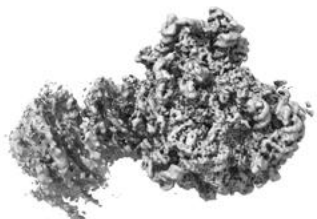
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal surface views [i](#)

6.4.1 Primary map



X



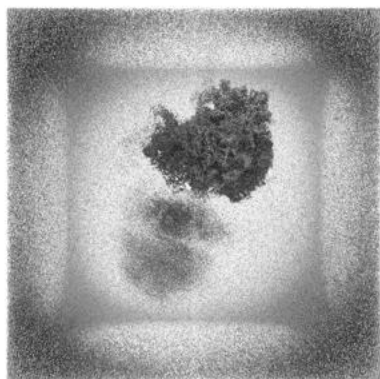
Y



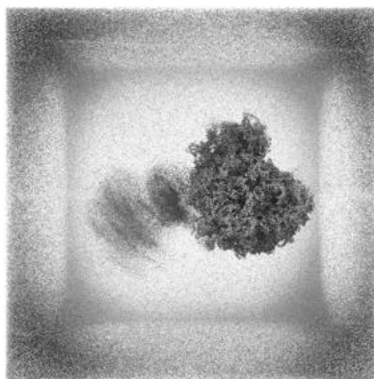
Z

The images above show the 3D surface view of the map at the recommended contour level 0.3. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

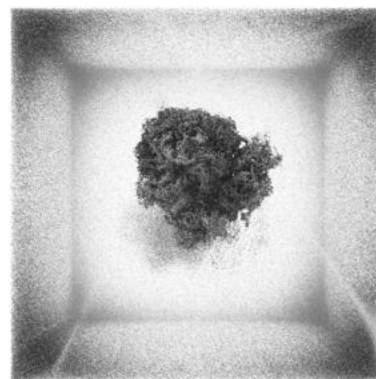
6.4.2 Raw map



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.

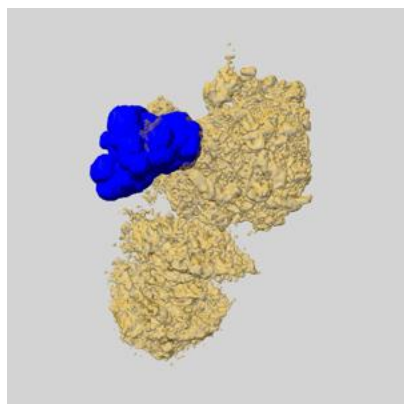
6.5 Mask visualisation [i](#)

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

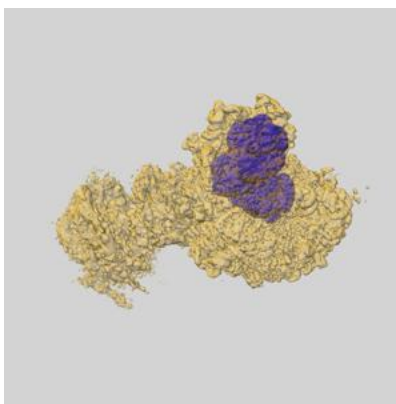
A mask typically either:

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

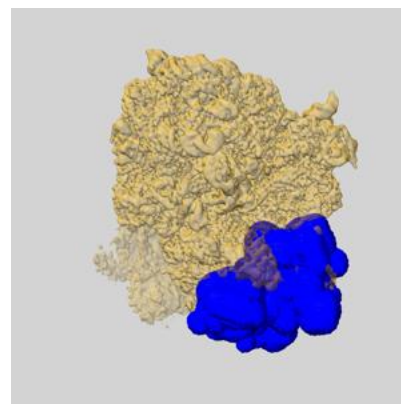
6.5.1 emd_14978_msk_1.map [i](#)



X

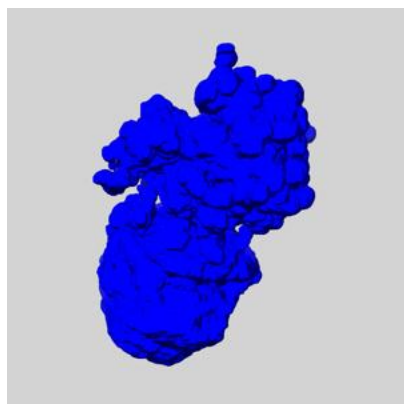


Y

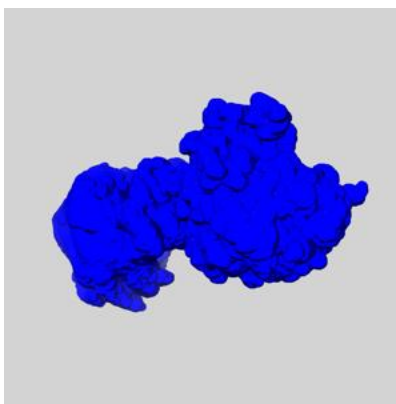


Z

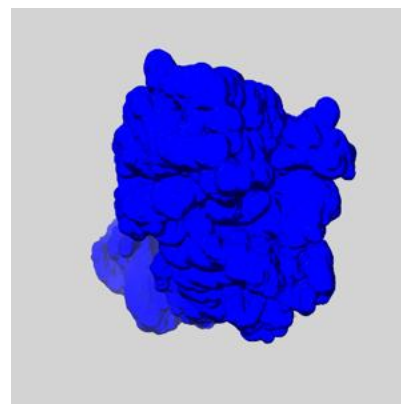
6.5.2 emd_14978_msk_2.map [i](#)



X



Y

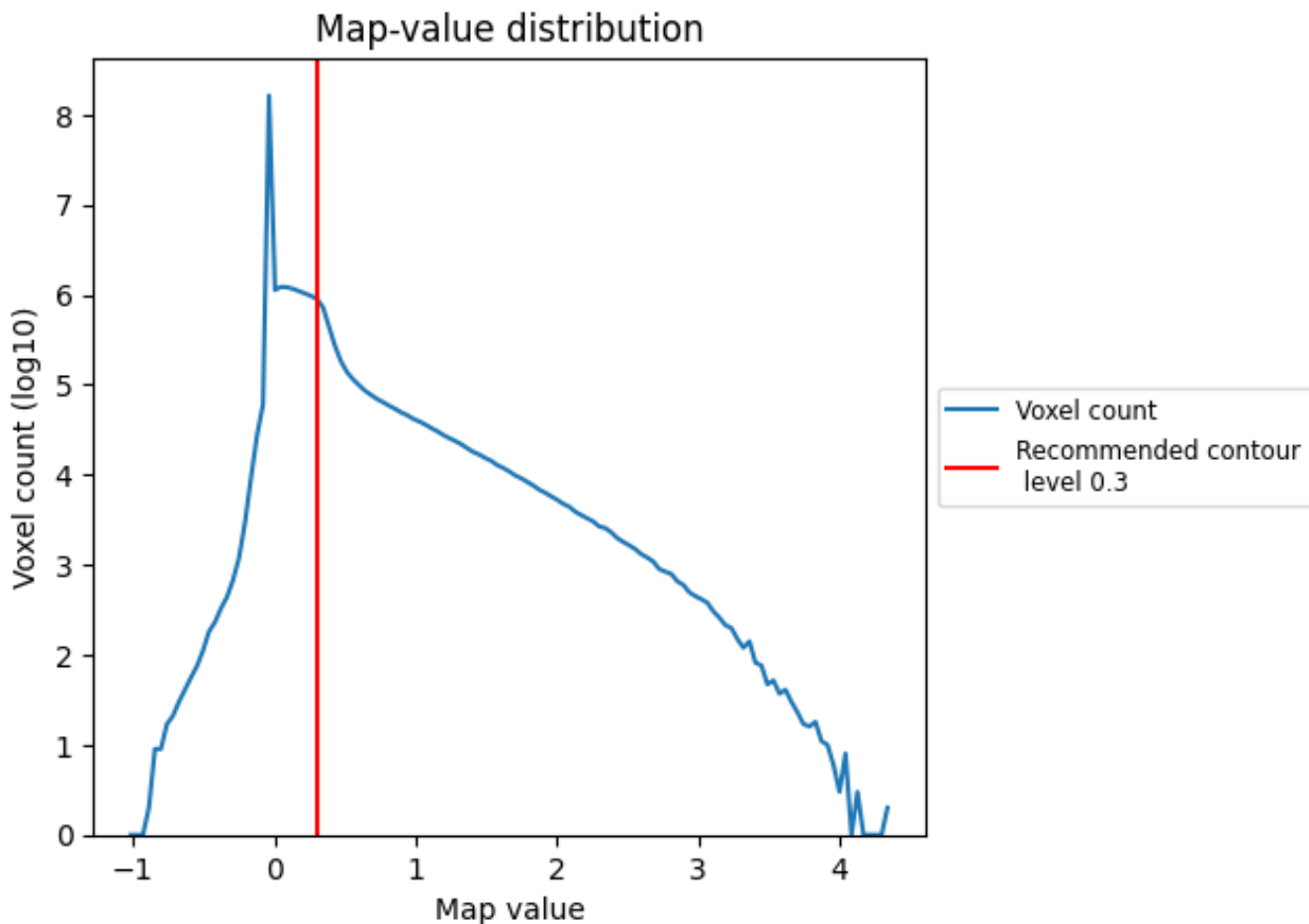


Z

7 Map analysis [i](#)

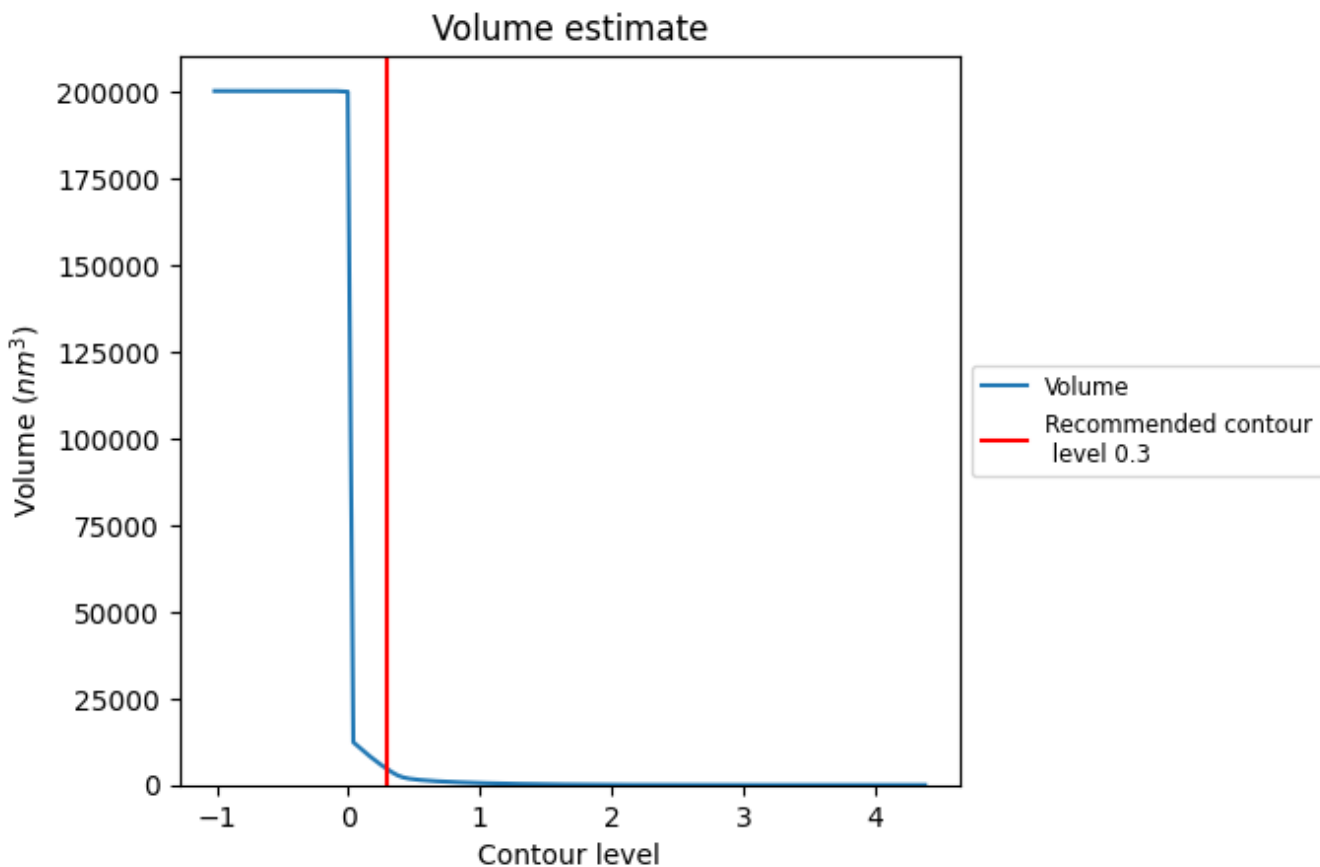
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

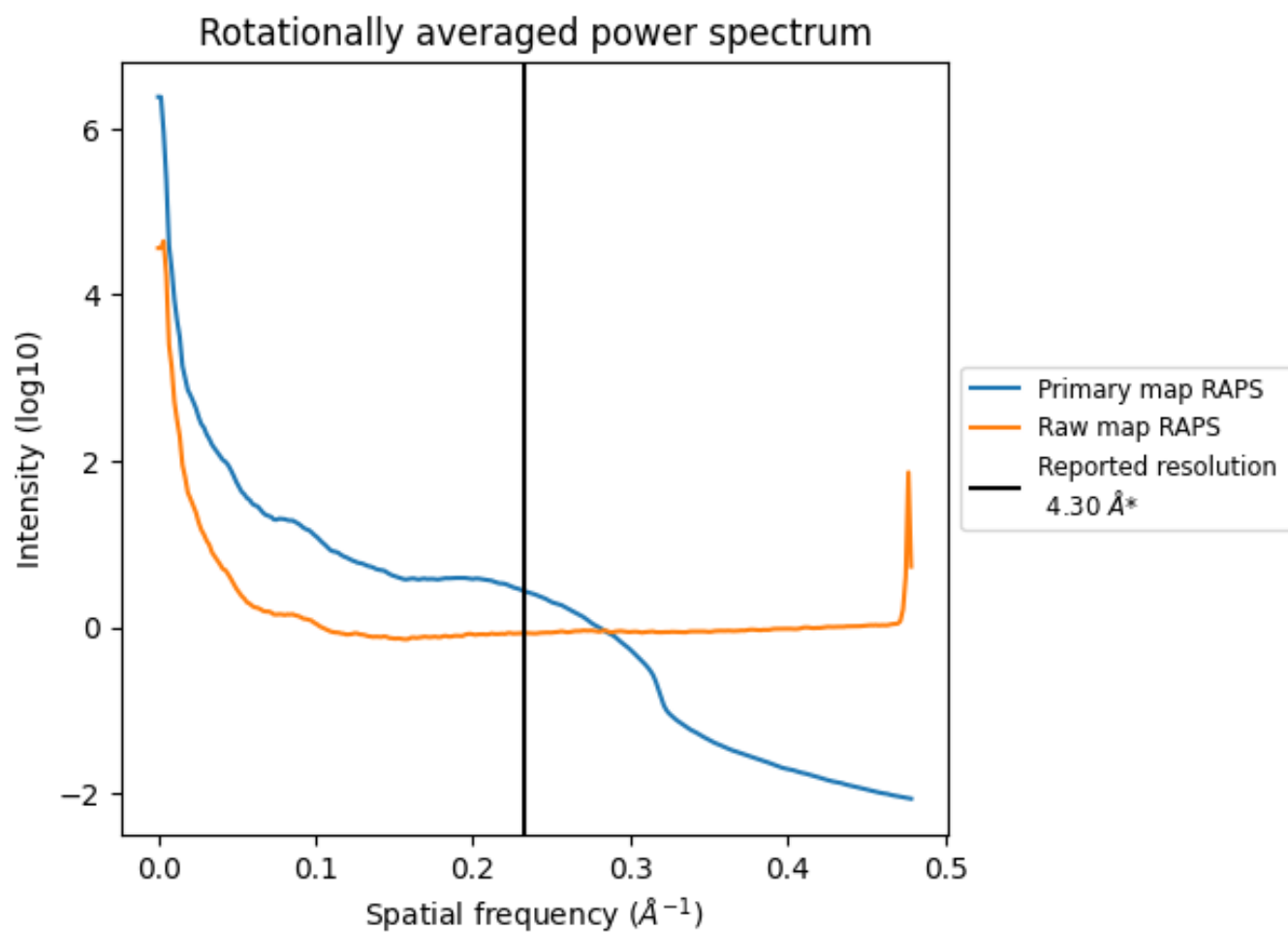
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 4493 nm³; this corresponds to an approximate mass of 4059 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

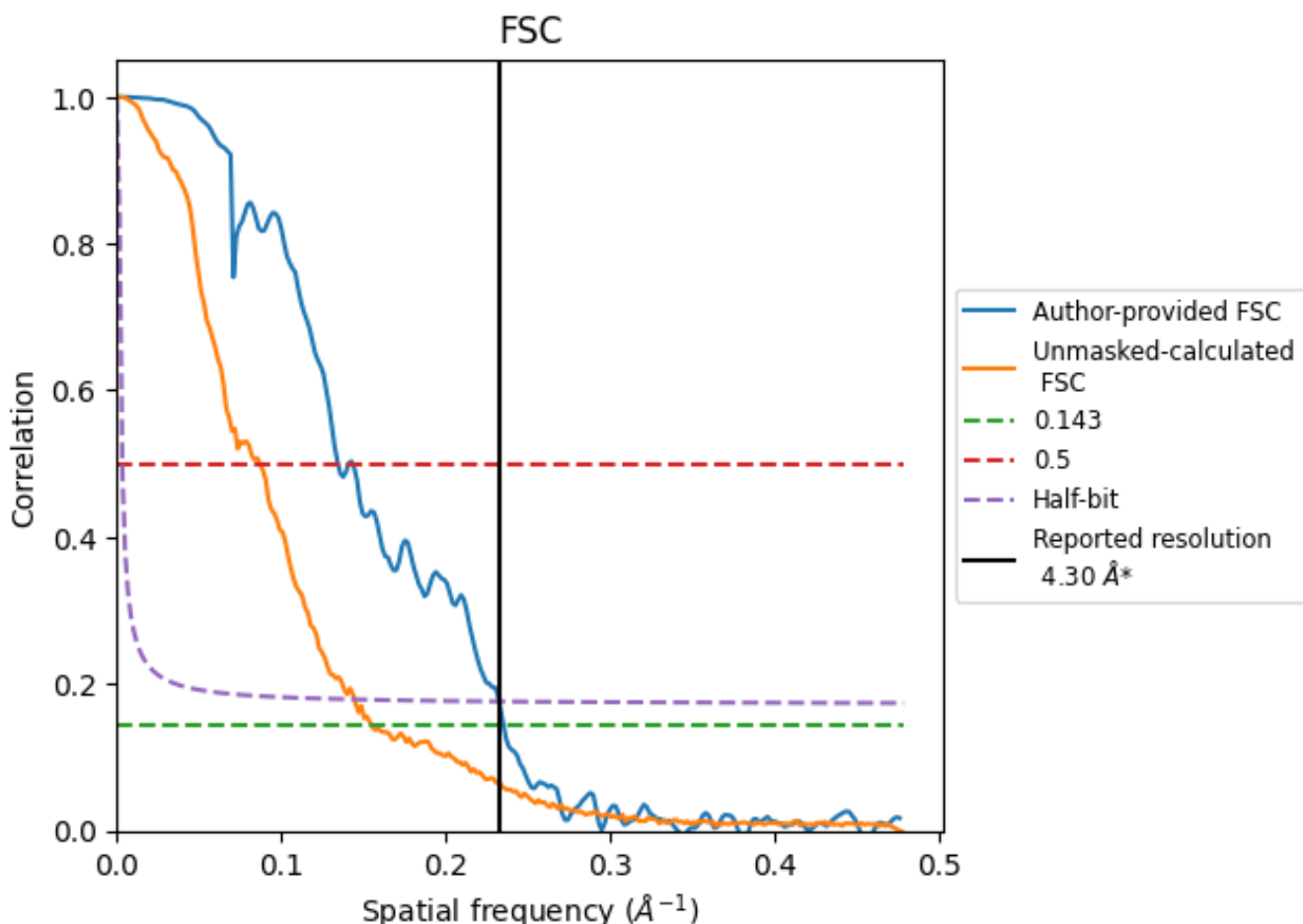


*Reported resolution corresponds to spatial frequency of 0.233 Å⁻¹

8 Fourier-Shell correlation [i](#)

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 [i](#)



*Reported resolution corresponds to spatial frequency of 0.233 Å⁻¹

8.2 Resolution estimates [i](#)

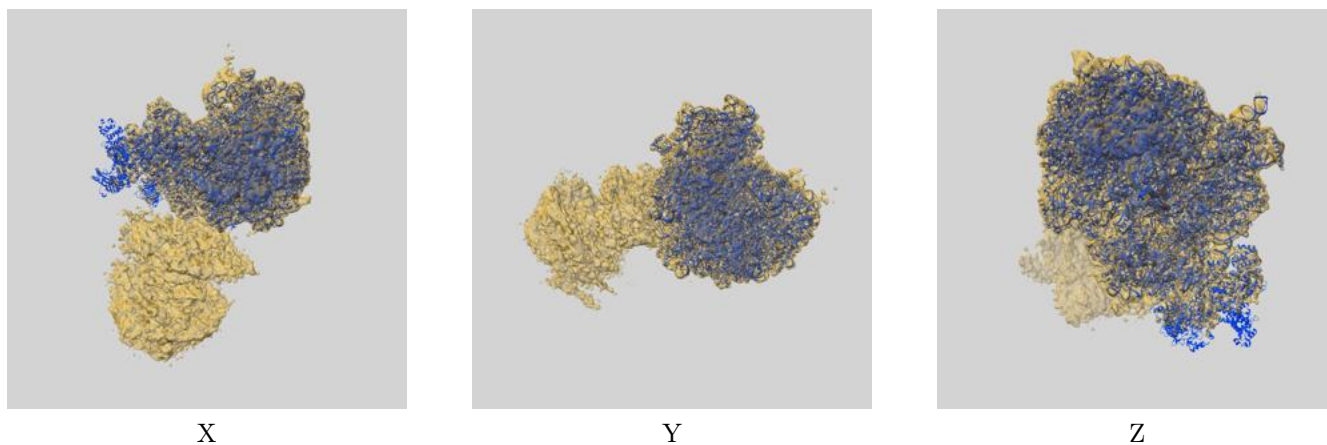
| Resolution estimate (Å) | Estimation criterion (FSC cut-off) | | |
|---------------------------|------------------------------------|-------|----------|
| | 0.143 | 0.5 | Half-bit |
| Reported by author | 4.30 | - | - |
| Author-provided FSC curve | 4.25 | 7.43 | 4.30 |
| Unmasked-calculated* | 6.46 | 11.49 | 6.92 |

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 6.46 differs from the reported value 4.3 by more than 10 %

9 Map-model fit [i](#)

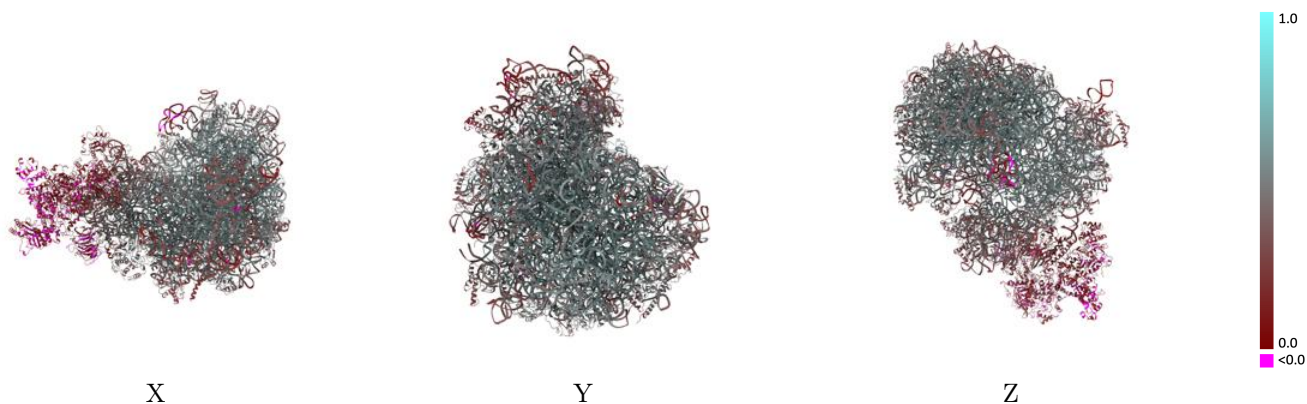
This section contains information regarding the fit between EMDB map EMD-14978 and PDB model 7ZUW. Per-residue inclusion information can be found in section [3](#) on page [19](#).

9.1 Map-model overlay [i](#)



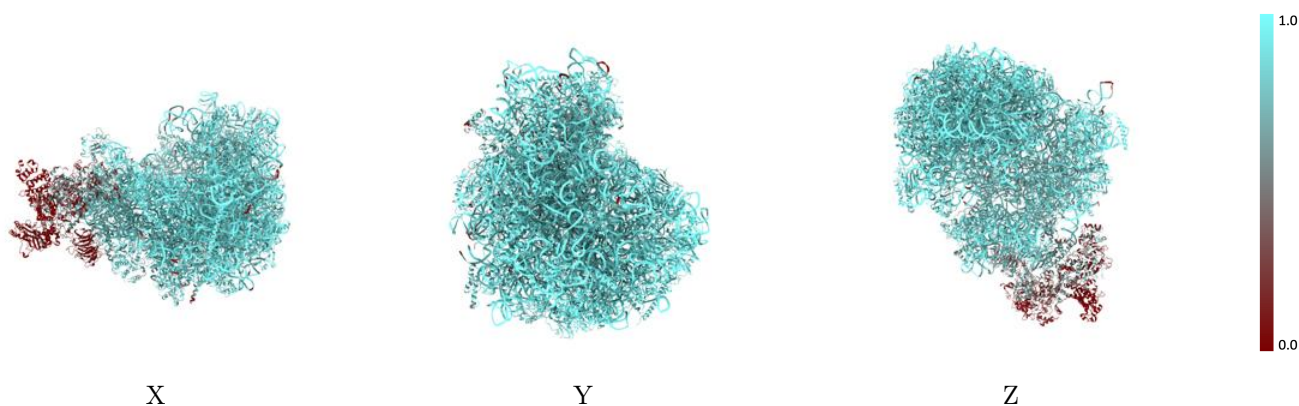
The images above show the 3D surface view of the map at the recommended contour level 0.3 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



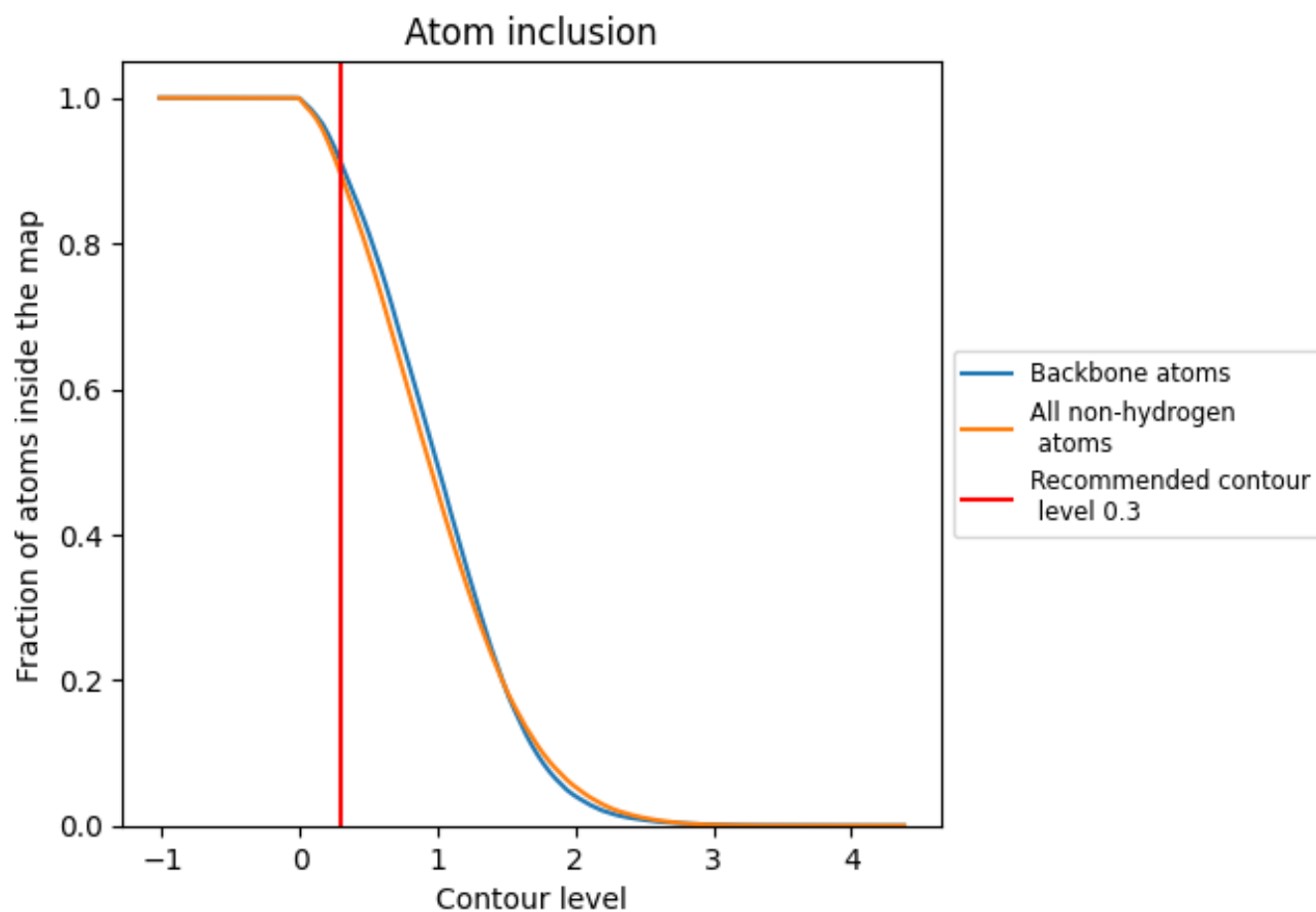
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.3).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 91% of all backbone atoms, 89% 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 (0.3) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion | Q-score |
|-------|--|--|
| All |  0.8942 |  0.4470 |
| 2 |  0.9704 |  0.4490 |
| 3 |  0.9875 |  0.5060 |
| 4 |  0.9934 |  0.4820 |
| 5 |  0.9794 |  0.5100 |
| 6 |  0.9660 |  0.3900 |
| AA |  0.8951 |  0.4260 |
| AB |  0.8511 |  0.4360 |
| AC |  0.9319 |  0.4800 |
| AD |  0.8652 |  0.3930 |
| AE |  0.9535 |  0.4910 |
| AF |  0.8551 |  0.3850 |
| AG |  0.9108 |  0.3870 |
| AH |  0.8331 |  0.3740 |
| AI |  0.9592 |  0.4980 |
| AJ |  0.9496 |  0.4460 |
| AK |  0.8970 |  0.3180 |
| AL |  0.9220 |  0.5140 |
| AM |  0.7538 |  0.2070 |
| AN |  0.9143 |  0.4800 |
| AO |  0.9185 |  0.4910 |
| AP |  0.9101 |  0.3570 |
| AQ |  0.8833 |  0.3830 |
| AR |  0.8232 |  0.3630 |
| AS |  0.9047 |  0.3610 |
| AT |  0.8807 |  0.3400 |
| AU |  0.8862 |  0.3600 |
| AV |  0.9081 |  0.4500 |
| AW |  0.9559 |  0.5190 |
| AX |  0.9698 |  0.5350 |
| AY |  0.9443 |  0.4420 |
| AZ |  0.7326 |  0.3040 |
| Aa |  0.9202 |  0.4790 |
| Ab |  0.8602 |  0.4290 |
| Ac |  0.8013 |  0.4040 |















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| Chain | Atom inclusion | Q-score |
|-------|--|--|
| Ad |  0.9693 |  0.4690 |
| Ae |  0.8838 |  0.4330 |
| Af |  0.8217 |  0.2180 |
| Ag |  0.0695 |  0.1180 |
| BA |  0.9592 |  0.5570 |
| BB |  0.9756 |  0.5300 |
| BC |  0.9672 |  0.5180 |
| BD |  0.9156 |  0.4200 |
| BE |  0.9281 |  0.4320 |
| BF |  0.9673 |  0.5180 |
| BG |  0.8674 |  0.4130 |
| BH |  0.9419 |  0.4780 |
| BI |  0.9415 |  0.4950 |
| BJ |  0.9017 |  0.4000 |
| BK |  0.9449 |  0.4840 |
| BL |  0.9513 |  0.4520 |
| BM |  0.9731 |  0.5520 |
| BN |  0.9696 |  0.5230 |
| BO |  0.9672 |  0.5300 |
| BP |  0.9771 |  0.5400 |
| BQ |  0.9196 |  0.4810 |
| BR |  0.9527 |  0.5150 |
| BS |  0.9653 |  0.5140 |
| BT |  0.9361 |  0.4360 |
| BU |  0.9561 |  0.5600 |
| BV |  0.9415 |  0.4570 |
| BW |  0.9501 |  0.4830 |
| BX |  0.9718 |  0.4800 |
| BY |  0.9169 |  0.4450 |
| BZ |  0.9527 |  0.5280 |
| Ba |  0.9491 |  0.5030 |
| Bb |  0.9352 |  0.4890 |
| Bc |  0.9541 |  0.5040 |
| Bd |  0.9738 |  0.5520 |
| Be |  0.9610 |  0.5490 |
| Bf |  0.9167 |  0.5050 |
| Bg |  0.9512 |  0.4680 |
| Bh |  0.9014 |  0.4400 |
| Bi |  0.9953 |  0.5690 |
| Bj |  0.9165 |  0.4040 |
| Bk |  0.9831 |  0.5650 |
| Bl |  0.9505 |  0.5160 |

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| Chain | Atom inclusion | Q-score |
|-------|--|--|
| Bm |  0.9856 |  0.5870 |
| Bn |  0.9429 |  0.5110 |
| Bo |  0.9388 |  0.5410 |
| CA |  0.3623 |  0.1550 |
| CB |  0.0059 |  0.0480 |
| CC |  0.2122 |  0.1450 |