# Full wwPDB EM Validation Report

Nov 8, 2022 – 10:45 AM JST

| | | |
|---|---|---|
| PDB ID | : | 5ZLU |
| EMDB ID | : | EMD-6934 |
| Title | : | Ribosome Structure bound to ABC-F protein. |
| Authors | : | Su, W.X.; Kumar, V.; Ero, R.; Andrew, S.W.W.; Jian, S.; Yong-Gui, G. |
| Deposited on | : | 2018-03-29 |
| Resolution | : | 3.60 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.

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

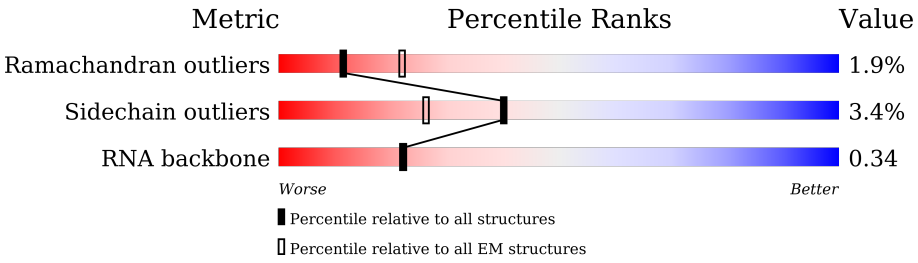
| | | |
|---|---|---|
| EMDB validation analysis | : | 0.0.1.dev43 |
| Mogul | : | 1.8.5 (274361), CSD as541be (2020) |
| MolProbity | : | 4.02b-467 |
| buster-report | : | 1.1.7 (2018) |
| Percentile statistics | : | 20191225.v01 (using entries in the PDB archive December 25th 2019) |
| MapQ | : | 1.9.9 |
| Ideal geometry (proteins) | : | Engh & Huber (2001) |
| Ideal geometry (DNA, RNA) | : | Parkinson et al. (1996) |
| Validation Pipeline (wwPDB-VP) | : | 2.31.2 |

# 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 3.60 Å.

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




| Metric | Whole archive (#Entries) | EM structures (#Entries) |
|---|---|---|
| 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 <=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 | W | 25 | 24% 72% |
| 2 | A | 104 | 90% 7% |
| 3 | B | 73 | 12% 96% |
| 4 | C | 106 | 91% 7% |
| 5 | D | 93 | 5% 84% 12% |
| 6 | E | 105 | 10% 89% 7% |
| 7 | F | 27 | 7% 89% 11% |
| 8 | G | 1514 | 64% 32% |

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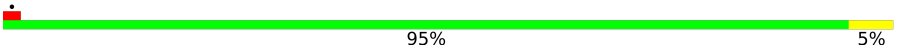
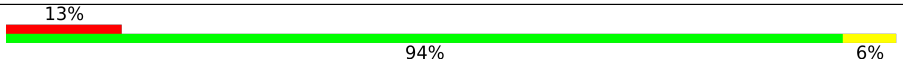
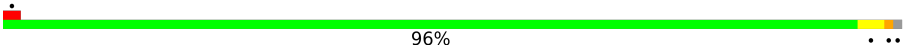
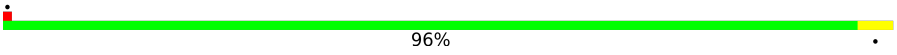
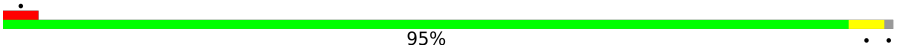
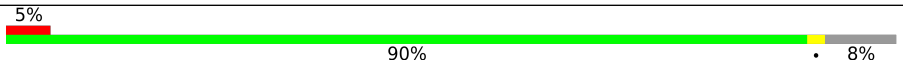
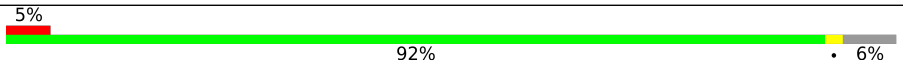
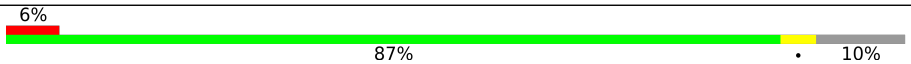
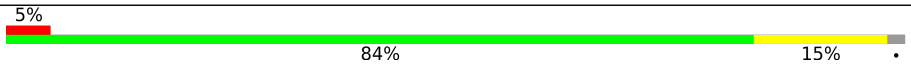
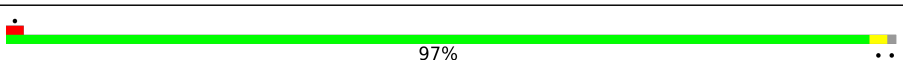
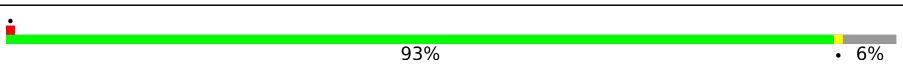
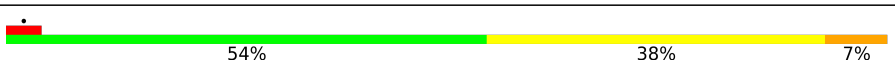
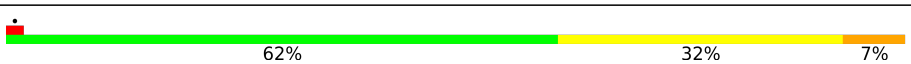
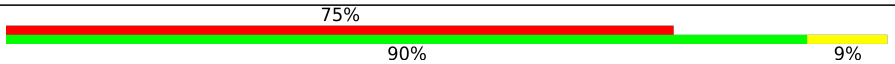
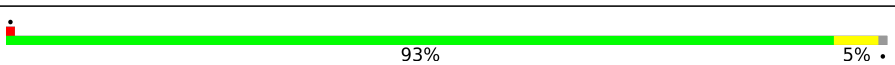
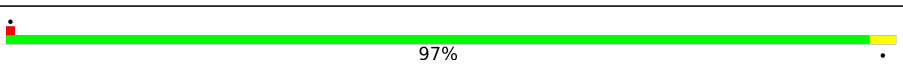
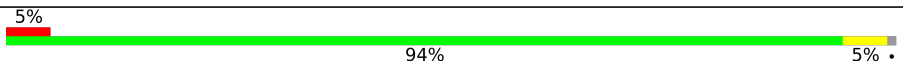
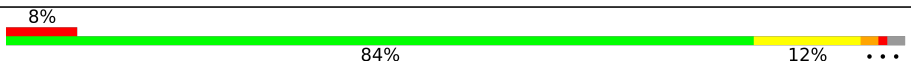
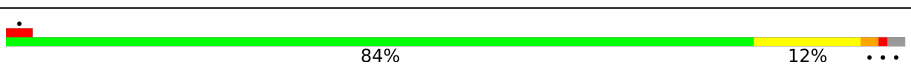
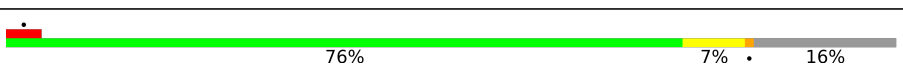
| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 9 | H | 256 |   |
| 10 | I | 239 |   |
| 11 | J | 209 |   |
| 12 | K | 162 |   |
| 13 | L | 101 |   |
| 14 | M | 156 |   |
| 15 | N | 138 |   |
| 16 | O | 128 |   |
| 17 | P | 129 |   |
| 18 | Q | 132 |   |
| 19 | R | 126 |   |
| 20 | S | 61 |   |
| 21 | T | 89 |   |
| 22 | U | 88 |   |
| 23 | V | 2875 |   |
| 24 | X | 123 |   |
| 25 | Y | 229 |   |
| 26 | Z | 276 |   |
| 27 | a | 206 |   |
| 28 | b | 210 |   |
| 29 | c | 182 |   |
| 30 | d | 180 |   |
| 31 | e | 173 |   |
| 32 | f | 147 |   |
| 33 | g | 140 |   |

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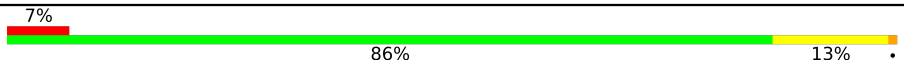
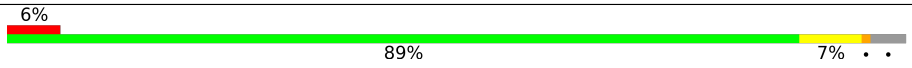
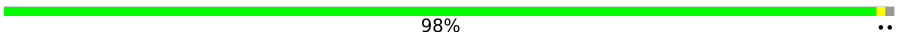
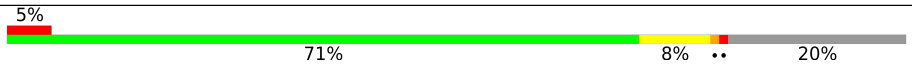
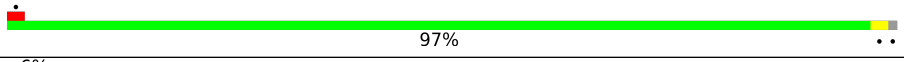
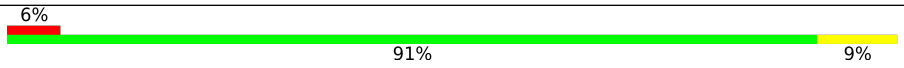
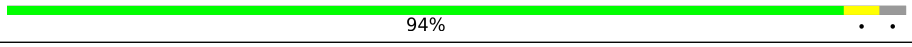
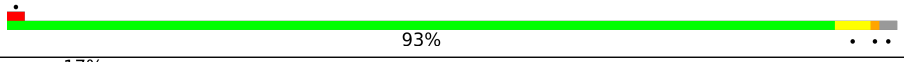
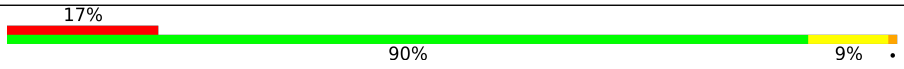
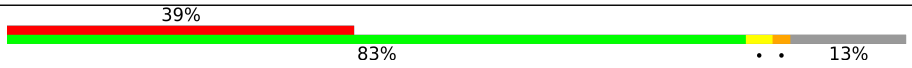
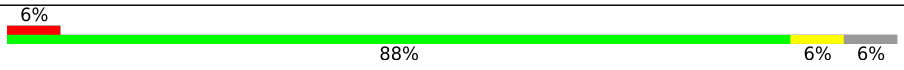
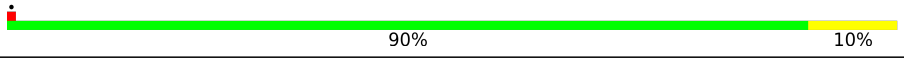
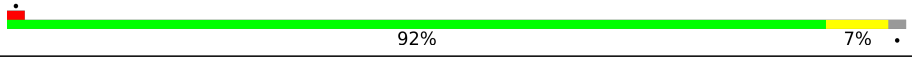
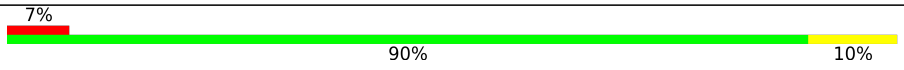
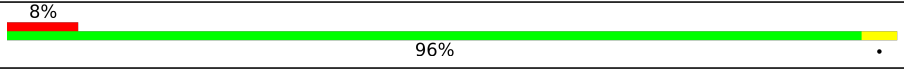
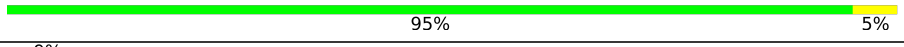
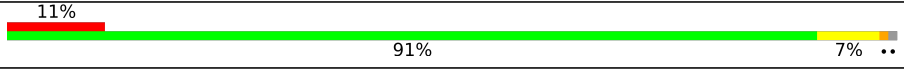
| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 34 | h | 122 |   |
| 35 | i | 150 |   |
| 36 | j | 141 |   |
| 37 | k | 118 |   |
| 38 | l | 112 |   |
| 39 | m | 146 |   |
| 40 | n | 118 |   |
| 41 | o | 101 |   |
| 42 | p | 113 |   |
| 43 | q | 96 |   |
| 44 | r | 110 |   |
| 45 | s | 206 |   |
| 46 | t | 85 |   |
| 47 | u | 67 |   |
| 48 | v | 60 |   |
| 49 | CC | 71 |   |
| 49 | w | 71 |   |
| 50 | x | 60 |   |
| 51 | y | 54 |   |
| 52 | z | 49 |   |
| 53 | AA | 65 |   |
| 54 | BB | 37 |   |
| 55 | DD | 77 |   |
| 56 | EE | 497 |   |

# 2 Entry composition

There are 58 unique types of molecules in this entry. The entry contains 150313 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 RNA (25-mer).

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | P | | |
| 1 | W | 7 | 149 | 67 | 26 | 49 | 7 | 0 | 0 |

- Molecule 2 is a protein called 30S ribosomal protein S17.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | S | | |
| 2 | A | 97 | 808 | 519 | 149 | 138 | 2 | 0 | 0 |

- Molecule 3 is a protein called 30S ribosomal protein S18.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | | |
| 3 | B | 73 | 597 | 380 | 118 | 99 | 0 | 0 |

- Molecule 4 is a protein called 30S ribosomal protein S20.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | S | | |
| 4 | C | 99 | 763 | 470 | 162 | 129 | 2 | 0 | 0 |

- Molecule 5 is a protein called 30S ribosomal protein S19.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | S | | |
| 5 | D | 82 | 656 | 419 | 121 | 113 | 3 | 0 | 1 |

- Molecule 6 is a protein called 30S ribosomal protein S10.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | S | | |
| 6 | E | 98 | 794 | 499 | 156 | 138 | 1 | 0 | 0 |

- Molecule 7 is a protein called 30S ribosomal protein Thx.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 7 | F | 24 | Total | C | N | O | 0 | 0 |
| | | | 208 | 128 | 50 | 30 | | |

- Molecule 8 is a RNA chain called 16S ribosomal RNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 8 | G | 1514 | Total | C | N | O | P | 0 | 0 |
| | | | 32534 | 14481 | 6019 | 10520 | 1514 | | |

- Molecule 9 is a protein called 30S ribosomal protein S2.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 9 | H | 222 | Total | C | N | O | S | 0 | 0 |
| | | | 1810 | 1154 | 328 | 323 | 5 | | |

- Molecule 10 is a protein called 30S ribosomal protein S3.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 10 | I | 206 | Total | C | N | O | S | 0 | 0 |
| | | | 1612 | 1016 | 314 | 281 | 1 | | |

- Molecule 11 is a protein called 30S ribosomal protein S4.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 11 | J | 208 | Total | C | N | O | S | 0 | 0 |
| | | | 1703 | 1066 | 339 | 291 | 7 | | |

- Molecule 12 is a protein called 30S ribosomal protein S5.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 12 | K | 150 | Total | C | N | O | S | 0 | 0 |
| | | | 1146 | 724 | 217 | 201 | 4 | | |

- Molecule 13 is a protein called 30S ribosomal protein S6.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 13 | L | 101 | Total | C | N | O | S | 0 | 0 |
| | | | 843 | 531 | 155 | 154 | 3 | | |

- Molecule 14 is a protein called 30S ribosomal protein S7.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 14 | M | 155 | Total | C | N | O | S | 0 | 0 |
| | | | 1257 | 781 | 252 | 218 | 6 | | |

- Molecule 15 is a protein called 30S ribosomal protein S8.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 15 | N | 138 | Total | C | N | O | S | 0 | 0 |
| | | | 1116 | 705 | 215 | 193 | 3 | | |

- Molecule 16 is a protein called 30S ribosomal protein S9.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 16 | O | 127 | Total | C | N | O | 0 | 0 |
| | | | 1010 | 639 | 197 | 174 | | |

- Molecule 17 is a protein called 30S ribosomal protein S11.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 17 | P | 119 | Total | C | N | O | S | 0 | 0 |
| | | | 885 | 549 | 168 | 165 | 3 | | |

- Molecule 18 is a protein called 30S ribosomal protein S12.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 18 | Q | 124 | Total | C | N | O | S | 0 | 0 |
| | | | 970 | 611 | 195 | 163 | 1 | | |

- Molecule 19 is a protein called 30S ribosomal protein S13.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 19 | R | 114 | Total | C | N | O | S | 0 | 0 |
| | | | 914 | 565 | 189 | 158 | 2 | | |

- Molecule 20 is a protein called 30S ribosomal protein S14 type Z.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 20 | S | 60 | Total | C | N | O | S | 0 | 0 |
| | | | 492 | 312 | 104 | 72 | 4 | | |

- Molecule 21 is a protein called 30S ribosomal protein S15.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 21 | T | 88 | Total | C | N | O | S | 0 | 0 |
| | | | 734 | 459 | 147 | 126 | 2 | | |

- Molecule 22 is a protein called 30S ribosomal protein S16.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 22 | U | 83 | Total | C | N | O | S | 0 | 0 |
| | | | 700 | 443 | 139 | 117 | 1 | | |

- Molecule 23 is a RNA chain called 23S ribosomal RNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 23 | V | 2875 | Total | C | N | O | P | 0 | 0 |
| | | | 61917 | 27558 | 11575 | 19909 | 2875 | | |

- Molecule 24 is a RNA chain called 5S ribosomal RNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 24 | X | 123 | Total | C | N | O | P | 0 | 0 |
| | | | 2641 | 1175 | 488 | 855 | 123 | | |

- Molecule 25 is a protein called 50S ribosomal protein L1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 25 | Y | 228 | Total | C | N | O | S | 0 | 0 |
| | | | 1742 | 1102 | 318 | 319 | 3 | | |

- Molecule 26 is a protein called 50S ribosomal protein L2.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 26 | Z | 273 | Total | C | N | O | S | 0 | 0 |
| | | | 2126 | 1341 | 424 | 358 | 3 | | |

- Molecule 27 is a protein called 50S ribosomal protein L3.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 27 | a | 206 | Total | C | N | O | S | 0 | 0 |
| | | | 1578 | 997 | 302 | 273 | 6 | | |

- Molecule 28 is a protein called 50S ribosomal protein L4.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 28 | b | 208 | Total | C | N | O | S | 0 | 0 |
| | | | 1625 | 1034 | 303 | 286 | 2 | | |

- Molecule 29 is a protein called 50S ribosomal protein L5.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 29 | c | 179 | Total | C | N | O | S | 0 | 0 |
| | | | 1455 | 929 | 266 | 256 | 4 | | |

- Molecule 30 is a protein called 50S ribosomal protein L6.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 30 | d | 176 | Total | C | N | O | S | 0 | 0 |
| | | | 1335 | 847 | 250 | 237 | 1 | | |

- Molecule 31 is a protein called 50S ribosomal protein L10.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 31 | e | 126 | Total | C | N | O | 0 | 0 |
| | | | 621 | 369 | 126 | 126 | | |

- Molecule 32 is a protein called 50S ribosomal protein L11.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 32 | f | 134 | Total | C | N | O | S | 0 | 0 |
| | | | 993 | 632 | 175 | 181 | 5 | | |

- Molecule 33 is a protein called 50S ribosomal protein L13.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 33 | g | 117 | Total | C | N | O | S | 0 | 0 |
| | | | 931 | 603 | 171 | 154 | 3 | | |

- Molecule 34 is a protein called 50S ribosomal protein L14.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 34 | h | 122 | Total | C | N | O | S | 0 | 0 |
| | | | 932 | 587 | 171 | 170 | 4 | | |

- Molecule 35 is a protein called 50S ribosomal protein L15.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 35 | i | 145 | Total | C | N | O | S | 0 | 0 |
| | | | 1108 | 689 | 226 | 191 | 2 | | |

- Molecule 36 is a protein called 50S ribosomal protein L16.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 36 | j | 136 | Total | C | N | O | S | 0 | 0 |
| | | | 1080 | 688 | 204 | 183 | 5 | | |

- Molecule 37 is a protein called 50S ribosomal protein L17.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 37 | k | 117 | Total | C | N | O | 0 | 0 |
| | | | 960 | 599 | 202 | 159 | | |

- Molecule 38 is a protein called 50S ribosomal protein L18.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 38 | l | 110 | Total | C | N | O | 0 | 0 |
| | | | 877 | 553 | 175 | 149 | | |

- Molecule 39 is a protein called 50S ribosomal protein L19.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 39 | m | 117 | Total | C | N | O | S | 0 | 0 |
| | | | 976 | 614 | 197 | 164 | 1 | | |

- Molecule 40 is a protein called 50S ribosomal protein L20.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 40 | n | 117 | Total | C | N | O | S | 0 | 0 |
| | | | 964 | 610 | 202 | 151 | 1 | | |

- Molecule 41 is a protein called 50S ribosomal protein L21.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 41 | o | 101 | Total | C | N | O | S | 0 | 0 |
| | | | 779 | 501 | 142 | 135 | 1 | | |

- Molecule 42 is a protein called 50S ribosomal protein L22.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 42 | p | 110 | Total | C | N | O | S | 0 | 0 |
| | | | 876 | 552 | 171 | 151 | 2 | | |

- Molecule 43 is a protein called 50S ribosomal protein L23.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 43 | q | 94 | Total | C | N | O | 0 | 0 |
| | | | 742 | 483 | 133 | 126 | | |

- Molecule 44 is a protein called 50S ribosomal protein L24.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 44 | r | 110 | Total | C | N | O | S | 0 | 0 |
| | | | 844 | 539 | 158 | 141 | 6 | | |

- Molecule 45 is a protein called 50S ribosomal protein L25.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 45 | s | 180 | Total | C | N | O | S | 0 | 0 |
| | | | 1435 | 916 | 256 | 260 | 3 | | |

- Molecule 46 is a protein called 50S ribosomal protein L27.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 46 | t | 80 | Total | C | N | O | S | 0 | 0 |
| | | | 629 | 389 | 132 | 107 | 1 | | |

- Molecule 47 is a protein called 50S ribosomal protein L29.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 47 | u | 67 | Total | C | N | O | S | 0 | 0 |
| | | | 567 | 350 | 116 | 99 | 2 | | |

- Molecule 48 is a protein called 50S ribosomal protein L30.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 48 | v | 59 | Total | C | N | O | 0 | 0 |
| | | | 469 | 298 | 90 | 81 | | |

- Molecule 49 is a protein called 50S ribosomal protein L31.

| Mol | Chain | Residues | Atoms | AltConf | Trace |
|---|---|---|---|---|---|
| 49 | w | 71 | Total C N O S<br>581 364 108 104 5 | 0 | 0 |
| 49 | CC | 32 | Total C N O<br>157 93 32 32 | 0 | 0 |

- Molecule 50 is a protein called 50S ribosomal protein L32.

| Mol | Chain | Residues | Atoms | AltConf | Trace |
|---|---|---|---|---|---|
| 50 | x | 57 | Total C N O S<br>445 279 87 74 5 | 0 | 0 |

- Molecule 51 is a protein called 50S ribosomal protein L33.

| Mol | Chain | Residues | Atoms | AltConf | Trace |
|---|---|---|---|---|---|
| 51 | y | 49 | Total C N O S<br>422 262 87 69 4 | 0 | 0 |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| y | 7 | LEU | ILE | see sequence details | UNP P35871 |

- Molecule 52 is a protein called 50S ribosomal protein L34.

| Mol | Chain | Residues | Atoms | AltConf | Trace |
|---|---|---|---|---|---|
| 52 | z | 49 | Total C N O S<br>430 263 108 57 2 | 0 | 0 |

- Molecule 53 is a protein called 50S ribosomal protein L35.

| Mol | Chain | Residues | Atoms | AltConf | Trace |
|---|---|---|---|---|---|
| 53 | AA | 64 | Total C N O S<br>515 331 102 79 3 | 0 | 0 |

- Molecule 54 is a protein called 50S ribosomal protein L36.

| Mol | Chain | Residues | Atoms | AltConf | Trace |
|---|---|---|---|---|---|
| 54 | BB | 37 | Total C N O S<br>307 188 68 47 4 | 0 | 0 |

- Molecule 55 is a RNA chain called P-site tRNA.

| Mol | Chain | Residues | Atoms | | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|---|
| 55 | DD | 77 | Total | C | N | O | P | S | 0 | 0 |
| | | | 1648 | 736 | 301 | 533 | 77 | 1 | | |

- Molecule 56 is a protein called Macrolide efflux protein.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 56 | EE | 490 | Total | C | N | O | S | 0 | 0 |
| | | | 3841 | 2415 | 668 | 742 | 16 | | |

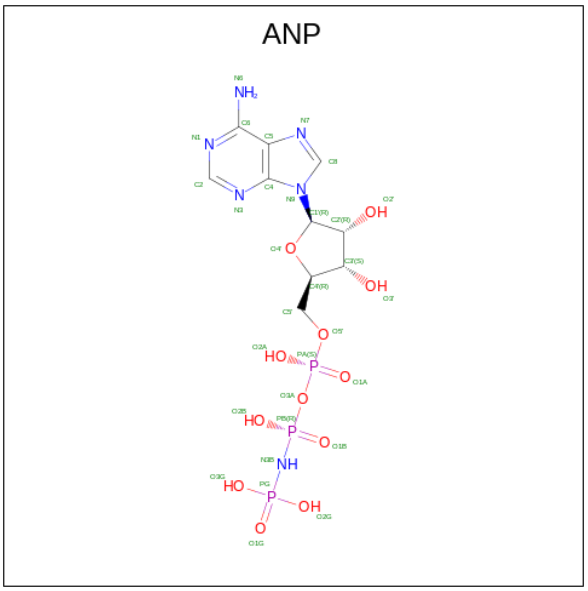
There are 6 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| EE | 492 | HIS | - | expression tag | UNP A0A1I9WCL8 |
| EE | 493 | HIS | - | expression tag | UNP A0A1I9WCL8 |
| EE | 494 | HIS | - | expression tag | UNP A0A1I9WCL8 |
| EE | 495 | HIS | - | expression tag | UNP A0A1I9WCL8 |
| EE | 496 | HIS | - | expression tag | UNP A0A1I9WCL8 |
| EE | 497 | HIS | - | expression tag | UNP A0A1I9WCL8 |

- Molecule 57 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

| Mol | Chain | Residues | Atoms | | AltConf |
|---|---|---|---|---|---|
| 57 | Z | 1 | Total | Mg | 0 |
| | | | 1 | 1 | |
| 57 | i | 1 | Total | Mg | 0 |
| | | | 1 | 1 | |

- Molecule 58 is PHOSPHOAMINOPHOSPHONIC ACID-ADENYLATE ESTER (three-letter code: ANP) (formula: $C_{10}H_{17}N_6O_{12}P_3$).



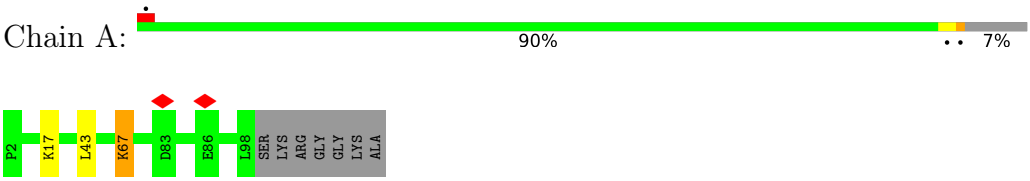

| Mol | Chain | Residues | Atoms | | | | | AltConf |
|---|---|---|---|---|---|---|---|---|
| 58 | EE | 1 | Total | C | N | O | P | 0 |
| | | | 62 | 20 | 12 | 24 | 6 | |
| 58 | EE | 1 | Total | C | N | O | P | 0 |
| | | | 62 | 20 | 12 | 24 | 6 | |

# 3 Residue-property plots (i)

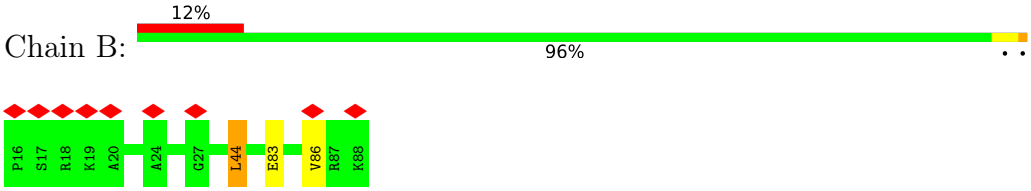
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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: RNA (25-mer)

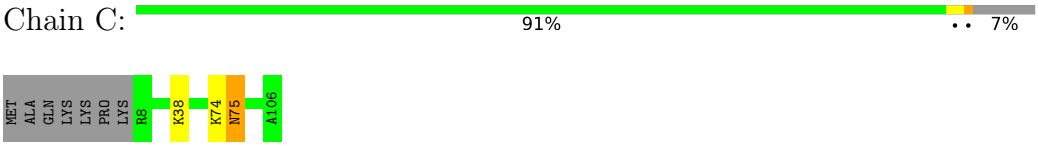

• Molecule 2: 30S ribosomal protein S17



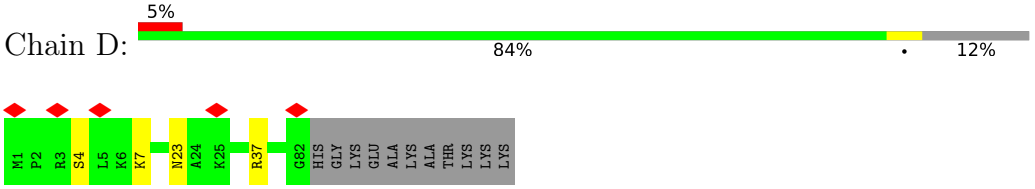

• Molecule 3: 30S ribosomal protein S18




• Molecule 4: 30S ribosomal protein S20

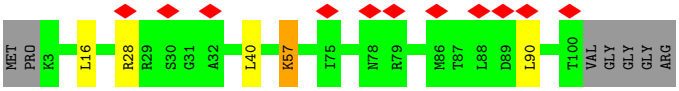



• Molecule 5: 30S ribosomal protein S19



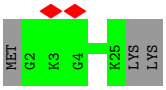
• Molecule 6: 30S ribosomal protein S10

Chain E:

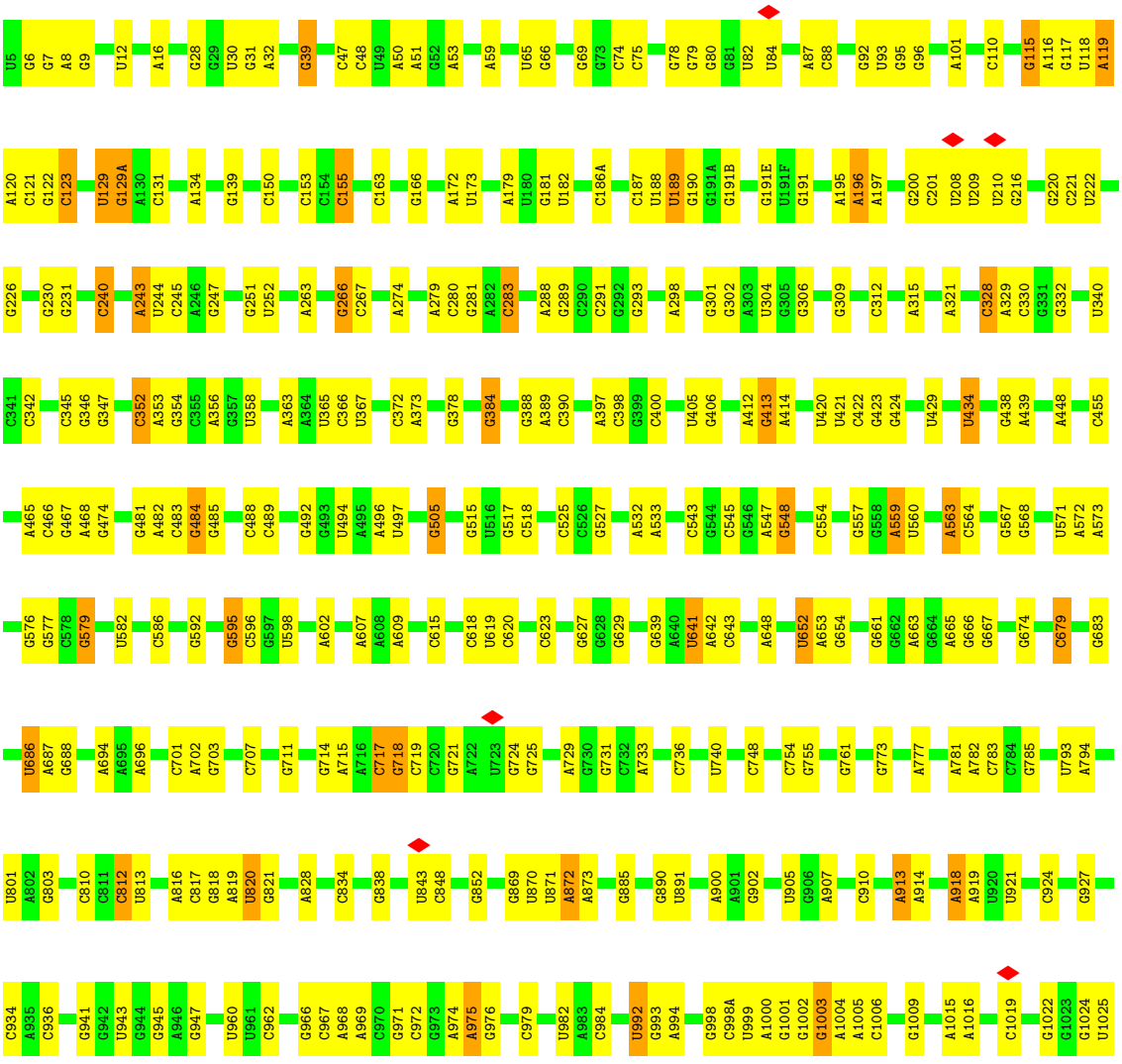

• Molecule 7: 30S ribosomal protein Thx

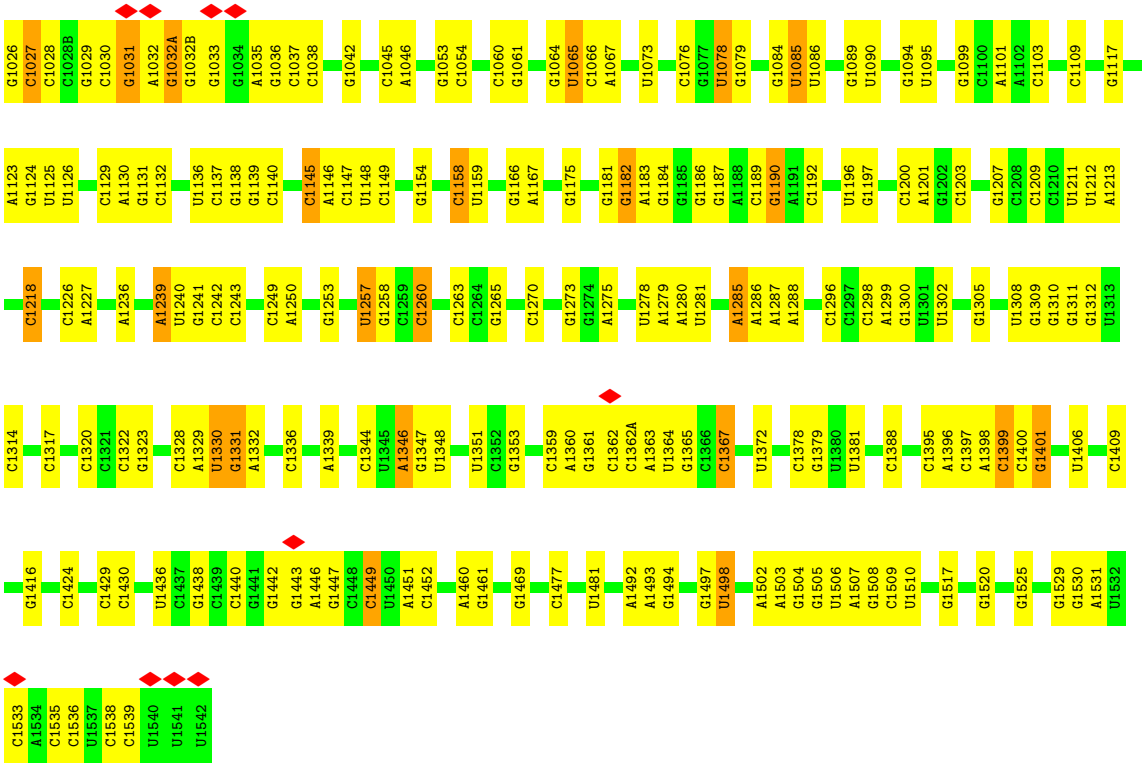
Chain F:


• Molecule 8: 16S ribosomal RNA

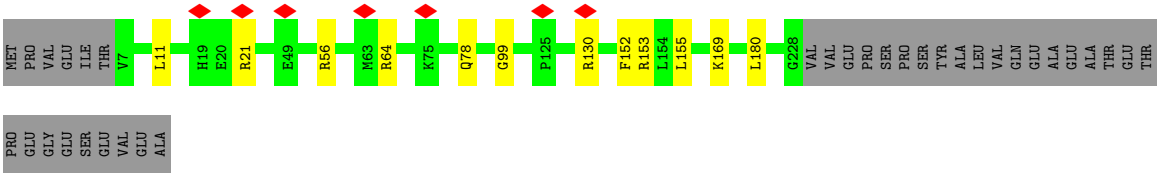
Chain G:



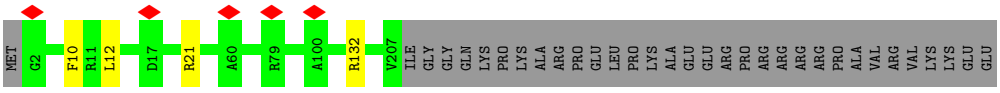

• Molecule 9: 30S ribosomal protein S2

Chain H:

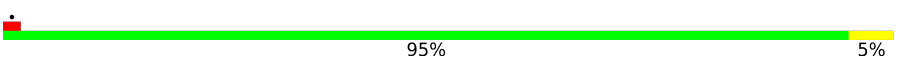

• Molecule 10: 30S ribosomal protein S3

Chain I:


• Molecule 11: 30S ribosomal protein S4

Chain J:





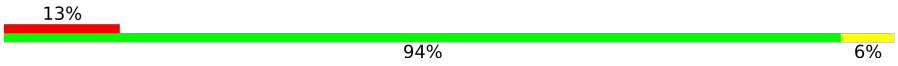
• Molecule 12: 30S ribosomal protein S5

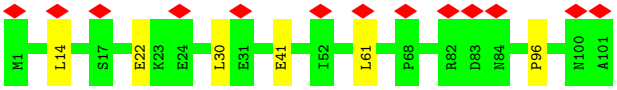
Chain K:



• Molecule 13: 30S ribosomal protein S6

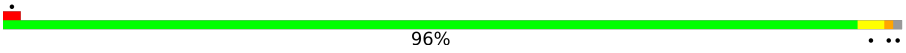
Chain L:

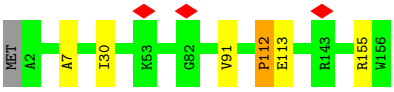



• Molecule 14: 30S ribosomal protein S7

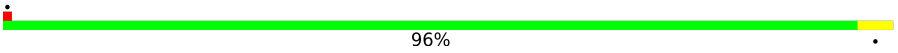
Chain M:

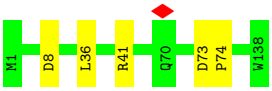



• Molecule 15: 30S ribosomal protein S8

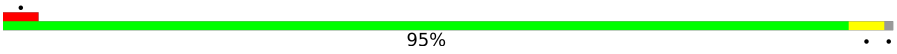
Chain N:

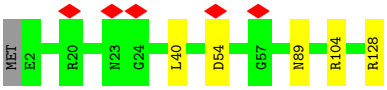



• Molecule 16: 30S ribosomal protein S9

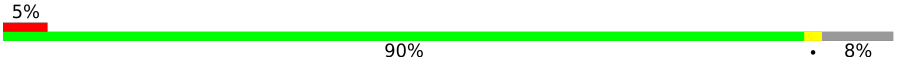
Chain O:

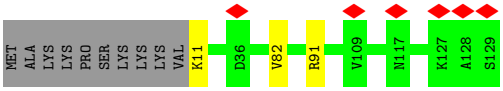



• Molecule 17: 30S ribosomal protein S11

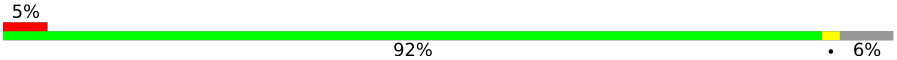
Chain P:

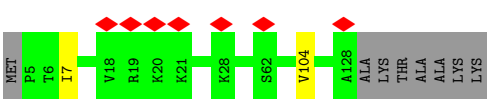



• Molecule 18: 30S ribosomal protein S12

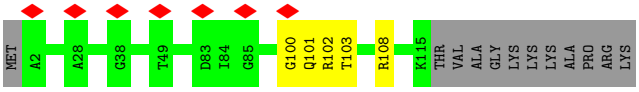
Chain Q:



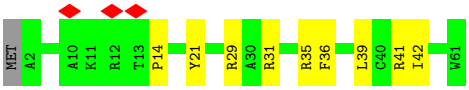
• Molecule 19: 30S ribosomal protein S13

Chain R:

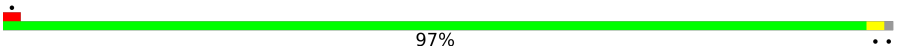

• Molecule 20: 30S ribosomal protein S14 type Z

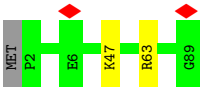
Chain S:


• Molecule 21: 30S ribosomal protein S15

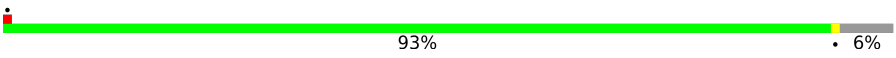
Chain T:

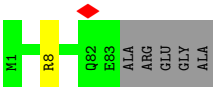



• Molecule 22: 30S ribosomal protein S16

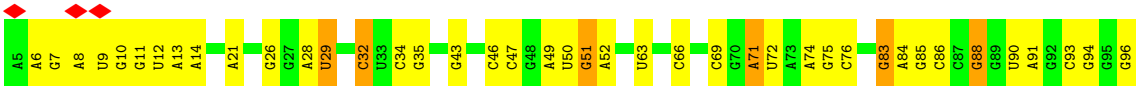
Chain U:

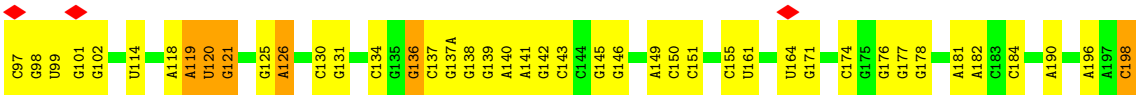


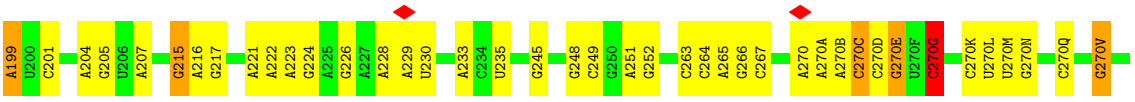



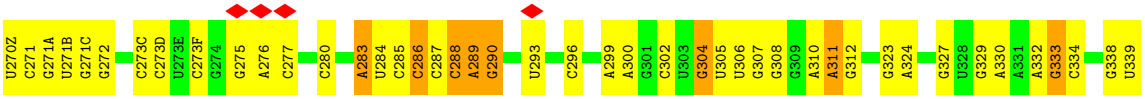

• Molecule 23: 23S ribosomal RNA

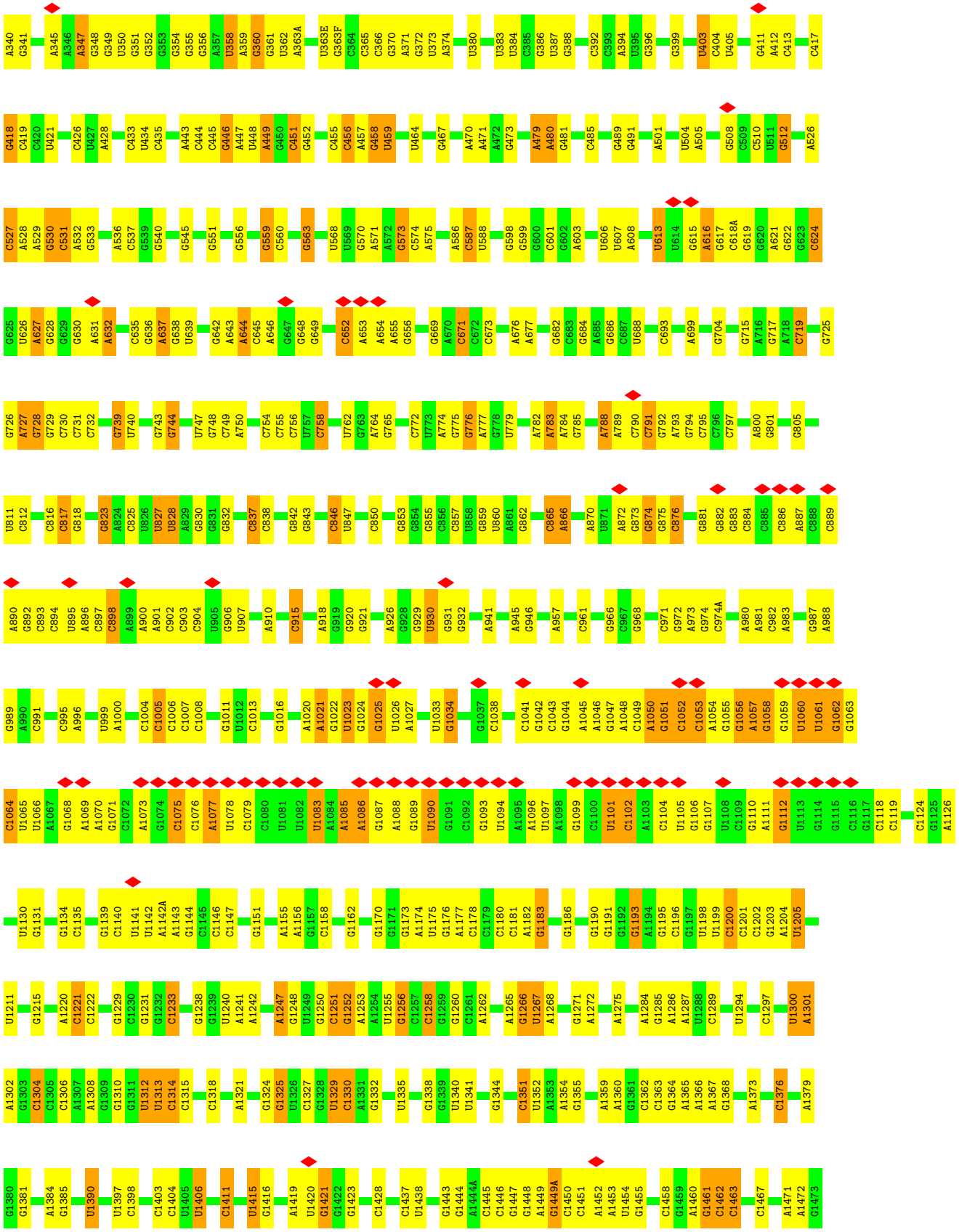
Chain V: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G418 C419 C420 U421 C426 U427 A428 C433 U434 C435 A443 C444 C445 G446 A447 U448 A449 G450 C451 G452 C455 C456 A457 G458 U459 U464 G467 A470 A471 A472 G473 A479 A480 G481 C485 G489 G491 A501 U504 A505 G508 C509 C510 U511 G512 A526
C527 A528 A529 G530 C531 A532 G533 A536 C537 G539 G540 G545 G551 G556 G559 C560 G563 U568 U569 G570 A571 A572 G573 C574 A575 A586 C587 U588 G598 G599 G600 C601 G602 A603 U606 U607 A608 U613 U614 G615 A616 G617 C618A G619 G620 A621 G622 G623 C624
G625 U626 A627 G628 G629 G630 A631 A632 C635 G636 A637 G638 U639 G642 A643 A644 C645 A646 G647 G648 G649 C652 A653 A654 A655 G656 G669 A670 C671 C672 C673 A676 A677 G682 C683 G684 A685 G686 C687 U688 C693 A699 G704 G715 A716 G717 A718 C719 G725
G726 A727 G728 G729 C730 C731 C732 G739 U740 G743 G744 U747 G748 C749 A750 C754 C755 C756 U757 C758 U762 G763 A764 G765 C772 U773 A774 G775 G776 A777 G778 U779 A782 A783 A784 G785 A788 A789 C790 C791 G792 A793 G794 C795 C796 C797 A800 G801 G805
U811 C812 C816 C817 C818 G823 A824 C825 U826 U827 U828 A829 G830 G831 G832 C837 C838 G842 G843 C846 U847 C850 G853 G854 G855 C856 C857 U858 G859 U860 A861 G862 C865 A866 A870 U871 A872 C873 G874 G875 C876 G881 G882 G883 C884 C885 C886 A887 C888 C889
A890 G892 C893 C894 U895 A896 C897 C898 A899 A900 A901 C902 C903 C904 U905 G906 U907 A910 C915 A918 G919 G920 G921 A926 G928 G929 U930 G931 G932 A941 A945 G946 A957 C961 G966 C967 G968 C971 G972 A973 G974 C974A A980 A981 C982 A983 G987 A988
G989 A990 C991 C995 A996 U999 A1000 C1004 C1005 C1006 C1007 C1008 G1011 U1012 C1013 G1016 A1020 A1021 G1022 U1023 G1024 G1025 U1026 A1027 U1033 G1034 G1037 C1038 C1041 G1042 C1043 G1044 A1045 A1046 G1047 A1048 C1049 A1050 G1051 C1052 C1053 A1054 G1055 G1056 A1057 G1058 G1059 U1060 U1061 G1062 G1063
C1064 U1065 U1066 A1067 G1068 A1069 A1070 G1071 C1072 A1073 G1074 C1075 C1076 A1077 U1078 C1079 C1080 U1081 U1082 U1083 A1084 A1085 A1086 G1087 A1088 G1089 U1090 G1091 C1092 G1093 U1094 A1095 A1096 U1097 A1098 G1099 C1100 U1101 C1102 A1103 C1104 U1105 G1106 G1107 U1108 C1109 G1110 A1111 G1112 U1113 G1114 G1115 C1116 G1117 C1118 C1119 C1124 G1125 A1126
U1130 C1131 G1134 C1135 G1139 C1140 U1141 U1142 A1142A A1143 G1144 C1145 C1146 C1147 G1151 A1155 A1156 C1157 C1158 C1162 G1170 C1171 G1173 A1174 U1175 G1176 A1177 C1178 C1179 C1180 C1181 A1182 G1183 G1186 C1190 G1191 G1192 G1193 A1194 G1195 C1196 G1197 U1198 U1199 C1200 C1201 C1202 G1203 A1204 U1205
U1211 G1215 A1220 C1221 C1222 G1229 C1230 G1231 G1232 C1233 G1238 G1239 U1240 A1241 A1242 A1247 G1248 U1249 G1250 C1251 C1252 A1253 A1254 U1255 G1256 C1257 C1258 G1259 G1260 C1261 A1262 A1265 G1266 U1267 A1268 G1271 A1272 A1275 A1284 G1285 A1286 A1287 U1288 C1289 U1294 C1297 U1300 A1301
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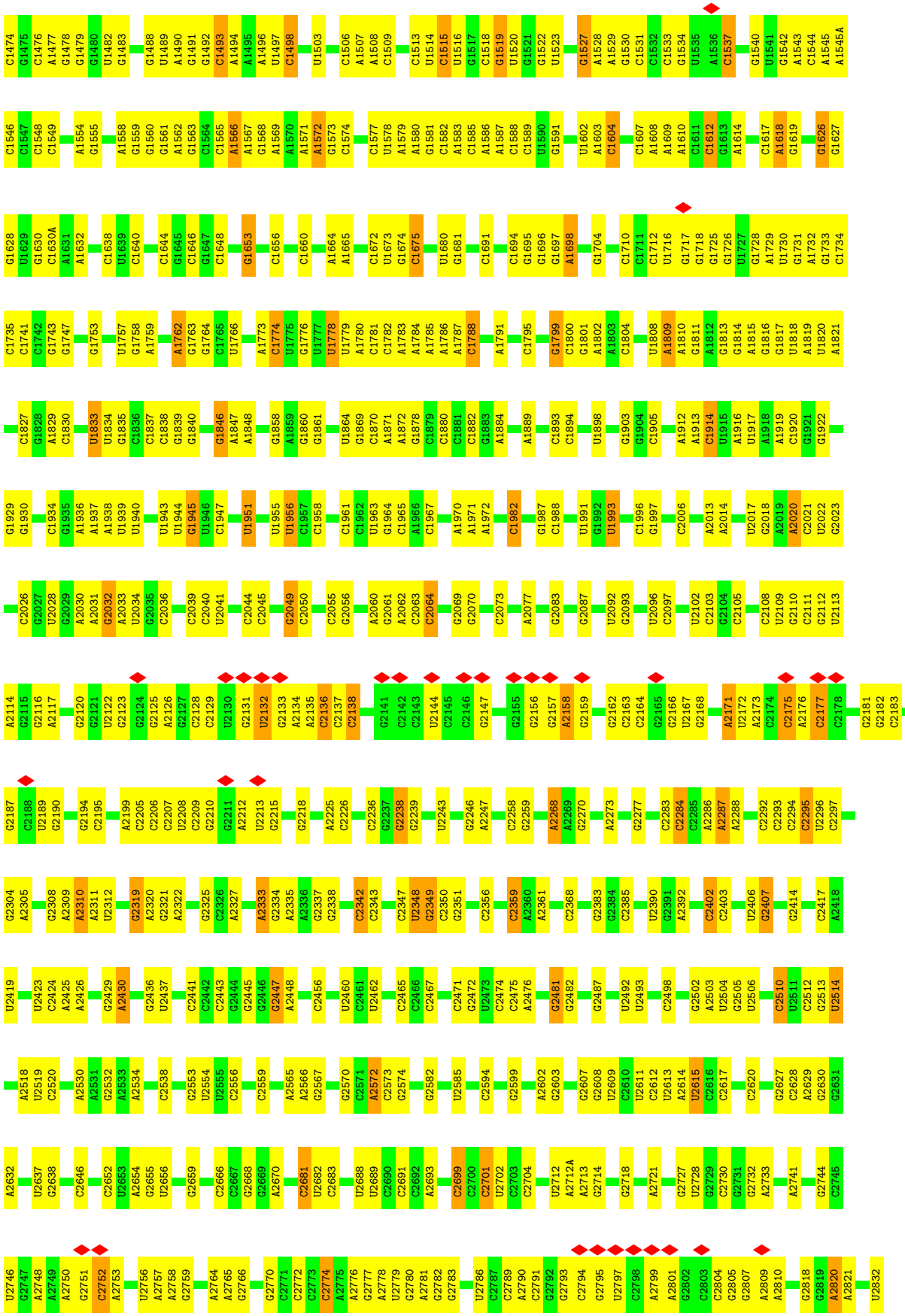
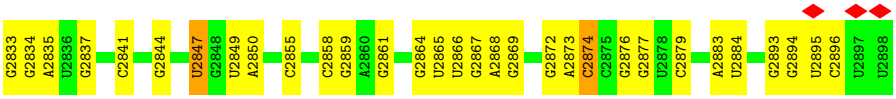
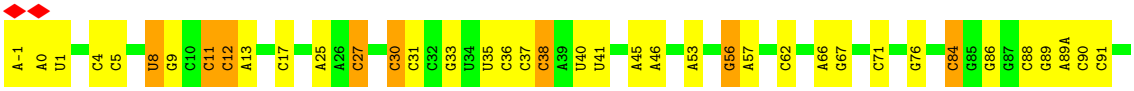
G1380 G1381 A1384 G1385 U1390 U1397 C1398 C1403 C1404 U1405 U1406 C1411 U1415 G1416 A1419 U1420 G1421 G1422 G1423 C1428 C1437 U1438 G1443 G1444 A1444A C1445 C1446 G1447 G1448 A1449 G1449A C1450 C1451 A1452 A1453 U1454 G1455 C1458 G1459 A1460 G1461 C1462 C1463 C1467 A1471 A1472 G1473

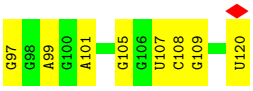





• Molecule 24: 5S ribosomal RNA

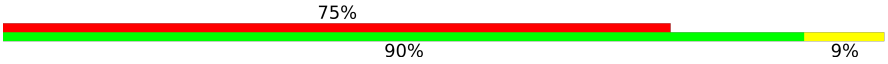
Chain X:

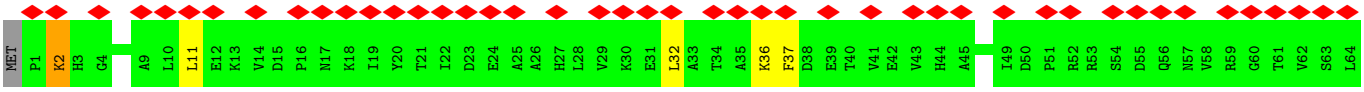



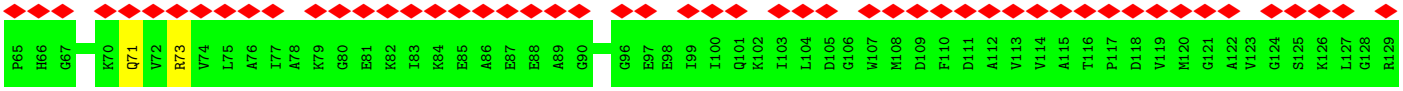



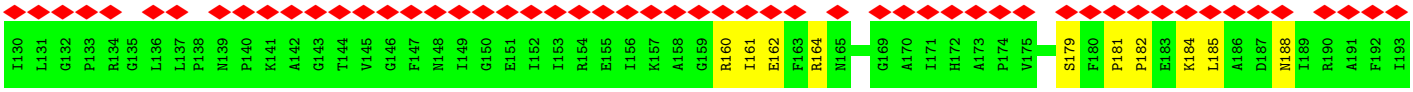

• Molecule 25: 50S ribosomal protein L1

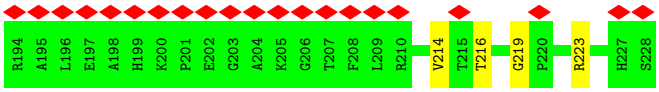
Chain Y:



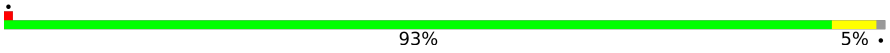




• Molecule 26: 50S ribosomal protein L2

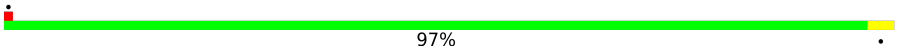
Chain Z:

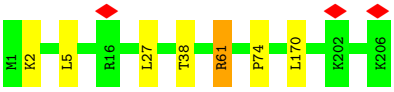




• Molecule 27: 50S ribosomal protein L3

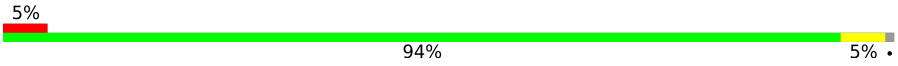
Chain a:

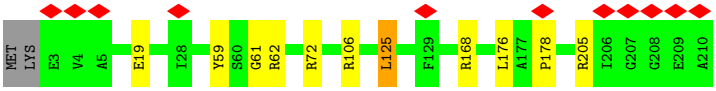



• Molecule 28: 50S ribosomal protein L4

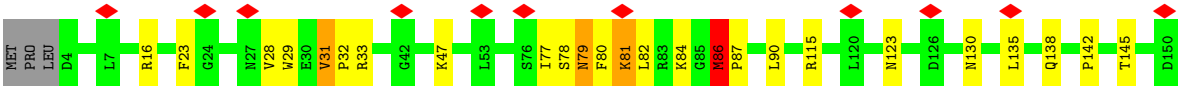
Chain b:

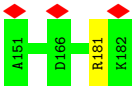



• Molecule 29: 50S ribosomal protein L5

Chain c:

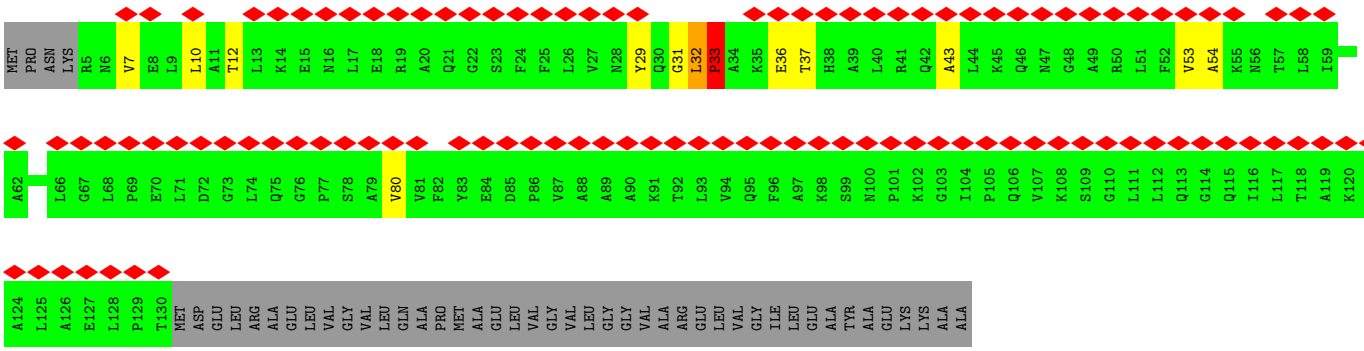

• Molecule 30: 50S ribosomal protein L6

Chain d:



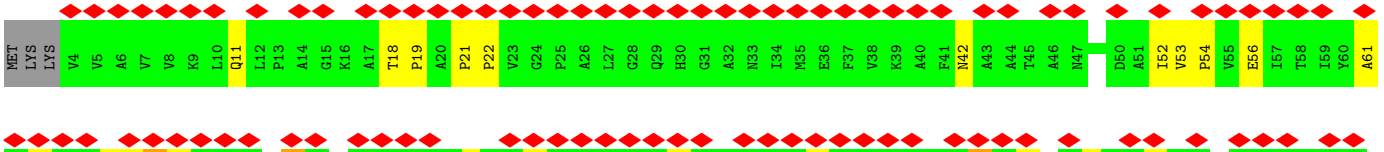
• Molecule 31: 50S ribosomal protein L10

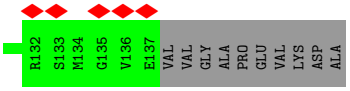
Chain e:


• Molecule 32: 50S ribosomal protein L11

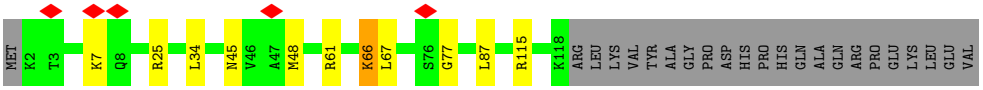
Chain f:



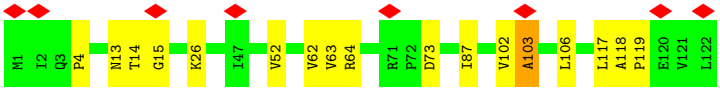

• Molecule 33: 50S ribosomal protein L13

Chain g:

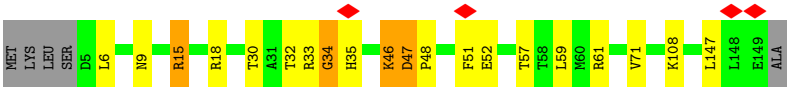

• Molecule 34: 50S ribosomal protein L14

Chain h:

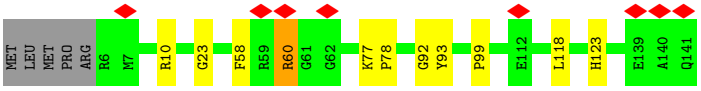

• Molecule 35: 50S ribosomal protein L15

Chain i:

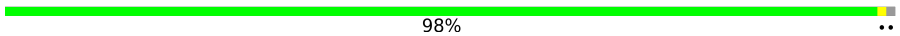

• Molecule 36: 50S ribosomal protein L16

Chain j:


• Molecule 37: 50S ribosomal protein L17

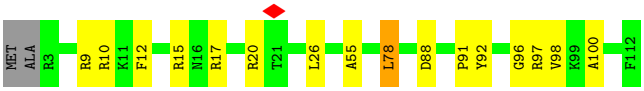
Chain k:





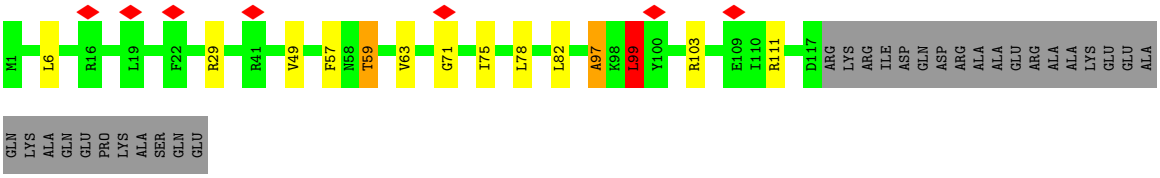
• Molecule 38: 50S ribosomal protein L18

Chain l:

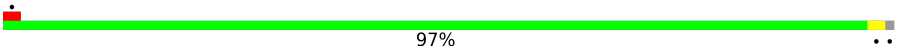

• Molecule 39: 50S ribosomal protein L19

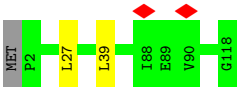
Chain m:


• Molecule 40: 50S ribosomal protein L20

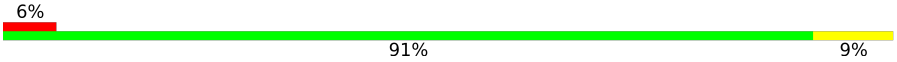
Chain n:

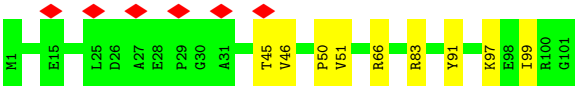



• Molecule 41: 50S ribosomal protein L21

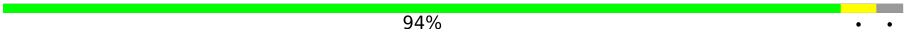
Chain o:

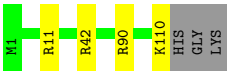



• Molecule 42: 50S ribosomal protein L22

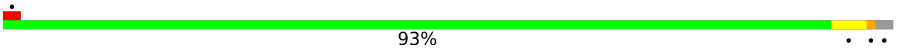
Chain p:

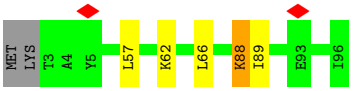



• Molecule 43: 50S ribosomal protein L23

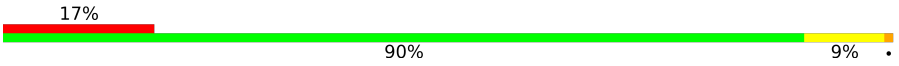
Chain q:

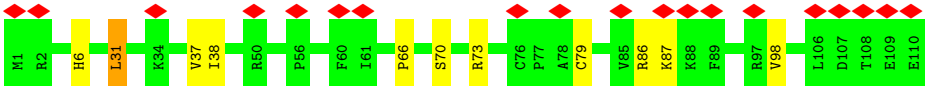



• Molecule 44: 50S ribosomal protein L24

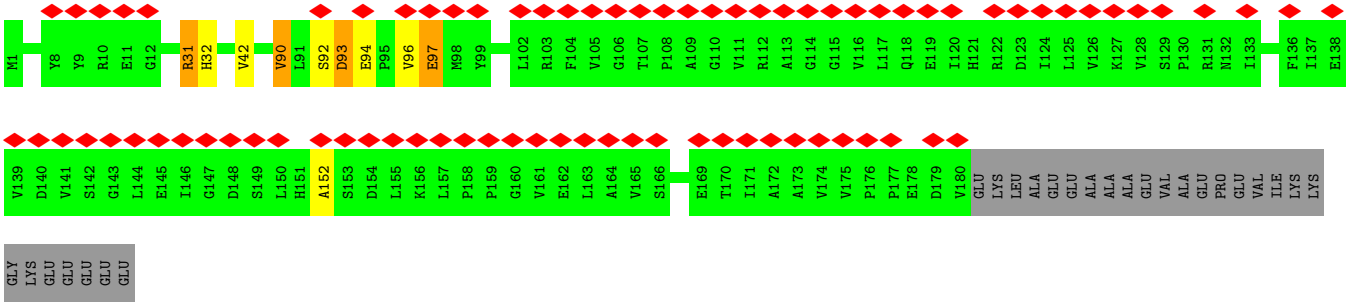
Chain r:



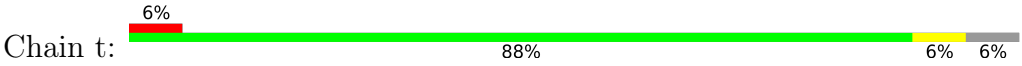



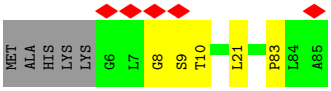

• Molecule 45: 50S ribosomal protein L25

Chain s:

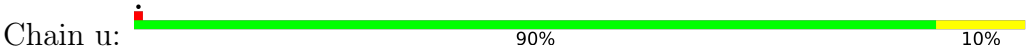


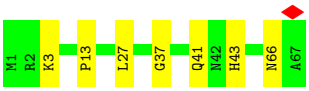

• Molecule 46: 50S ribosomal protein L27



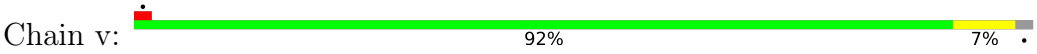




• Molecule 47: 50S ribosomal protein L29



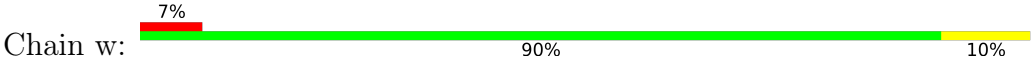



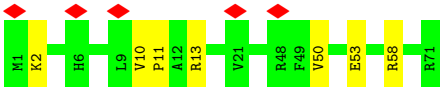

• Molecule 48: 50S ribosomal protein L30



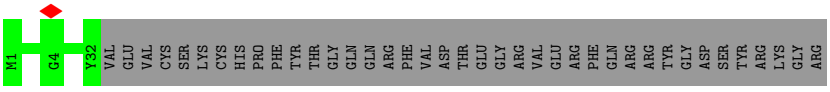


• Molecule 49: 50S ribosomal protein L31



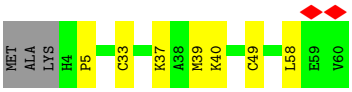




• Molecule 49: 50S ribosomal protein L31

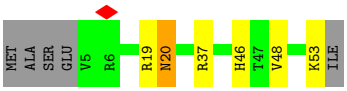

• Molecule 50: 50S ribosomal protein L32

Chain x:

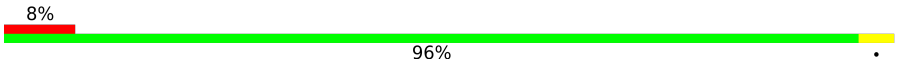

• Molecule 51: 50S ribosomal protein L33

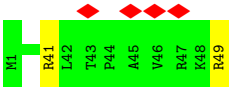
Chain y:


• Molecule 52: 50S ribosomal protein L34

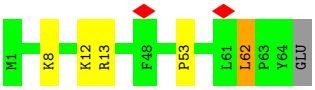
Chain z:



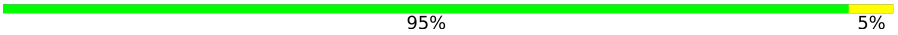

• Molecule 53: 50S ribosomal protein L35

Chain AA:


• Molecule 54: 50S ribosomal protein L36

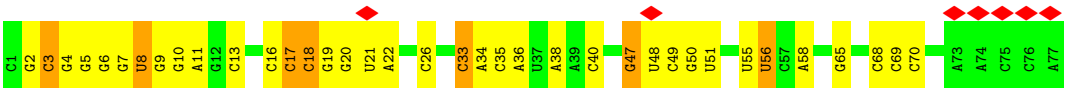
Chain BB:





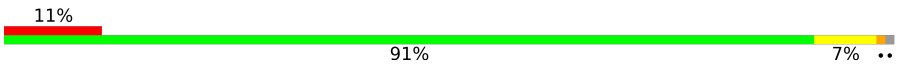
• Molecule 55: P-site tRNA

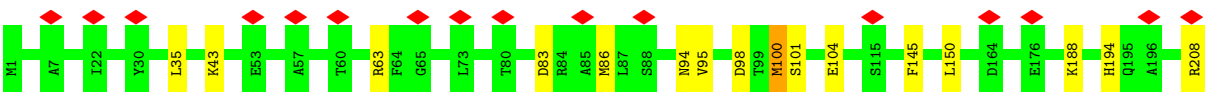
Chain DD:

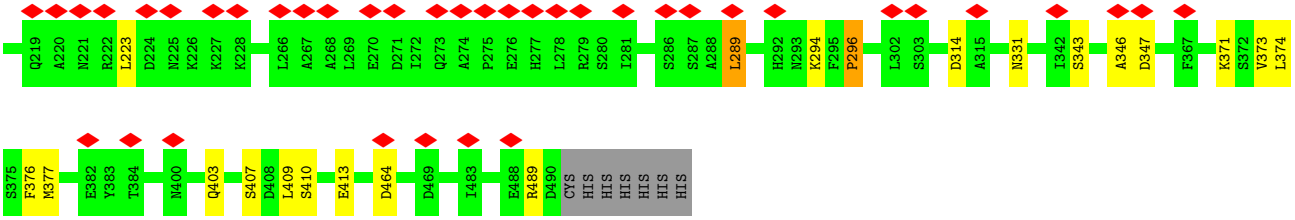




• Molecule 56: Macrolide efflux protein

Chain EE:




Q219
A220
N221
R222
L223
D224
N225
K226
K227
K228
L266
A267
A268
L269
E270
D271
I272
Q273
A274
P275
E276
H277
L278
R279
S280
I281
S286
S287
A288
L289
H292
N293
K294
F295
P296
L302
S303
D314
A315
N331
I342
S343
A346
D347
F367
K371
S372
V373
L374
S375
F376
M377
E382
Y383
T384
N400
Q403
S407
D408
L409
S410
E413
D464
D469
T483
E488
R489
D490
CYS
HIS
HIS
HIS
HIS
HIS
HIS

# 4 Experimental information (i)

| Property | Value | Source |
|---|---|---|
| EM reconstruction method | SINGLE PARTICLE | Depositor |
| Imposed symmetry | POINT, C1 | Depositor |
| Number of particles used | 127778 | Depositor |
| Resolution determination method | FSC 0.143 CUT-OFF | Depositor |
| CTF correction method | PHASE FLIPPING AND AMPLITUDE CORRECTION | Depositor |
| Microscope | FEI TITAN KRIOS | Depositor |
| Voltage (kV) | 300 | Depositor |
| Electron dose ($e^-/Å^2$) | 50 | Depositor |
| Minimum defocus (nm) | Not provided | |
| Maximum defocus (nm) | Not provided | |
| Magnification | Not provided | |
| Image detector | FEI FALCON II (4k x 4k) | Depositor |
| Maximum map value | 0.568 | Depositor |
| Minimum map value | -0.339 | Depositor |
| Average map value | 0.002 | Depositor |
| Map value standard deviation | 0.021 | Depositor |
| Recommended contour level | 0.052 | Depositor |
| Map size (Å) | 396.0, 396.0, 396.0 | wwPDB |
| Map dimensions | 360, 360, 360 | wwPDB |
| Map angles (°) | 90.0, 90.0, 90.0 | wwPDB |
| Pixel spacing (Å) | 1.1, 1.1, 1.1 | Depositor |

# 5 Model quality

## 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: 7MG, PSU, MG, 4SU, 5MU, OMC, ANP

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 | W | 0.25 | 0/166 | 0.74 | 0/256 |
| 2 | A | 0.38 | 0/821 | 0.69 | 2/1098 (0.2%) |
| 3 | B | 0.32 | 0/603 | 0.77 | 1/799 (0.1%) |
| 4 | C | 0.31 | 0/765 | 0.63 | 0/1007 |
| 5 | D | 0.36 | 0/670 | 0.69 | 0/903 |
| 6 | E | 0.32 | 0/807 | 0.72 | 1/1085 (0.1%) |
| 7 | F | 0.32 | 0/212 | 0.57 | 0/277 |
| 8 | G | 0.67 | 2/36416 (0.0%) | 1.15 | 241/56835 (0.4%) |
| 9 | H | 0.33 | 0/1842 | 0.72 | 3/2479 (0.1%) |
| 10 | I | 0.34 | 0/1636 | 0.64 | 1/2205 (0.0%) |
| 11 | J | 0.41 | 1/1733 (0.1%) | 0.75 | 3/2318 (0.1%) |
| 12 | K | 0.38 | 0/1162 | 0.69 | 0/1564 |
| 13 | L | 0.34 | 0/856 | 0.76 | 3/1154 (0.3%) |
| 14 | M | 0.36 | 0/1276 | 0.67 | 1/1709 (0.1%) |
| 15 | N | 0.36 | 0/1136 | 0.70 | 2/1527 (0.1%) |
| 16 | O | 0.34 | 0/1029 | 0.71 | 1/1379 (0.1%) |
| 17 | P | 0.32 | 0/900 | 0.67 | 0/1213 |
| 18 | Q | 0.40 | 0/986 | 0.76 | 0/1320 |
| 19 | R | 0.34 | 0/924 | 0.71 | 0/1238 |
| 20 | S | 0.29 | 0/501 | 0.50 | 0/664 |
| 21 | T | 0.33 | 0/745 | 0.63 | 0/992 |
| 22 | U | 0.35 | 0/716 | 0.63 | 0/963 |
| 23 | V | 0.86 | 11/69349 (0.0%) | 1.27 | 775/108263 (0.7%) |
| 24 | X | 0.64 | 1/2954 (0.0%) | 1.23 | 24/4606 (0.5%) |
| 25 | Y | 0.43 | 1/1775 (0.1%) | 0.79 | 3/2393 (0.1%) |
| 26 | Z | 0.47 | 0/2176 | 0.78 | 3/2933 (0.1%) |
| 27 | a | 0.48 | 0/1611 | 0.82 | 3/2171 (0.1%) |
| 28 | b | 0.46 | 0/1660 | 0.80 | 1/2247 (0.0%) |
| 29 | c | 0.33 | 0/1479 | 0.83 | 3/1989 (0.2%) |
| 30 | d | 0.35 | 0/1360 | 0.98 | 4/1838 (0.2%) |
| 31 | e | 0.41 | 0/620 | 0.81 | 2/861 (0.2%) |
| 32 | f | 0.34 | 0/1012 | 0.85 | 5/1373 (0.4%) |

| Mol | Chain | Bond lengths | | Bond angles | |
|---|---|---|---|---|---|
| | | RMSZ | #\|Z\| >5 | RMSZ | #\|Z\| >5 |
| 33 | g | 0.40 | 0/952 | 0.80 | 3/1283 (0.2%) |
| 34 | h | 0.47 | 0/942 | 0.91 | 2/1268 (0.2%) |
| 35 | i | 0.41 | 0/1125 | 0.88 | 4/1497 (0.3%) |
| 36 | j | 0.47 | 0/1100 | 0.87 | 1/1470 (0.1%) |
| 37 | k | 0.41 | 0/974 | 0.74 | 0/1302 |
| 38 | l | 0.32 | 0/887 | 0.69 | 2/1180 (0.2%) |
| 39 | m | 0.43 | 0/990 | 0.89 | 3/1325 (0.2%) |
| 40 | n | 0.46 | 0/982 | 0.72 | 1/1306 (0.1%) |
| 41 | o | 0.41 | 0/790 | 0.90 | 1/1057 (0.1%) |
| 42 | p | 0.43 | 0/886 | 0.67 | 0/1189 |
| 43 | q | 0.41 | 0/756 | 0.81 | 2/1015 (0.2%) |
| 44 | r | 0.37 | 0/857 | 0.91 | 2/1142 (0.2%) |
| 45 | s | 0.37 | 0/1467 | 0.72 | 1/1992 (0.1%) |
| 46 | t | 0.39 | 0/637 | 0.69 | 1/848 (0.1%) |
| 47 | u | 0.34 | 0/569 | 0.72 | 2/751 (0.3%) |
| 48 | v | 0.47 | 0/474 | 0.79 | 1/635 (0.2%) |
| 49 | CC | 0.26 | 0/156 | 0.53 | 0/215 |
| 49 | w | 0.49 | 0/594 | 0.96 | 0/795 |
| 50 | x | 0.44 | 0/459 | 0.79 | 0/621 |
| 51 | y | 0.48 | 0/429 | 0.85 | 0/572 |
| 52 | z | 0.55 | 0/438 | 0.84 | 0/575 |
| 53 | AA | 0.50 | 0/523 | 0.88 | 0/690 |
| 54 | BB | 0.43 | 0/310 | 0.88 | 1/407 (0.2%) |
| 55 | DD | 0.46 | 0/1724 | 1.16 | 24/2687 (0.9%) |
| 56 | EE | 0.34 | 0/3892 | 0.70 | 4/5224 (0.1%) |
| All | All | 0.69 | 16/162811 (0.0%) | 1.11 | 1137/242705 (0.5%) |

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

| Mol | Chain | #Chirality outliers | #Planarity outliers |
|---|---|---|---|
| 3 | B | 0 | 3 |
| 4 | C | 0 | 1 |
| 5 | D | 0 | 1 |
| 6 | E | 0 | 4 |
| 9 | H | 0 | 2 |
| 11 | J | 0 | 2 |
| 12 | K | 0 | 1 |
| 13 | L | 0 | 2 |
| 14 | M | 0 | 2 |

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| Mol | Chain | #Chirality outliers | #Planarity outliers |
|---|---|---|---|
| 15 | N | 0 | 1 |
| 16 | O | 0 | 2 |
| 18 | Q | 0 | 1 |
| 19 | R | 0 | 1 |
| 23 | V | 0 | 6 |
| 25 | Y | 0 | 4 |
| 26 | Z | 0 | 8 |
| 27 | a | 0 | 2 |
| 28 | b | 0 | 5 |
| 29 | c | 0 | 4 |
| 30 | d | 0 | 2 |
| 31 | e | 0 | 8 |
| 32 | f | 0 | 2 |
| 33 | g | 0 | 2 |
| 34 | h | 0 | 10 |
| 35 | i | 0 | 8 |
| 36 | j | 0 | 6 |
| 38 | l | 0 | 1 |
| 39 | m | 0 | 8 |
| 41 | o | 0 | 4 |
| 43 | q | 0 | 2 |
| 44 | r | 0 | 7 |
| 46 | t | 0 | 1 |
| 47 | u | 0 | 2 |
| 48 | v | 0 | 1 |
| 49 | w | 0 | 2 |
| 50 | x | 0 | 1 |
| 51 | y | 0 | 1 |
| 52 | z | 0 | 1 |
| 53 | AA | 0 | 2 |
| 56 | EE | 0 | 6 |
| All | All | 0 | 129 |

All (16) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 23 | V | 1449(A) | G | O3'-P | -15.61 | 1.42 | 1.61 |
| 23 | V | 1146 | C | O3'-P | 11.89 | 1.75 | 1.61 |
| 24 | X | -1 | A | OP3-P | -10.17 | 1.49 | 1.61 |
| 8 | G | 93 | U | O3'-P | -8.97 | 1.50 | 1.61 |
| 8 | G | 1167 | A | O3'-P | -7.78 | 1.51 | 1.61 |
| 23 | V | 2349 | G | N9-C4 | 7.20 | 1.43 | 1.38 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 23 | V | 347 | A | N9-C4 | 5.94 | 1.41 | 1.37 |
| 23 | V | 1471 | A | N9-C4 | 5.92 | 1.41 | 1.37 |
| 11 | J | 12 | CYS | CB-SG | 5.89 | 1.92 | 1.82 |
| 23 | V | 1057 | A | O3'-P | 5.88 | 1.68 | 1.61 |
| 23 | V | 676 | A | N9-C4 | -5.81 | 1.34 | 1.37 |
| 23 | V | 270(V) | G | N9-C4 | -5.47 | 1.33 | 1.38 |
| 23 | V | 2287 | A | N9-C4 | -5.43 | 1.34 | 1.37 |
| 23 | V | 1808 | U | N1-C2 | 5.41 | 1.43 | 1.38 |
| 25 | Y | 219 | GLY | C-N | 5.16 | 1.44 | 1.34 |
| 23 | V | 126 | A | N7-C5 | -5.15 | 1.36 | 1.39 |

All (1137) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 30 | d | 11 | VAL | C-N-CD | -21.67 | 72.92 | 120.60 |
| 23 | V | 1449(A) | G | O3'-P-O5' | -19.38 | 67.19 | 104.00 |
| 23 | V | 1061 | U | OP1-P-OP2 | 18.30 | 147.06 | 119.60 |
| 23 | V | 155 | C | O3'-P-O5' | -18.02 | 69.77 | 104.00 |
| 23 | V | 2349 | G | C8-N9-C4 | -17.62 | 99.35 | 106.40 |
| 30 | d | 127 | GLU | C-N-CD | -17.55 | 82.00 | 120.60 |
| 23 | V | 2349 | G | N3-C4-C5 | -14.67 | 121.27 | 128.60 |
| 29 | c | 86 | MET | C-N-CD | -14.49 | 88.71 | 120.60 |
| 23 | V | 1058 | G | O5'-P-OP2 | -14.35 | 92.78 | 105.70 |
| 23 | V | 2349 | G | N7-C8-N9 | 14.06 | 120.13 | 113.10 |
| 23 | V | 1664 | A | C8-N9-C4 | -14.01 | 100.19 | 105.80 |
| 23 | V | 2132 | U | N1-C2-O2 | 13.61 | 132.33 | 122.80 |
| 23 | V | 791 | C | C2-N1-C1' | 13.07 | 133.18 | 118.80 |
| 23 | V | 155 | C | OP2-P-O3' | 12.95 | 133.69 | 105.20 |
| 23 | V | 1808 | U | N3-C2-O2 | -12.79 | 113.25 | 122.20 |
| 23 | V | 2349 | G | C4-N9-C1' | 12.63 | 142.92 | 126.50 |
| 23 | V | 1060 | U | OP1-P-O3' | -12.49 | 77.72 | 105.20 |
| 23 | V | 1050 | A | C2-N3-C4 | 12.38 | 116.79 | 110.60 |
| 23 | V | 1060 | U | OP2-P-O3' | -12.24 | 78.27 | 105.20 |
| 8 | G | 754 | C | C2-N1-C1' | 12.11 | 132.12 | 118.80 |
| 23 | V | 531 | C | N1-C2-O2 | 12.10 | 126.16 | 118.90 |
| 23 | V | 531 | C | C2-N1-C1' | 11.80 | 131.78 | 118.80 |
| 26 | Z | 244 | ARG | C-N-CD | -11.75 | 94.75 | 120.60 |
| 23 | V | 920 | G | OP1-P-O3' | -11.58 | 79.71 | 105.20 |
| 23 | V | 1052 | C | C6-N1-C2 | -11.53 | 115.69 | 120.30 |
| 29 | c | 31 | VAL | C-N-CD | -11.38 | 95.57 | 120.60 |
| 23 | V | 1251 | C | N3-C2-O2 | -11.36 | 113.95 | 121.90 |
| 23 | V | 1251 | C | N1-C2-O2 | 11.16 | 125.59 | 118.90 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 23 | V | 791 | C | N1-C2-O2 | 11.13 | 125.58 | 118.90 |
| 23 | V | 1102 | C | C2-N1-C1' | 11.02 | 130.92 | 118.80 |
| 23 | V | 531 | C | N3-C2-O2 | -10.86 | 114.30 | 121.90 |
| 23 | V | 1493 | C | N1-C2-O2 | 10.83 | 125.40 | 118.90 |
| 23 | V | 387 | U | C2-N1-C1' | 10.72 | 130.56 | 117.70 |
| 8 | G | 1038 | C | N3-C2-O2 | -10.61 | 114.47 | 121.90 |
| 23 | V | 1329 | U | C2-N1-C1' | 10.45 | 130.24 | 117.70 |
| 23 | V | 1058 | G | N1-C6-O6 | -10.26 | 113.74 | 119.90 |
| 8 | G | 717 | C | C2-N1-C1' | 10.14 | 129.96 | 118.80 |
| 23 | V | 2132 | U | N3-C2-O2 | -10.01 | 115.19 | 122.20 |
| 23 | V | 1774 | C | C6-N1-C2 | -9.86 | 116.36 | 120.30 |
| 23 | V | 1102 | C | N1-C2-O2 | 9.86 | 124.81 | 118.90 |
| 32 | f | 18 | THR | C-N-CD | -9.86 | 98.91 | 120.60 |
| 23 | V | 791 | C | C6-N1-C1' | -9.85 | 108.98 | 120.80 |
| 23 | V | 1808 | U | N1-C2-O2 | 9.79 | 129.66 | 122.80 |
| 8 | G | 717 | C | N1-C2-O2 | 9.79 | 124.77 | 118.90 |
| 23 | V | 636 | G | N3-C4-C5 | -9.76 | 123.72 | 128.60 |
| 11 | J | 9 | CYS | CA-CB-SG | 9.76 | 131.56 | 114.00 |
| 8 | G | 1498 | U | C2-N1-C1' | 9.75 | 129.40 | 117.70 |
| 55 | DD | 17 | C | C2-N1-C1' | 9.69 | 129.46 | 118.80 |
| 8 | G | 1260 | C | N1-C2-O2 | 9.69 | 124.71 | 118.90 |
| 23 | V | 915 | C | C2-N1-C1' | 9.63 | 129.40 | 118.80 |
| 23 | V | 1314 | C | C2-N1-C1' | 9.57 | 129.33 | 118.80 |
| 8 | G | 1498 | U | N3-C2-O2 | -9.53 | 115.53 | 122.20 |
| 23 | V | 1664 | A | N7-C8-N9 | 9.51 | 118.55 | 113.80 |
| 23 | V | 387 | U | N1-C2-O2 | 9.48 | 129.43 | 122.80 |
| 23 | V | 915 | C | N1-C2-O2 | 9.44 | 124.56 | 118.90 |
| 23 | V | 1462 | C | N1-C2-O2 | 9.34 | 124.50 | 118.90 |
| 23 | V | 456 | C | N1-C2-O2 | 9.32 | 124.49 | 118.90 |
| 23 | V | 1183 | G | O4'-C1'-N9 | 9.30 | 115.64 | 108.20 |
| 23 | V | 2701 | C | C6-N1-C2 | -9.28 | 116.59 | 120.30 |
| 23 | V | 32 | C | C2-N1-C1' | 9.24 | 128.96 | 118.80 |
| 8 | G | 754 | C | C6-N1-C1' | -9.23 | 109.72 | 120.80 |
| 23 | V | 32 | C | N1-C2-O2 | 9.23 | 124.44 | 118.90 |
| 23 | V | 2701 | C | C5-C6-N1 | 9.18 | 125.59 | 121.00 |
| 23 | V | 2866 | U | N3-C2-O2 | -9.13 | 115.81 | 122.20 |
| 8 | G | 1260 | C | C2-N1-C1' | 9.09 | 128.80 | 118.80 |
| 23 | V | 1515 | C | C6-N1-C2 | -9.09 | 116.67 | 120.30 |
| 23 | V | 2132 | U | C2-N1-C1' | 9.08 | 128.60 | 117.70 |
| 8 | G | 1085 | U | N3-C2-O2 | -9.06 | 115.86 | 122.20 |
| 8 | G | 1260 | C | C6-N1-C2 | -9.04 | 116.68 | 120.30 |
| 23 | V | 1493 | C | C2-N1-C1' | 9.01 | 128.71 | 118.80 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 23 | V | 387 | U | N3-C2-O2 | -8.99 | 115.91 | 122.20 |
| 23 | V | 1493 | C | N3-C2-O2 | -8.98 | 115.61 | 121.90 |
| 23 | V | 1085 | A | P-O3'-C3' | 8.96 | 130.46 | 119.70 |
| 23 | V | 837 | C | C6-N1-C2 | -8.94 | 116.72 | 120.30 |
| 8 | G | 1498 | U | N1-C2-O2 | 8.92 | 129.04 | 122.80 |
| 23 | V | 1774 | C | N3-C2-O2 | -8.89 | 115.67 | 121.90 |
| 54 | BB | 27 | CYS | CA-CB-SG | 8.89 | 130.01 | 114.00 |
| 8 | G | 405 | U | C5-C4-O4 | -8.89 | 120.57 | 125.90 |
| 32 | f | 22 | PRO | CA-N-CD | -8.88 | 99.07 | 111.50 |
| 23 | V | 1604 | C | C2-N1-C1' | 8.86 | 128.55 | 118.80 |
| 8 | G | 352 | C | N3-C2-O2 | -8.83 | 115.72 | 121.90 |
| 56 | EE | 296 | PRO | CA-N-CD | -8.83 | 99.14 | 111.50 |
| 23 | V | 1993 | U | N3-C2-O2 | -8.82 | 116.03 | 122.20 |
| 23 | V | 531 | C | C6-N1-C1' | -8.82 | 110.22 | 120.80 |
| 23 | V | 1058 | G | C2-N3-C4 | 8.81 | 116.31 | 111.90 |
| 55 | DD | 17 | C | N1-C2-O2 | 8.81 | 124.19 | 118.90 |
| 23 | V | 176 | G | N3-C4-N9 | -8.79 | 120.72 | 126.00 |
| 23 | V | 636 | G | N3-C4-N9 | 8.79 | 131.27 | 126.00 |
| 23 | V | 817 | C | C6-N1-C2 | -8.77 | 116.79 | 120.30 |
| 23 | V | 2349 | G | N3-C4-N9 | 8.74 | 131.25 | 126.00 |
| 23 | V | 456 | C | C2-N1-C1' | 8.73 | 128.40 | 118.80 |
| 23 | V | 1774 | C | C2-N1-C1' | 8.72 | 128.39 | 118.80 |
| 23 | V | 1193 | G | C8-N9-C4 | -8.71 | 102.92 | 106.40 |
| 8 | G | 93 | U | O3'-P-O5' | -8.69 | 87.50 | 104.00 |
| 8 | G | 352 | C | N1-C2-O2 | 8.68 | 124.11 | 118.90 |
| 23 | V | 2666 | C | N1-C2-O2 | 8.61 | 124.06 | 118.90 |
| 23 | V | 1329 | U | N1-C2-O2 | 8.57 | 128.80 | 122.80 |
| 23 | V | 1604 | C | C6-N1-C2 | -8.57 | 116.87 | 120.30 |
| 23 | V | 1052 | C | O4'-C1'-N1 | 8.54 | 115.03 | 108.20 |
| 8 | G | 129 | U | N1-C2-O2 | 8.51 | 128.76 | 122.80 |
| 8 | G | 1263 | C | N3-C2-O2 | -8.50 | 115.95 | 121.90 |
| 8 | G | 1263 | C | N1-C2-O2 | 8.46 | 123.98 | 118.90 |
| 23 | V | 828 | U | C2-N1-C1' | 8.46 | 127.85 | 117.70 |
| 8 | G | 1200 | C | C6-N1-C2 | -8.43 | 116.93 | 120.30 |
| 11 | J | 196 | LEU | CA-CB-CG | 8.38 | 134.58 | 115.30 |
| 23 | V | 1146 | C | O3'-P-O5' | 8.34 | 119.85 | 104.00 |
| 23 | V | 2132 | U | C5-C6-N1 | 8.30 | 126.85 | 122.70 |
| 23 | V | 2136 | C | N1-C2-O2 | 8.26 | 123.86 | 118.90 |
| 23 | V | 1202 | C | N1-C2-O2 | 8.23 | 123.84 | 118.90 |
| 8 | G | 221 | C | N1-C2-O2 | 8.23 | 123.84 | 118.90 |
| 30 | d | 125 | VAL | C-N-CD | -8.23 | 102.50 | 120.60 |
| 23 | V | 2162 | G | C4-N9-C1' | 8.21 | 137.17 | 126.50 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 23 | V | 1809 | A | O4'-C1'-N9 | 8.19 | 114.75 | 108.20 |
| 23 | V | 1604 | C | N3-C2-O2 | -8.19 | 116.17 | 121.90 |
| 23 | V | 2752 | C | O5'-P-OP2 | -8.17 | 98.34 | 105.70 |
| 24 | X | 30 | C | N1-C2-O2 | 8.17 | 123.80 | 118.90 |
| 23 | V | 1102 | C | N3-C2-O2 | -8.16 | 116.18 | 121.90 |
| 23 | V | 201 | C | N1-C2-O2 | 8.16 | 123.79 | 118.90 |
| 8 | G | 563 | A | C2-N3-C4 | 8.14 | 114.67 | 110.60 |
| 44 | r | 31 | LEU | CA-CB-CG | 8.14 | 134.03 | 115.30 |
| 23 | V | 1951 | U | N3-C2-O2 | -8.12 | 116.51 | 122.20 |
| 8 | G | 129 | U | N3-C2-O2 | -8.10 | 116.53 | 122.20 |
| 8 | G | 39 | G | N3-C4-N9 | -8.10 | 121.14 | 126.00 |
| 23 | V | 1808 | U | C2-N1-C1' | 8.09 | 127.41 | 117.70 |
| 23 | V | 644 | A | O4'-C1'-N9 | 8.09 | 114.67 | 108.20 |
| 23 | V | 1102 | C | C6-N1-C2 | -8.09 | 117.06 | 120.30 |
| 23 | V | 2510 | C | C2-N1-C1' | 8.08 | 127.68 | 118.80 |
| 23 | V | 2073 | C | C6-N1-C2 | -8.07 | 117.07 | 120.30 |
| 8 | G | 405 | U | N3-C4-O4 | 8.07 | 125.05 | 119.40 |
| 23 | V | 1774 | C | N1-C2-O2 | 8.07 | 123.74 | 118.90 |
| 23 | V | 624 | C | C6-N1-C2 | -8.04 | 117.08 | 120.30 |
| 23 | V | 1052 | C | C5-C6-N1 | 8.04 | 125.02 | 121.00 |
| 23 | V | 2866 | U | N1-C2-O2 | 8.04 | 128.43 | 122.80 |
| 55 | DD | 2 | G | C4-N9-C1' | 8.03 | 136.94 | 126.50 |
| 23 | V | 2866 | U | C2-N1-C1' | 8.03 | 127.33 | 117.70 |
| 23 | V | 1051 | G | P-O3'-C3' | 8.00 | 129.30 | 119.70 |
| 23 | V | 1005 | C | N1-C2-O2 | 8.00 | 123.70 | 118.90 |
| 23 | V | 2847 | U | N3-C2-O2 | -8.00 | 116.60 | 122.20 |
| 9 | H | 11 | LEU | CA-CB-CG | 7.98 | 133.66 | 115.30 |
| 23 | V | 1762 | A | C8-N9-C4 | -7.97 | 102.61 | 105.80 |
| 8 | G | 1032(A) | G | C4-N9-C1' | 7.95 | 136.83 | 126.50 |
| 23 | V | 86 | C | C2-N1-C1' | 7.92 | 127.52 | 118.80 |
| 23 | V | 2032 | G | C4-C5-N7 | 7.92 | 113.97 | 110.80 |
| 23 | V | 1314 | C | N1-C2-O2 | 7.91 | 123.65 | 118.90 |
| 23 | V | 920 | G | OP2-P-O3' | -7.90 | 87.82 | 105.20 |
| 23 | V | 1698 | A | O4'-C1'-N9 | 7.90 | 114.52 | 108.20 |
| 23 | V | 1808 | U | C6-N1-C2 | -7.89 | 116.27 | 121.00 |
| 23 | V | 1005 | C | C2-N1-C1' | 7.87 | 127.46 | 118.80 |
| 24 | X | 27 | C | N1-C2-O2 | 7.82 | 123.59 | 118.90 |
| 23 | V | 1057 | A | P-O3'-C3' | 7.81 | 129.07 | 119.70 |
| 23 | V | 1325 | G | O4'-C1'-N9 | 7.81 | 114.45 | 108.20 |
| 23 | V | 176 | G | N3-C2-N2 | -7.79 | 114.45 | 119.90 |
| 8 | G | 1260 | C | N3-C2-O2 | -7.75 | 116.47 | 121.90 |
| 23 | V | 2349 | G | C2-N3-C4 | 7.75 | 115.77 | 111.90 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 23 | V | 637 | A | O4'-C1'-N9 | 7.74 | 114.39 | 108.20 |
| 11 | J | 12 | CYS | CA-CB-SG | 7.72 | 127.90 | 114.00 |
| 23 | V | 86 | C | N1-C2-O2 | 7.71 | 123.53 | 118.90 |
| 23 | V | 791 | C | N3-C2-O2 | -7.71 | 116.51 | 121.90 |
| 23 | V | 1788 | C | C6-N1-C2 | -7.70 | 117.22 | 120.30 |
| 23 | V | 1951 | U | C2-N1-C1' | 7.69 | 126.92 | 117.70 |
| 23 | V | 2175 | C | C6-N1-C2 | -7.68 | 117.23 | 120.30 |
| 23 | V | 2163 | C | N1-C2-O2 | 7.67 | 123.50 | 118.90 |
| 23 | V | 1351 | C | C2-N1-C1' | 7.66 | 127.23 | 118.80 |
| 23 | V | 2847 | U | N1-C2-O2 | 7.65 | 128.15 | 122.80 |
| 26 | Z | 244 | ARG | C-N-CA | 7.64 | 154.11 | 122.00 |
| 33 | g | 67 | LEU | CA-CB-CG | 7.63 | 132.86 | 115.30 |
| 23 | V | 1329 | U | C6-N1-C1' | -7.63 | 110.52 | 121.20 |
| 23 | V | 1463 | C | C2-N1-C1' | 7.63 | 127.19 | 118.80 |
| 23 | V | 2752 | C | C6-N1-C2 | -7.62 | 117.25 | 120.30 |
| 23 | V | 613 | U | C2-N1-C1' | 7.60 | 126.82 | 117.70 |
| 8 | G | 1038 | C | C6-N1-C2 | -7.57 | 117.27 | 120.30 |
| 23 | V | 1314 | C | C6-N1-C2 | -7.56 | 117.28 | 120.30 |
| 8 | G | 1003 | G | C5-C6-O6 | 7.55 | 133.13 | 128.60 |
| 23 | V | 1202 | C | N3-C2-O2 | -7.55 | 116.61 | 121.90 |
| 23 | V | 1993 | U | N1-C2-O2 | 7.54 | 128.08 | 122.80 |
| 23 | V | 1462 | C | C2-N1-C1' | 7.53 | 127.09 | 118.80 |
| 8 | G | 1330 | U | C2-N1-C1' | 7.53 | 126.73 | 117.70 |
| 8 | G | 1260 | C | C5-C6-N1 | 7.51 | 124.75 | 121.00 |
| 8 | G | 717 | C | N3-C2-O2 | -7.50 | 116.65 | 121.90 |
| 23 | V | 2238 | G | P-O3'-C3' | 7.50 | 128.70 | 119.70 |
| 23 | V | 1314 | C | C5-C6-N1 | 7.48 | 124.74 | 121.00 |
| 23 | V | 1102 | C | C6-N1-C1' | -7.46 | 111.84 | 120.80 |
| 23 | V | 1449(A) | G | OP1-P-O3' | 7.46 | 121.61 | 105.20 |
| 8 | G | 736 | C | N3-C2-O2 | -7.45 | 116.69 | 121.90 |
| 34 | h | 117 | LEU | CA-CB-CG | 7.45 | 132.43 | 115.30 |
| 23 | V | 1993 | U | C2-N1-C1' | 7.44 | 126.63 | 117.70 |
| 23 | V | 1097 | U | N1-C2-O2 | 7.44 | 128.01 | 122.80 |
| 23 | V | 1202 | C | C6-N1-C2 | -7.42 | 117.33 | 120.30 |
| 46 | t | 21 | LEU | CA-CB-CG | 7.39 | 132.29 | 115.30 |
| 23 | V | 846 | C | P-O3'-C3' | 7.38 | 128.55 | 119.70 |
| 23 | V | 1267 | U | N1-C2-O2 | 7.38 | 127.96 | 122.80 |
| 8 | G | 93 | U | OP1-P-O3' | 7.35 | 121.38 | 105.20 |
| 23 | V | 1566 | A | O4'-C1'-N9 | 7.35 | 114.08 | 108.20 |
| 8 | G | 554 | C | C6-N1-C2 | -7.35 | 117.36 | 120.30 |
| 23 | V | 2162 | G | N3-C4-N9 | 7.34 | 130.41 | 126.00 |
| 55 | DD | 2 | G | C8-N9-C1' | -7.33 | 117.47 | 127.00 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 23 | V | 1057 | A | C3'-C2'-C1' | 7.32 | 107.36 | 101.50 |
| 23 | V | 1304 | C | N1-C2-O2 | 7.32 | 123.29 | 118.90 |
| 23 | V | 817 | C | C5-C6-N1 | 7.32 | 124.66 | 121.00 |
| 23 | V | 2138 | C | C2-N1-C1' | 7.30 | 126.83 | 118.80 |
| 23 | V | 1025 | G | C4-N9-C1' | 7.30 | 135.99 | 126.50 |
| 8 | G | 1243 | C | N1-C2-O2 | 7.29 | 123.27 | 118.90 |
| 23 | V | 1914 | C | N1-C2-O2 | 7.29 | 123.28 | 118.90 |
| 23 | V | 86 | C | C5-C6-N1 | 7.27 | 124.63 | 121.00 |
| 23 | V | 456 | C | C6-N1-C2 | -7.27 | 117.39 | 120.30 |
| 23 | V | 1085 | A | O4'-C1'-N9 | 7.26 | 114.01 | 108.20 |
| 28 | b | 125 | LEU | CA-CB-CG | 7.26 | 131.99 | 115.30 |
| 8 | G | 718 | G | C4-N9-C1' | 7.26 | 135.93 | 126.50 |
| 23 | V | 1247 | A | P-O3'-C3' | 7.26 | 128.41 | 119.70 |
| 23 | V | 791 | C | C5-C6-N1 | 7.25 | 124.63 | 121.00 |
| 8 | G | 717 | C | C6-N1-C1' | -7.25 | 112.10 | 120.80 |
| 23 | V | 456 | C | N3-C2-O2 | -7.25 | 116.83 | 121.90 |
| 34 | h | 106 | LEU | CA-CB-CG | 7.25 | 131.97 | 115.30 |
| 23 | V | 749 | C | N1-C2-O2 | 7.24 | 123.25 | 118.90 |
| 23 | V | 1656 | C | C6-N1-C2 | -7.23 | 117.41 | 120.30 |
| 23 | V | 1051 | G | C8-N9-C4 | -7.21 | 103.52 | 106.40 |
| 23 | V | 1498 | C | N1-C2-O2 | 7.21 | 123.23 | 118.90 |
| 23 | V | 636 | G | C4-N9-C1' | 7.17 | 135.82 | 126.50 |
| 56 | EE | 289 | LEU | CA-CB-CG | 7.17 | 131.80 | 115.30 |
| 23 | V | 1329 | U | C5-C6-N1 | 7.16 | 126.28 | 122.70 |
| 8 | G | 754 | C | N1-C2-O2 | 7.15 | 123.19 | 118.90 |
| 23 | V | 837 | C | C5-C6-N1 | 7.15 | 124.58 | 121.00 |
| 8 | G | 1031 | G | N3-C4-C5 | -7.15 | 125.03 | 128.60 |
| 55 | DD | 3 | C | N1-C2-O2 | 7.15 | 123.19 | 118.90 |
| 23 | V | 2349 | G | C8-N9-C1' | -7.13 | 117.73 | 127.00 |
| 23 | V | 1202 | C | C2-N1-C1' | 7.13 | 126.65 | 118.80 |
| 23 | V | 426 | C | N1-C2-O2 | 7.13 | 123.18 | 118.90 |
| 23 | V | 387 | U | C6-N1-C1' | -7.13 | 111.22 | 121.20 |
| 23 | V | 1053 | C | C6-N1-C2 | -7.12 | 117.45 | 120.30 |
| 8 | G | 1328 | C | N1-C2-O2 | 7.11 | 123.17 | 118.90 |
| 23 | V | 2158 | A | P-O3'-C3' | 7.11 | 128.23 | 119.70 |
| 23 | V | 1053 | C | C2-N1-C1' | 7.10 | 126.61 | 118.80 |
| 23 | V | 2177 | C | C6-N1-C2 | -7.07 | 117.47 | 120.30 |
| 8 | G | 1330 | U | N1-C2-O2 | 7.07 | 127.75 | 122.80 |
| 23 | V | 1795 | C | N1-C2-O2 | 7.07 | 123.14 | 118.90 |
| 13 | L | 61 | LEU | CA-CB-CG | 7.07 | 131.55 | 115.30 |
| 23 | V | 1267 | U | C5-C6-N1 | 7.06 | 126.23 | 122.70 |
| 23 | V | 2162 | G | C8-N9-C1' | -7.06 | 117.83 | 127.00 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 23 | V | 817 | C | N1-C2-O2 | 7.06 | 123.13 | 118.90 |
| 23 | V | 2471 | C | C2-N1-C1' | 7.05 | 126.56 | 118.80 |
| 8 | G | 352 | C | C2-N1-C1' | 7.05 | 126.55 | 118.80 |
| 8 | G | 1065 | U | P-O3'-C3' | 7.05 | 128.16 | 119.70 |
| 23 | V | 2162 | G | N3-C4-C5 | -7.04 | 125.08 | 128.60 |
| 8 | G | 717 | C | C5-C6-N1 | 7.04 | 124.52 | 121.00 |
| 23 | V | 1097 | U | N3-C2-O2 | -7.03 | 117.28 | 122.20 |
| 23 | V | 2620 | C | C6-N1-C2 | -7.01 | 117.49 | 120.30 |
| 8 | G | 1509 | C | N1-C2-O2 | 7.01 | 123.10 | 118.90 |
| 23 | V | 290 | G | O5'-P-OP2 | -7.00 | 99.40 | 105.70 |
| 23 | V | 797 | C | C6-N1-C2 | -6.97 | 117.51 | 120.30 |
| 23 | V | 1057 | A | OP2-P-O3' | 6.97 | 120.54 | 105.20 |
| 23 | V | 2666 | C | N3-C2-O2 | -6.96 | 117.03 | 121.90 |
| 23 | V | 155 | C | P-O3'-C3' | -6.95 | 111.36 | 119.70 |
| 55 | DD | 17 | C | C6-N1-C1' | -6.95 | 112.46 | 120.80 |
| 8 | G | 221 | C | N3-C2-O2 | -6.94 | 117.04 | 121.90 |
| 23 | V | 915 | C | N3-C2-O2 | -6.94 | 117.04 | 121.90 |
| 23 | V | 1804 | C | N1-C2-O2 | 6.92 | 123.06 | 118.90 |
| 23 | V | 1471 | A | C2-N3-C4 | 6.91 | 114.06 | 110.60 |
| 24 | X | 27 | C | N3-C2-O2 | -6.91 | 117.06 | 121.90 |
| 23 | V | 1062 | G | P-O3'-C3' | 6.90 | 127.98 | 119.70 |
| 55 | DD | 18 | C | P-O3'-C3' | 6.90 | 127.98 | 119.70 |
| 23 | V | 613 | U | N1-C2-O2 | 6.89 | 127.62 | 122.80 |
| 23 | V | 1604 | C | N1-C2-O2 | 6.89 | 123.03 | 118.90 |
| 23 | V | 897 | C | N3-C2-O2 | -6.89 | 117.08 | 121.90 |
| 23 | V | 2492 | U | N3-C2-O2 | -6.88 | 117.38 | 122.20 |
| 24 | X | 11 | C | C2-N1-C1' | 6.88 | 126.37 | 118.80 |
| 23 | V | 1146 | C | P-O3'-C3' | -6.88 | 111.44 | 119.70 |
| 23 | V | 119 | A | P-O3'-C3' | 6.87 | 127.94 | 119.70 |
| 23 | V | 1518 | C | N1-C2-O2 | 6.86 | 123.01 | 118.90 |
| 8 | G | 1085 | U | N1-C2-O2 | 6.85 | 127.60 | 122.80 |
| 8 | G | 679 | C | N1-C2-O2 | 6.85 | 123.01 | 118.90 |
| 23 | V | 2164 | C | N1-C2-O2 | 6.83 | 123.00 | 118.90 |
| 8 | G | 1031 | G | N3-C4-N9 | 6.83 | 130.10 | 126.00 |
| 23 | V | 1951 | U | N1-C2-O2 | 6.82 | 127.57 | 122.80 |
| 23 | V | 828 | U | C5-C6-N1 | 6.82 | 126.11 | 122.70 |
| 23 | V | 32 | C | C6-N1-C1' | -6.81 | 112.63 | 120.80 |
| 23 | V | 1411 | C | C2-N1-C1' | 6.79 | 126.27 | 118.80 |
| 23 | V | 2164 | C | C2-N1-C1' | 6.79 | 126.27 | 118.80 |
| 23 | V | 2284 | C | C6-N1-C2 | -6.79 | 117.58 | 120.30 |
| 8 | G | 1032(A) | G | N3-C4-N9 | 6.79 | 130.07 | 126.00 |
| 8 | G | 1003 | G | N1-C6-O6 | -6.78 | 115.83 | 119.90 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 23 | V | 1493 | C | C6-N1-C2 | -6.78 | 117.59 | 120.30 |
| 23 | V | 1005 | C | N3-C2-O2 | -6.78 | 117.15 | 121.90 |
| 23 | V | 2006 | C | N1-C2-O2 | 6.78 | 122.97 | 118.90 |
| 23 | V | 1051 | G | OP1-P-O3' | 6.77 | 120.10 | 105.20 |
| 23 | V | 2163 | C | C2-N1-C1' | 6.77 | 126.25 | 118.80 |
| 23 | V | 283 | A | C4-N9-C1' | 6.76 | 138.48 | 126.30 |
| 8 | G | 155 | C | N1-C2-O2 | 6.76 | 122.95 | 118.90 |
| 23 | V | 1005 | C | C6-N1-C2 | -6.76 | 117.60 | 120.30 |
| 23 | V | 288 | C | N1-C2-O2 | 6.75 | 122.95 | 118.90 |
| 23 | V | 151 | C | C6-N1-C2 | -6.74 | 117.60 | 120.30 |
| 23 | V | 201 | C | C2-N1-C1' | 6.74 | 126.21 | 118.80 |
| 23 | V | 1376 | C | C2-N1-C1' | 6.73 | 126.20 | 118.80 |
| 23 | V | 2615 | U | C2-N1-C1' | 6.73 | 125.78 | 117.70 |
| 23 | V | 1200 | C | C2-N1-C1' | 6.73 | 126.20 | 118.80 |
| 23 | V | 1376 | C | N1-C2-O2 | 6.72 | 122.93 | 118.90 |
| 55 | DD | 70 | C | N3-C2-O2 | -6.72 | 117.20 | 121.90 |
| 14 | M | 91 | VAL | C-N-CA | 6.72 | 138.49 | 121.70 |
| 23 | V | 1312 | U | C5-C6-N1 | 6.71 | 126.06 | 122.70 |
| 23 | V | 1572 | A | O5'-P-OP2 | -6.71 | 99.66 | 105.70 |
| 23 | V | 2103 | C | N1-C2-O2 | 6.71 | 122.92 | 118.90 |
| 8 | G | 620 | C | N1-C2-O2 | 6.70 | 122.92 | 118.90 |
| 8 | G | 563 | A | N3-C4-C5 | -6.70 | 122.11 | 126.80 |
| 8 | G | 1032(A) | G | C8-N9-C1' | -6.69 | 118.30 | 127.00 |
| 8 | G | 1388 | C | C6-N1-C2 | -6.69 | 117.62 | 120.30 |
| 23 | V | 921 | G | OP1-P-OP2 | 6.68 | 129.63 | 119.60 |
| 23 | V | 1626 | G | C4-N9-C1' | 6.68 | 135.19 | 126.50 |
| 23 | V | 797 | C | C5-C6-N1 | 6.68 | 124.34 | 121.00 |
| 24 | X | 56 | G | P-O3'-C3' | 6.67 | 127.71 | 119.70 |
| 23 | V | 1675 | C | C6-N1-C2 | -6.67 | 117.63 | 120.30 |
| 55 | DD | 3 | C | C2-N1-C1' | 6.67 | 126.14 | 118.80 |
| 8 | G | 1031 | G | C4-N9-C1' | 6.66 | 135.16 | 126.50 |
| 23 | V | 198 | C | N1-C2-O2 | 6.66 | 122.90 | 118.90 |
| 24 | X | 11 | C | N1-C2-O2 | 6.66 | 122.90 | 118.90 |
| 8 | G | 992 | U | P-O3'-C3' | 6.66 | 127.69 | 119.70 |
| 8 | G | 1509 | C | N3-C2-O2 | -6.66 | 117.24 | 121.90 |
| 23 | V | 1961 | C | N1-C2-O2 | 6.66 | 122.89 | 118.90 |
| 23 | V | 1799 | G | P-O3'-C3' | 6.65 | 127.68 | 119.70 |
| 8 | G | 717 | C | C6-N1-C2 | -6.64 | 117.64 | 120.30 |
| 23 | V | 1463 | C | C6-N1-C2 | -6.64 | 117.64 | 120.30 |
| 23 | V | 2349 | G | C4-C5-C6 | 6.64 | 122.78 | 118.80 |
| 23 | V | 1788 | C | C5-C6-N1 | 6.63 | 124.31 | 121.00 |
| 23 | V | 2447 | G | P-O3'-C3' | 6.63 | 127.65 | 119.70 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 23 | V | 915 | C | C6-N1-C2 | -6.62 | 117.65 | 120.30 |
| 8 | G | 525 | C | C5-C6-N1 | 6.62 | 124.31 | 121.00 |
| 23 | V | 288 | C | C5-C6-N1 | 6.62 | 124.31 | 121.00 |
| 8 | G | 582 | U | N3-C2-O2 | -6.61 | 117.57 | 122.20 |
| 23 | V | 1101 | U | N1-C2-O2 | 6.61 | 127.43 | 122.80 |
| 23 | V | 527 | C | P-O3'-C3' | 6.60 | 127.62 | 119.70 |
| 24 | X | 4 | C | N1-C2-O2 | 6.60 | 122.86 | 118.90 |
| 23 | V | 2268 | A | C8-N9-C4 | -6.59 | 103.16 | 105.80 |
| 23 | V | 2177 | C | C2-N1-C1' | 6.59 | 126.05 | 118.80 |
| 23 | V | 2032 | G | C6-C5-N7 | -6.59 | 126.45 | 130.40 |
| 23 | V | 1256 | G | N3-C4-N9 | 6.58 | 129.95 | 126.00 |
| 23 | V | 1351 | C | C5-C6-N1 | 6.58 | 124.29 | 121.00 |
| 23 | V | 1762 | A | N7-C8-N9 | 6.58 | 117.09 | 113.80 |
| 23 | V | 2163 | C | C6-N1-C2 | -6.58 | 117.67 | 120.30 |
| 23 | V | 915 | C | C6-N1-C1' | -6.58 | 112.91 | 120.80 |
| 8 | G | 328 | C | P-O3'-C3' | 6.57 | 127.59 | 119.70 |
| 23 | V | 2064 | C | N1-C2-O2 | 6.57 | 122.84 | 118.90 |
| 23 | V | 215 | G | P-O3'-C3' | 6.57 | 127.58 | 119.70 |
| 23 | V | 828 | U | N3-C2-O2 | -6.57 | 117.60 | 122.20 |
| 8 | G | 1440 | C | N1-C2-O2 | 6.56 | 122.84 | 118.90 |
| 23 | V | 2752 | C | C5-C6-N1 | 6.56 | 124.28 | 121.00 |
| 8 | G | 559 | A | P-O3'-C3' | 6.55 | 127.56 | 119.70 |
| 23 | V | 2044 | C | C5-C6-N1 | 6.55 | 124.28 | 121.00 |
| 8 | G | 1149 | C | N1-C2-O2 | 6.55 | 122.83 | 118.90 |
| 23 | V | 1893 | C | N1-C2-O2 | 6.55 | 122.83 | 118.90 |
| 8 | G | 913 | A | P-O3'-C3' | 6.55 | 127.56 | 119.70 |
| 23 | V | 2617 | C | N1-C2-O2 | 6.55 | 122.83 | 118.90 |
| 23 | V | 2112 | G | N3-C4-N9 | 6.54 | 129.92 | 126.00 |
| 23 | V | 1200 | C | C5-C6-N1 | 6.54 | 124.27 | 121.00 |
| 23 | V | 2006 | C | C6-N1-C2 | -6.53 | 117.69 | 120.30 |
| 23 | V | 1329 | U | N3-C2-O2 | -6.52 | 117.63 | 122.20 |
| 23 | V | 837 | C | C2-N1-C1' | 6.52 | 125.97 | 118.80 |
| 23 | V | 198 | C | C2-N1-C1' | 6.52 | 125.97 | 118.80 |
| 23 | V | 136 | G | C2'-C3'-O3' | 6.51 | 124.12 | 113.70 |
| 23 | V | 744 | G | N3-C4-N9 | 6.51 | 129.91 | 126.00 |
| 8 | G | 1498 | U | C5-C6-N1 | 6.51 | 125.95 | 122.70 |
| 8 | G | 1346 | A | P-O3'-C3' | 6.50 | 127.50 | 119.70 |
| 23 | V | 150 | C | C2-N1-C1' | 6.50 | 125.95 | 118.80 |
| 23 | V | 270(G) | C | O4'-C1'-N1 | 6.50 | 113.40 | 108.20 |
| 23 | V | 32 | C | N3-C2-O2 | -6.49 | 117.35 | 121.90 |
| 23 | V | 458 | G | P-O3'-C3' | 6.49 | 127.49 | 119.70 |
| 23 | V | 749 | C | N3-C2-O2 | -6.49 | 117.36 | 121.90 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 23 | V | 2103 | C | N3-C2-O2 | -6.49 | 117.36 | 121.90 |
| 23 | V | 2164 | C | C6-N1-C2 | -6.49 | 117.71 | 120.30 |
| 55 | DD | 40 | C | C2-N1-C1' | 6.48 | 125.93 | 118.80 |
| 23 | V | 1817 | G | N3-C4-C5 | -6.47 | 125.36 | 128.60 |
| 27 | a | 27 | LEU | CA-CB-CG | 6.47 | 130.19 | 115.30 |
| 23 | V | 1956 | U | N3-C2-O2 | -6.47 | 117.67 | 122.20 |
| 23 | V | 86 | C | C6-N1-C2 | -6.46 | 117.71 | 120.30 |
| 24 | X | 30 | C | N3-C2-O2 | -6.46 | 117.38 | 121.90 |
| 39 | m | 99 | LEU | CA-CB-CG | 6.46 | 130.15 | 115.30 |
| 8 | G | 1037 | C | N1-C2-O2 | 6.46 | 122.77 | 118.90 |
| 23 | V | 2112 | G | C4-N9-C1' | 6.46 | 134.89 | 126.50 |
| 23 | V | 283 | A | C8-N9-C1' | -6.44 | 116.10 | 127.70 |
| 23 | V | 1376 | C | C6-N1-C2 | -6.44 | 117.72 | 120.30 |
| 23 | V | 876 | C | C6-N1-C2 | -6.44 | 117.72 | 120.30 |
| 23 | V | 201 | C | N3-C2-O2 | -6.43 | 117.40 | 121.90 |
| 23 | V | 1462 | C | N3-C2-O2 | -6.43 | 117.40 | 121.90 |
| 23 | V | 1056 | G | N1-C6-O6 | -6.43 | 116.04 | 119.90 |
| 23 | V | 114 | U | C2-N1-C1' | 6.43 | 125.41 | 117.70 |
| 8 | G | 243 | A | P-O3'-C3' | 6.42 | 127.41 | 119.70 |
| 23 | V | 1193 | G | N7-C8-N9 | 6.42 | 116.31 | 113.10 |
| 35 | i | 147 | LEU | CA-CB-CG | 6.42 | 130.06 | 115.30 |
| 8 | G | 1182 | G | P-O3'-C3' | 6.42 | 127.40 | 119.70 |
| 23 | V | 1102 | C | C5-C6-N1 | 6.42 | 124.21 | 121.00 |
| 23 | V | 184 | C | N1-C2-O2 | 6.41 | 122.75 | 118.90 |
| 23 | V | 426 | C | C6-N1-C2 | -6.41 | 117.74 | 120.30 |
| 8 | G | 652 | U | N3-C2-O2 | -6.40 | 117.72 | 122.20 |
| 23 | V | 451 | C | P-O3'-C3' | 6.40 | 127.38 | 119.70 |
| 23 | V | 201 | C | C6-N1-C2 | -6.39 | 117.74 | 120.30 |
| 23 | V | 530 | G | C4-N9-C1' | 6.39 | 134.81 | 126.50 |
| 8 | G | 683 | G | N1-C6-O6 | -6.39 | 116.06 | 119.90 |
| 8 | G | 1032(A) | G | N3-C4-C5 | -6.39 | 125.40 | 128.60 |
| 23 | V | 828 | U | N1-C2-O2 | 6.39 | 127.27 | 122.80 |
| 23 | V | 2430 | A | C2-N3-C4 | 6.39 | 113.79 | 110.60 |
| 8 | G | 221 | C | C2-N1-C1' | 6.38 | 125.82 | 118.80 |
| 23 | V | 791 | C | C6-N1-C2 | -6.38 | 117.75 | 120.30 |
| 23 | V | 1193 | G | C4-N9-C1' | 6.37 | 134.78 | 126.50 |
| 32 | f | 108 | ALA | C-N-CA | 6.36 | 137.60 | 121.70 |
| 23 | V | 2073 | C | C5-C6-N1 | 6.36 | 124.18 | 121.00 |
| 23 | V | 2045 | C | C6-N1-C2 | -6.35 | 117.76 | 120.30 |
| 23 | V | 2136 | C | N3-C2-O2 | -6.35 | 117.45 | 121.90 |
| 8 | G | 1331 | G | P-O3'-C3' | 6.35 | 127.32 | 119.70 |
| 23 | V | 624 | C | N3-C2-O2 | -6.35 | 117.45 | 121.90 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 24 | X | 30 | C | C6-N1-C2 | -6.35 | 117.76 | 120.30 |
| 23 | V | 1101 | U | N3-C2-O2 | -6.35 | 117.76 | 122.20 |
| 23 | V | 1506 | C | N1-C2-O2 | 6.35 | 122.71 | 118.90 |
| 23 | V | 624 | C | N1-C2-O2 | 6.35 | 122.71 | 118.90 |
| 8 | G | 1038 | C | N1-C2-O2 | 6.34 | 122.71 | 118.90 |
| 23 | V | 915 | C | C5-C6-N1 | 6.34 | 124.17 | 121.00 |
| 8 | G | 1330 | U | N3-C2-O2 | -6.34 | 117.77 | 122.20 |
| 23 | V | 1626 | G | N3-C4-C5 | -6.34 | 125.43 | 128.60 |
| 23 | V | 1198 | U | N3-C2-O2 | -6.33 | 117.77 | 122.20 |
| 23 | V | 652 | C | C6-N1-C2 | -6.33 | 117.77 | 120.30 |
| 23 | V | 1795 | C | C5-C6-N1 | 6.33 | 124.17 | 121.00 |
| 23 | V | 1314 | C | C6-N1-C1' | -6.33 | 113.20 | 120.80 |
| 23 | V | 1267 | U | C2-N1-C1' | 6.33 | 125.30 | 117.70 |
| 23 | V | 1947 | C | C2-N1-C1' | 6.33 | 125.76 | 118.80 |
| 23 | V | 632 | A | O5'-P-OP2 | -6.32 | 100.01 | 105.70 |
| 23 | V | 2177 | C | N3-C2-O2 | -6.32 | 117.47 | 121.90 |
| 23 | V | 1313 | U | C2-N1-C1' | -6.32 | 110.12 | 117.70 |
| 23 | V | 817 | C | N3-C2-O2 | -6.31 | 117.48 | 121.90 |
| 25 | Y | 32 | LEU | CA-CB-CG | 6.31 | 129.81 | 115.30 |
| 23 | V | 456 | C | C5-C6-N1 | 6.31 | 124.15 | 121.00 |
| 23 | V | 2407 | G | C4-N9-C1' | 6.31 | 134.70 | 126.50 |
| 23 | V | 1518 | C | C6-N1-C2 | -6.30 | 117.78 | 120.30 |
| 8 | G | 548 | G | N3-C4-N9 | 6.30 | 129.78 | 126.00 |
| 55 | DD | 17 | C | C5-C6-N1 | 6.29 | 124.15 | 121.00 |
| 23 | V | 1947 | C | N1-C2-O2 | 6.29 | 122.67 | 118.90 |
| 23 | V | 1956 | U | N1-C2-O2 | 6.29 | 127.20 | 122.80 |
| 55 | DD | 3 | C | C6-N1-C2 | -6.29 | 117.79 | 120.30 |
| 23 | V | 2855 | C | C6-N1-C2 | -6.28 | 117.79 | 120.30 |
| 23 | V | 1827 | C | C6-N1-C2 | -6.28 | 117.79 | 120.30 |
| 23 | V | 83 | G | P-O3'-C3' | 6.27 | 127.22 | 119.70 |
| 23 | V | 1527 | G | C8-N9-C4 | -6.27 | 103.89 | 106.40 |
| 8 | G | 1498 | U | C6-N1-C2 | -6.27 | 117.24 | 121.00 |
| 8 | G | 641 | U | P-O3'-C3' | 6.26 | 127.22 | 119.70 |
| 23 | V | 51 | G | P-O3'-C3' | 6.26 | 127.22 | 119.70 |
| 23 | V | 2138 | C | N1-C2-O2 | 6.26 | 122.65 | 118.90 |
| 8 | G | 1330 | U | C5-C6-N1 | 6.25 | 125.83 | 122.70 |
| 23 | V | 2510 | C | C5-C6-N1 | 6.25 | 124.13 | 121.00 |
| 8 | G | 484 | G | P-O3'-C3' | 6.25 | 127.20 | 119.70 |
| 23 | V | 1314 | C | N3-C2-O2 | -6.25 | 117.53 | 121.90 |
| 8 | G | 189 | U | OP1-P-O3' | 6.25 | 118.95 | 105.20 |
| 8 | G | 979 | C | N1-C2-O2 | 6.25 | 122.65 | 118.90 |
| 23 | V | 1518 | C | C2-N1-C1' | 6.25 | 125.67 | 118.80 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 23 | V | 1050 | A | N3-C4-C5 | -6.24 | 122.43 | 126.80 |
| 8 | G | 1200 | C | C5-C6-N1 | 6.24 | 124.12 | 121.00 |
| 23 | V | 2666 | C | C6-N1-C2 | -6.24 | 117.80 | 120.30 |
| 23 | V | 1947 | C | C6-N1-C2 | -6.24 | 117.81 | 120.30 |
| 23 | V | 1914 | C | C2-N1-C1' | 6.22 | 125.64 | 118.80 |
| 23 | V | 2319 | G | P-O3'-C3' | 6.22 | 127.17 | 119.70 |
| 23 | V | 1058 | G | N9-C4-C5 | 6.21 | 107.89 | 105.40 |
| 23 | V | 531 | C | C6-N1-C2 | -6.21 | 117.82 | 120.30 |
| 23 | V | 1518 | C | P-O3'-C3' | 6.20 | 127.14 | 119.70 |
| 23 | V | 1043 | C | C2-N1-C1' | -6.20 | 111.98 | 118.80 |
| 23 | V | 1300 | U | O4'-C1'-N1 | -6.20 | 103.24 | 108.20 |
| 23 | V | 636 | G | C8-N9-C1' | -6.20 | 118.95 | 127.00 |
| 23 | V | 201 | C | C5-C6-N1 | 6.19 | 124.10 | 121.00 |
| 8 | G | 1078 | U | N1-C2-O2 | 6.19 | 127.13 | 122.80 |
| 8 | G | 525 | C | C6-N1-C2 | -6.19 | 117.83 | 120.30 |
| 8 | G | 820 | U | P-O3'-C3' | 6.18 | 127.12 | 119.70 |
| 8 | G | 582 | U | N1-C2-O2 | 6.17 | 127.12 | 122.80 |
| 23 | V | 302 | C | C6-N1-C2 | -6.17 | 117.83 | 120.30 |
| 23 | V | 1083 | U | C2-N1-C1' | 6.17 | 125.10 | 117.70 |
| 55 | DD | 2 | G | N3-C4-N9 | 6.17 | 129.70 | 126.00 |
| 8 | G | 119 | A | P-O3'-C3' | 6.16 | 127.09 | 119.70 |
| 23 | V | 671 | C | C6-N1-C2 | -6.16 | 117.84 | 120.30 |
| 23 | V | 1023 | U | C5-C6-N1 | 6.16 | 125.78 | 122.70 |
| 23 | V | 1147 | C | C2-N1-C1' | 6.15 | 125.57 | 118.80 |
| 23 | V | 1086 | A | OP1-P-O3' | 6.15 | 118.72 | 105.20 |
| 23 | V | 426 | C | C2-N1-C1' | 6.14 | 125.56 | 118.80 |
| 23 | V | 2481 | G | P-O3'-C3' | 6.14 | 127.07 | 119.70 |
| 23 | V | 637 | A | C4-N9-C1' | 6.14 | 137.35 | 126.30 |
| 23 | V | 1461 | G | C8-N9-C1' | -6.14 | 119.02 | 127.00 |
| 23 | V | 2032 | G | C4-N9-C1' | 6.14 | 134.48 | 126.50 |
| 23 | V | 286 | C | N3-C2-O2 | -6.14 | 117.60 | 121.90 |
| 23 | V | 1083 | U | N3-C2-O2 | -6.14 | 117.91 | 122.20 |
| 8 | G | 936 | C | N1-C2-O2 | 6.13 | 122.58 | 118.90 |
| 31 | e | 31 | GLY | N-CA-C | 6.13 | 128.42 | 113.10 |
| 23 | V | 360 | G | C6-C5-N7 | -6.12 | 126.73 | 130.40 |
| 23 | V | 1315 | C | C6-N1-C2 | -6.12 | 117.85 | 120.30 |
| 23 | V | 2132 | U | C6-N1-C1' | -6.12 | 112.63 | 121.20 |
| 23 | V | 283 | A | N3-C4-N9 | 6.12 | 132.29 | 127.40 |
| 8 | G | 1348 | U | N3-C2-O2 | -6.12 | 117.92 | 122.20 |
| 23 | V | 1795 | C | C6-N1-C2 | -6.12 | 117.85 | 120.30 |
| 23 | V | 2510 | C | N1-C2-O2 | 6.12 | 122.57 | 118.90 |
| 23 | V | 288 | C | C6-N1-C2 | -6.11 | 117.86 | 120.30 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 8 | G | 1348 | U | C2-N1-C1' | 6.11 | 125.03 | 117.70 |
| 23 | V | 2163 | C | N3-C2-O2 | -6.11 | 117.62 | 121.90 |
| 23 | V | 2847 | U | C2-N1-C1' | 6.10 | 125.02 | 117.70 |
| 8 | G | 1367 | C | N1-C2-O2 | 6.10 | 122.56 | 118.90 |
| 23 | V | 347 | A | C2-N3-C4 | 6.10 | 113.65 | 110.60 |
| 24 | X | 27 | C | C6-N1-C2 | -6.10 | 117.86 | 120.30 |
| 8 | G | 283 | C | N1-C2-O2 | 6.09 | 122.56 | 118.90 |
| 23 | V | 1267 | U | N3-C2-O2 | -6.09 | 117.94 | 122.20 |
| 23 | V | 1894 | C | C5-C6-N1 | 6.09 | 124.05 | 121.00 |
| 23 | V | 2510 | C | C6-N1-C2 | -6.09 | 117.86 | 120.30 |
| 23 | V | 2284 | C | C5-C6-N1 | 6.08 | 124.04 | 121.00 |
| 23 | V | 2471 | C | N1-C2-O2 | 6.08 | 122.55 | 118.90 |
| 8 | G | 505 | G | N3-C4-N9 | 6.08 | 129.65 | 126.00 |
| 23 | V | 1804 | C | N3-C2-O2 | -6.08 | 117.65 | 121.90 |
| 23 | V | 1461 | G | C4-N9-C1' | 6.07 | 134.39 | 126.50 |
| 23 | V | 1982 | C | N1-C2-O2 | 6.07 | 122.54 | 118.90 |
| 23 | V | 1493 | C | C6-N1-C1' | -6.07 | 113.52 | 120.80 |
| 8 | G | 1430 | C | C5-C6-N1 | 6.07 | 124.03 | 121.00 |
| 23 | V | 1612 | C | C6-N1-C2 | -6.06 | 117.88 | 120.30 |
| 23 | V | 304 | G | N3-C4-N9 | 6.06 | 129.64 | 126.00 |
| 23 | V | 1945 | G | N3-C4-N9 | 6.05 | 129.63 | 126.00 |
| 8 | G | 1218 | C | N1-C2-O2 | 6.05 | 122.53 | 118.90 |
| 23 | V | 897 | C | N1-C2-O2 | 6.04 | 122.53 | 118.90 |
| 23 | V | 1318 | C | C2-N1-C1' | 6.04 | 125.45 | 118.80 |
| 23 | V | 1837 | C | C2-N1-C1' | 6.04 | 125.44 | 118.80 |
| 23 | V | 174 | C | C2-N1-C1' | 6.04 | 125.44 | 118.80 |
| 23 | V | 426 | C | N3-C2-O2 | -6.04 | 117.67 | 121.90 |
| 23 | V | 1537 | C | N1-C2-O2 | 6.04 | 122.52 | 118.90 |
| 23 | V | 765 | G | O5'-P-OP2 | -6.04 | 100.27 | 105.70 |
| 23 | V | 744 | G | N3-C4-C5 | -6.03 | 125.58 | 128.60 |
| 35 | i | 59 | LEU | CA-CB-CG | 6.03 | 129.18 | 115.30 |
| 23 | V | 1411 | C | N1-C2-O2 | 6.03 | 122.52 | 118.90 |
| 23 | V | 1519 | G | OP1-P-OP2 | -6.03 | 110.56 | 119.60 |
| 23 | V | 1304 | C | C6-N1-C2 | -6.02 | 117.89 | 120.30 |
| 23 | V | 613 | U | N3-C2-O2 | -6.02 | 117.99 | 122.20 |
| 23 | V | 2820 | A | P-O3'-C3' | 6.02 | 126.92 | 119.70 |
| 23 | V | 898 | C | N1-C2-O2 | 6.02 | 122.51 | 118.90 |
| 8 | G | 505 | G | C4-N9-C1' | 6.01 | 134.32 | 126.50 |
| 8 | G | 563 | A | N3-C4-N9 | 6.01 | 132.21 | 127.40 |
| 23 | V | 1052 | C | N3-C2-O2 | -6.00 | 117.70 | 121.90 |
| 23 | V | 176 | G | N3-C4-C5 | 6.00 | 131.60 | 128.60 |
| 23 | V | 1056 | G | C2-N3-C4 | 5.99 | 114.89 | 111.90 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 23 | V | 1146 | C | C6-N1-C2 | -5.99 | 117.90 | 120.30 |
| 8 | G | 1076 | C | C6-N1-C2 | -5.98 | 117.91 | 120.30 |
| 8 | G | 1085 | U | C6-N1-C2 | -5.98 | 117.41 | 121.00 |
| 23 | V | 302 | C | N1-C2-O2 | 5.98 | 122.49 | 118.90 |
| 23 | V | 1200 | C | N1-C2-O2 | 5.98 | 122.49 | 118.90 |
| 23 | V | 2492 | U | N1-C2-O2 | 5.97 | 126.98 | 122.80 |
| 23 | V | 783 | A | C5-N7-C8 | -5.97 | 100.91 | 103.90 |
| 24 | X | 17 | C | N1-C2-O2 | 5.97 | 122.48 | 118.90 |
| 23 | V | 644 | A | P-O3'-C3' | 5.97 | 126.86 | 119.70 |
| 23 | V | 2321 | G | C4-N9-C1' | 5.97 | 134.26 | 126.50 |
| 8 | G | 595 | G | P-O3'-C3' | 5.96 | 126.86 | 119.70 |
| 23 | V | 184 | C | N3-C2-O2 | -5.96 | 117.72 | 121.90 |
| 8 | G | 718 | G | C8-N9-C1' | -5.96 | 119.25 | 127.00 |
| 23 | V | 2574 | G | N3-C4-N9 | 5.96 | 129.58 | 126.00 |
| 23 | V | 2615 | U | N3-C2-O2 | -5.96 | 118.03 | 122.20 |
| 23 | V | 2032 | G | C8-N9-C1' | -5.96 | 119.25 | 127.00 |
| 23 | V | 637 | A | N7-C8-N9 | 5.95 | 116.78 | 113.80 |
| 23 | V | 776 | G | P-O3'-C3' | 5.95 | 126.84 | 119.70 |
| 23 | V | 1411 | C | C5-C6-N1 | 5.95 | 123.98 | 121.00 |
| 8 | G | 1003 | G | N1-C2-N2 | -5.95 | 110.84 | 116.20 |
| 8 | G | 812 | C | P-O3'-C3' | 5.94 | 126.83 | 119.70 |
| 23 | V | 563 | G | N3-C4-N9 | 5.94 | 129.57 | 126.00 |
| 23 | V | 613 | U | C6-N1-C1' | -5.94 | 112.88 | 121.20 |
| 23 | V | 2333 | A | C4-N9-C1' | 5.94 | 137.00 | 126.30 |
| 23 | V | 732 | C | C6-N1-C2 | -5.94 | 117.92 | 120.30 |
| 23 | V | 1061 | U | C5-C6-N1 | 5.93 | 125.67 | 122.70 |
| 23 | V | 872 | A | C8-N9-C4 | -5.93 | 103.43 | 105.80 |
| 24 | X | 12 | C | N1-C2-O2 | 5.93 | 122.46 | 118.90 |
| 23 | V | 2666 | C | C2-N1-C1' | 5.93 | 125.32 | 118.80 |
| 23 | V | 2866 | U | C6-N1-C2 | -5.93 | 117.44 | 121.00 |
| 23 | V | 1518 | C | OP1-P-O3' | 5.92 | 118.23 | 105.20 |
| 23 | V | 1083 | U | C5-C6-N1 | 5.92 | 125.66 | 122.70 |
| 23 | V | 676 | A | C5-N7-C8 | -5.92 | 100.94 | 103.90 |
| 33 | g | 87 | LEU | CA-CB-CG | 5.92 | 128.92 | 115.30 |
| 23 | V | 1533 | C | C6-N1-C2 | -5.92 | 117.93 | 120.30 |
| 15 | N | 36 | LEU | CA-CB-CG | 5.91 | 128.90 | 115.30 |
| 23 | V | 1052 | C | C5'-C4'-C3' | 5.91 | 125.46 | 116.00 |
| 8 | G | 1498 | U | C6-N1-C1' | -5.91 | 112.92 | 121.20 |
| 55 | DD | 17 | C | N3-C2-O2 | -5.91 | 117.77 | 121.90 |
| 23 | V | 2474 | C | N1-C2-O2 | 5.90 | 122.44 | 118.90 |
| 8 | G | 718 | G | N3-C4-C5 | -5.90 | 125.65 | 128.60 |
| 23 | V | 1312 | U | P-O3'-C3' | 5.90 | 126.78 | 119.70 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 23 | V | 1351 | C | N1-C2-O2 | 5.89 | 122.44 | 118.90 |
| 23 | V | 2506 | U | N1-C2-O2 | 5.89 | 126.92 | 122.80 |
| 23 | V | 176 | G | C8-N9-C1' | 5.89 | 134.66 | 127.00 |
| 23 | V | 1626 | G | N3-C4-N9 | 5.89 | 129.53 | 126.00 |
| 23 | V | 788 | A | P-O3'-C3' | 5.89 | 126.77 | 119.70 |
| 8 | G | 488 | C | C6-N1-C2 | -5.88 | 117.95 | 120.30 |
| 23 | V | 671 | C | C2-N1-C1' | 5.88 | 125.27 | 118.80 |
| 23 | V | 624 | C | C5-C6-N1 | 5.88 | 123.94 | 121.00 |
| 23 | V | 1196 | C | N3-C2-O2 | -5.88 | 117.78 | 121.90 |
| 8 | G | 652 | U | C2-N1-C1' | 5.88 | 124.76 | 117.70 |
| 8 | G | 943 | U | N3-C2-O2 | -5.88 | 118.08 | 122.20 |
| 23 | V | 174 | C | N1-C2-O2 | 5.87 | 122.42 | 118.90 |
| 23 | V | 1390 | U | N3-C2-O2 | -5.87 | 118.09 | 122.20 |
| 23 | V | 235 | U | N1-C2-O2 | 5.86 | 126.90 | 122.80 |
| 23 | V | 2704 | C | N1-C2-O2 | 5.86 | 122.42 | 118.90 |
| 8 | G | 413 | G | P-O3'-C3' | 5.86 | 126.73 | 119.70 |
| 23 | V | 1618 | A | C4-N9-C1' | 5.86 | 136.85 | 126.30 |
| 23 | V | 2506 | U | N3-C2-O2 | -5.86 | 118.10 | 122.20 |
| 8 | G | 1265 | G | C4-C5-N7 | 5.86 | 113.14 | 110.80 |
| 23 | V | 1058 | G | C5-C6-O6 | 5.86 | 132.11 | 128.60 |
| 23 | V | 1101 | U | C2-N1-C1' | 5.86 | 124.73 | 117.70 |
| 23 | V | 1251 | C | C2-N1-C1' | 5.86 | 125.24 | 118.80 |
| 23 | V | 2032 | G | C5-C6-O6 | -5.86 | 125.09 | 128.60 |
| 23 | V | 2166 | G | N3-C4-N9 | -5.85 | 122.49 | 126.00 |
| 23 | V | 1376 | C | N3-C2-O2 | -5.84 | 117.81 | 121.90 |
| 23 | V | 1415 | U | C2-N1-C1' | 5.84 | 124.71 | 117.70 |
| 23 | V | 2171 | A | P-O3'-C3' | 5.84 | 126.71 | 119.70 |
| 23 | V | 2349 | G | C6-C5-N7 | -5.84 | 126.89 | 130.40 |
| 23 | V | 1774 | C | C5-C6-N1 | 5.84 | 123.92 | 121.00 |
| 23 | V | 1506 | C | C6-N1-C2 | -5.83 | 117.97 | 120.30 |
| 8 | G | 975 | A | P-O3'-C3' | 5.83 | 126.70 | 119.70 |
| 23 | V | 1675 | C | N3-C2-O2 | -5.83 | 117.82 | 121.90 |
| 23 | V | 772 | C | C6-N1-C2 | -5.83 | 117.97 | 120.30 |
| 23 | V | 1020 | A | C8-N9-C4 | -5.83 | 103.47 | 105.80 |
| 23 | V | 1390 | U | C2-N1-C1' | 5.83 | 124.69 | 117.70 |
| 23 | V | 587 | C | P-O3'-C3' | 5.82 | 126.69 | 119.70 |
| 23 | V | 1381 | G | N3-C4-N9 | 5.82 | 129.49 | 126.00 |
| 23 | V | 1025 | G | N3-C4-C5 | -5.82 | 125.69 | 128.60 |
| 23 | V | 2348 | U | N3-C2-O2 | -5.82 | 118.13 | 122.20 |
| 23 | V | 151 | C | N3-C2-O2 | -5.82 | 117.83 | 121.90 |
| 23 | V | 1304 | C | C5-C6-N1 | 5.82 | 123.91 | 121.00 |
| 23 | V | 636 | G | C2-N3-C4 | 5.81 | 114.81 | 111.90 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 23 | V | 355 | G | N3-C4-N9 | -5.81 | 122.51 | 126.00 |
| 23 | V | 1306 | C | N1-C2-O2 | 5.81 | 122.38 | 118.90 |
| 23 | V | 2032 | G | N3-C4-N9 | 5.80 | 129.48 | 126.00 |
| 8 | G | 39 | G | N3-C4-C5 | 5.80 | 131.50 | 128.60 |
| 8 | G | 1449 | C | C6-N1-C2 | -5.80 | 117.98 | 120.30 |
| 23 | V | 1403 | C | N1-C2-O2 | 5.80 | 122.38 | 118.90 |
| 23 | V | 1795 | C | C2-N1-C1' | 5.80 | 125.18 | 118.80 |
| 23 | V | 1653 | G | P-O3'-C3' | 5.79 | 126.65 | 119.70 |
| 35 | i | 47 | ASP | C-N-CD | -5.79 | 107.86 | 120.60 |
| 30 | d | 109 | PHE | C-N-CA | 5.79 | 136.17 | 121.70 |
| 55 | DD | 17 | C | C6-N1-C2 | -5.79 | 117.98 | 120.30 |
| 8 | G | 455 | C | N1-C2-O2 | 5.79 | 122.37 | 118.90 |
| 8 | G | 1328 | C | N3-C2-O2 | -5.79 | 117.85 | 121.90 |
| 8 | G | 1449 | C | C2-N1-C1' | 5.78 | 125.16 | 118.80 |
| 23 | V | 121 | G | C4-N9-C1' | 5.78 | 134.02 | 126.50 |
| 8 | G | 783 | C | C6-N1-C2 | -5.78 | 117.99 | 120.30 |
| 23 | V | 2617 | C | C5-C6-N1 | 5.78 | 123.89 | 121.00 |
| 23 | V | 1531 | C | C6-N1-C2 | -5.78 | 117.99 | 120.30 |
| 23 | V | 1058 | G | C6-C5-N7 | 5.78 | 133.87 | 130.40 |
| 8 | G | 1401 | G | C6-C5-N7 | -5.78 | 126.93 | 130.40 |
| 23 | V | 1294 | U | N1-C2-O2 | 5.77 | 126.84 | 122.80 |
| 27 | a | 61 | ARG | CA-CB-CG | 5.77 | 126.09 | 113.40 |
| 23 | V | 2136 | C | C2-N1-C1' | 5.77 | 125.14 | 118.80 |
| 23 | V | 616 | A | P-O3'-C3' | 5.76 | 126.62 | 119.70 |
| 8 | G | 139 | G | N3-C4-N9 | 5.76 | 129.46 | 126.00 |
| 23 | V | 1057 | A | N7-C8-N9 | 5.76 | 116.68 | 113.80 |
| 8 | G | 1145 | C | P-O3'-C3' | 5.76 | 126.61 | 119.70 |
| 23 | V | 418 | G | C4-N9-C1' | 5.75 | 133.98 | 126.50 |
| 39 | m | 78 | LEU | CA-CB-CG | 5.75 | 128.53 | 115.30 |
| 8 | G | 505 | G | C8-N9-C1' | -5.75 | 119.53 | 127.00 |
| 23 | V | 32 | C | C6-N1-C2 | -5.75 | 118.00 | 120.30 |
| 23 | V | 758 | C | C6-N1-C2 | -5.75 | 118.00 | 120.30 |
| 8 | G | 328 | C | N1-C2-O2 | 5.75 | 122.35 | 118.90 |
| 8 | G | 921 | U | N1-C2-O2 | 5.75 | 126.82 | 122.80 |
| 23 | V | 355 | G | N9-C4-C5 | 5.75 | 107.70 | 105.40 |
| 23 | V | 857 | C | C6-N1-C2 | -5.74 | 118.00 | 120.30 |
| 23 | V | 1267 | U | P-O3'-C3' | 5.74 | 126.59 | 119.70 |
| 23 | V | 1945 | G | C4-N9-C1' | 5.74 | 133.96 | 126.50 |
| 43 | q | 66 | LEU | CA-CB-CG | 5.74 | 128.49 | 115.30 |
| 8 | G | 1285 | A | P-O3'-C3' | 5.74 | 126.58 | 119.70 |
| 23 | V | 2064 | C | N3-C2-O2 | -5.73 | 117.89 | 121.90 |
| 23 | V | 1945 | G | C8-N9-C1' | -5.73 | 119.56 | 127.00 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 55 | DD | 70 | C | C6-N1-C2 | -5.72 | 118.01 | 120.30 |
| 8 | G | 1449 | C | N1-C2-O2 | 5.72 | 122.33 | 118.90 |
| 23 | V | 872 | A | N7-C8-N9 | 5.72 | 116.66 | 113.80 |
| 23 | V | 392 | C | C2-N1-C1' | 5.72 | 125.09 | 118.80 |
| 8 | G | 155 | C | N3-C2-O2 | -5.71 | 117.90 | 121.90 |
| 23 | V | 1052 | C | C5'-C4'-O4' | 5.71 | 115.96 | 109.10 |
| 23 | V | 2032 | G | N9-C4-C5 | -5.71 | 103.11 | 105.40 |
| 23 | V | 1566 | A | C4-N9-C1' | 5.71 | 136.58 | 126.30 |
| 23 | V | 510 | C | N1-C2-O2 | 5.71 | 122.33 | 118.90 |
| 23 | V | 71 | A | P-O3'-C3' | 5.71 | 126.55 | 119.70 |
| 23 | V | 727 | A | P-O3'-C3' | 5.71 | 126.55 | 119.70 |
| 8 | G | 240 | C | C6-N1-C2 | -5.71 | 118.02 | 120.30 |
| 23 | V | 2615 | U | N1-C2-O2 | 5.71 | 126.79 | 122.80 |
| 23 | V | 2163 | C | C5-C6-N1 | 5.71 | 123.85 | 121.00 |
| 23 | V | 2620 | C | C5-C6-N1 | 5.70 | 123.85 | 121.00 |
| 23 | V | 866 | A | C4-N9-C1' | 5.70 | 136.56 | 126.30 |
| 23 | V | 1463 | C | C5-C6-N1 | 5.70 | 123.85 | 121.00 |
| 23 | V | 176 | G | N9-C4-C5 | 5.70 | 107.68 | 105.40 |
| 23 | V | 2615 | U | C5-C6-N1 | 5.69 | 125.55 | 122.70 |
| 23 | V | 1056 | G | C5-C6-N1 | 5.69 | 114.35 | 111.50 |
| 23 | V | 1660 | C | C6-N1-C2 | -5.69 | 118.02 | 120.30 |
| 8 | G | 652 | U | N1-C2-O2 | 5.69 | 126.78 | 122.80 |
| 23 | V | 635 | C | C6-N1-C2 | -5.68 | 118.03 | 120.30 |
| 8 | G | 266 | G | P-O3'-C3' | 5.68 | 126.52 | 119.70 |
| 23 | V | 727 | A | C8-N9-C4 | -5.68 | 103.53 | 105.80 |
| 23 | V | 971 | C | C6-N1-C2 | -5.68 | 118.03 | 120.30 |
| 23 | V | 1005 | C | C5-C6-N1 | 5.68 | 123.84 | 121.00 |
| 23 | V | 1914 | C | N3-C2-O2 | -5.68 | 117.92 | 121.90 |
| 26 | Z | 27 | THR | C-N-CA | 5.67 | 135.89 | 121.70 |
| 6 | E | 16 | LEU | CA-CB-CG | 5.67 | 128.35 | 115.30 |
| 8 | G | 936 | C | N3-C2-O2 | -5.67 | 117.93 | 121.90 |
| 23 | V | 2456 | C | C6-N1-C2 | -5.67 | 118.03 | 120.30 |
| 23 | V | 2559 | C | C6-N1-C2 | -5.67 | 118.03 | 120.30 |
| 8 | G | 1509 | C | C6-N1-C2 | -5.67 | 118.03 | 120.30 |
| 13 | L | 14 | LEU | CA-CB-CG | 5.67 | 128.33 | 115.30 |
| 23 | V | 1058 | G | C8-N9-C4 | -5.66 | 104.14 | 106.40 |
| 23 | V | 1266 | G | P-O3'-C3' | 5.66 | 126.49 | 119.70 |
| 23 | V | 2045 | C | C5-C6-N1 | 5.66 | 123.83 | 121.00 |
| 8 | G | 1243 | C | N3-C2-O2 | -5.65 | 117.94 | 121.90 |
| 23 | V | 1025 | G | C8-N9-C1' | -5.65 | 119.66 | 127.00 |
| 8 | G | 115 | G | P-O3'-C3' | 5.65 | 126.48 | 119.70 |
| 23 | V | 1183 | G | N9-C1'-C2' | 5.65 | 121.34 | 114.00 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 23 | V | 862 | G | N3-C4-N9 | 5.64 | 129.38 | 126.00 |
| 23 | V | 2112 | G | C8-N9-C1' | -5.64 | 119.66 | 127.00 |
| 23 | V | 1518 | C | N3-C2-O2 | -5.64 | 117.95 | 121.90 |
| 23 | V | 120 | U | P-O3'-C3' | 5.64 | 126.47 | 119.70 |
| 23 | V | 2138 | C | C5-C6-N1 | 5.63 | 123.82 | 121.00 |
| 23 | V | 2348 | U | N1-C2-O2 | 5.63 | 126.74 | 122.80 |
| 23 | V | 2559 | C | C2-N1-C1' | 5.63 | 124.99 | 118.80 |
| 8 | G | 1348 | U | N1-C2-O2 | 5.63 | 126.74 | 122.80 |
| 23 | V | 1656 | C | C5-C6-N1 | 5.63 | 123.81 | 121.00 |
| 23 | V | 384 | U | N3-C2-O2 | -5.62 | 118.26 | 122.20 |
| 55 | DD | 3 | C | C5-C6-N1 | 5.62 | 123.81 | 121.00 |
| 23 | V | 2293 | C | N3-C2-O2 | -5.62 | 117.96 | 121.90 |
| 23 | V | 302 | C | N3-C2-O2 | -5.62 | 117.97 | 121.90 |
| 23 | V | 1057 | A | O3'-P-O5' | 5.62 | 114.68 | 104.00 |
| 23 | V | 2175 | C | C5-C6-N1 | 5.62 | 123.81 | 121.00 |
| 8 | G | 1265 | G | N9-C4-C5 | -5.62 | 103.15 | 105.40 |
| 8 | G | 129 | U | C2-N1-C1' | 5.62 | 124.44 | 117.70 |
| 23 | V | 1191 | G | N3-C4-N9 | 5.62 | 129.37 | 126.00 |
| 23 | V | 2310 | A | C4-N9-C1' | 5.61 | 136.41 | 126.30 |
| 24 | X | 91 | C | N1-C2-O2 | 5.61 | 122.27 | 118.90 |
| 23 | V | 1462 | C | C6-N1-C1' | -5.61 | 114.07 | 120.80 |
| 23 | V | 2268 | A | N7-C8-N9 | 5.61 | 116.61 | 113.80 |
| 8 | G | 754 | C | C5-C6-N1 | 5.60 | 123.80 | 121.00 |
| 23 | V | 2333 | A | C2-N3-C4 | 5.60 | 113.40 | 110.60 |
| 23 | V | 2683 | C | C5-C6-N1 | 5.60 | 123.80 | 121.00 |
| 23 | V | 930 | U | P-O3'-C3' | 5.60 | 126.42 | 119.70 |
| 23 | V | 2177 | C | N1-C2-O2 | 5.60 | 122.26 | 118.90 |
| 23 | V | 421 | U | N1-C2-O2 | 5.59 | 126.71 | 122.80 |
| 23 | V | 1840 | G | C4-N9-C1' | 5.59 | 133.77 | 126.50 |
| 47 | u | 27 | LEU | CA-CB-CG | 5.59 | 128.15 | 115.30 |
| 8 | G | 910 | C | C6-N1-C2 | -5.58 | 118.07 | 120.30 |
| 23 | V | 1025 | G | N7-C8-N9 | 5.58 | 115.89 | 113.10 |
| 23 | V | 817 | C | C2-N1-C1' | 5.58 | 124.94 | 118.80 |
| 23 | V | 479 | A | O4'-C1'-N9 | 5.58 | 112.66 | 108.20 |
| 23 | V | 1449(A) | G | P-O3'-C3' | 5.57 | 126.39 | 119.70 |
| 8 | G | 123 | C | C6-N1-C2 | -5.57 | 118.07 | 120.30 |
| 8 | G | 342 | C | N1-C2-O2 | 5.57 | 122.24 | 118.90 |
| 23 | V | 456 | C | C6-N1-C1' | -5.57 | 114.12 | 120.80 |
| 32 | f | 53 | VAL | C-N-CD | -5.57 | 108.35 | 120.60 |
| 23 | V | 1294 | U | N3-C2-O2 | -5.57 | 118.31 | 122.20 |
| 23 | V | 198 | C | C5-C6-N1 | 5.56 | 123.78 | 121.00 |
| 55 | DD | 3 | C | N3-C2-O2 | -5.56 | 118.01 | 121.90 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 8 | G | 196 | A | P-O3'-C3' | 5.56 | 126.37 | 119.70 |
| 23 | V | 2572 | A | OP2-P-O3' | 5.56 | 117.42 | 105.20 |
| 8 | G | 39 | G | C8-N9-C1' | 5.55 | 134.22 | 127.00 |
| 8 | G | 1078 | U | N3-C2-O2 | -5.55 | 118.31 | 122.20 |
| 23 | V | 2855 | C | C5-C6-N1 | 5.55 | 123.78 | 121.00 |
| 8 | G | 1399 | C | P-O3'-C3' | 5.55 | 126.36 | 119.70 |
| 23 | V | 2137 | C | C6-N1-C2 | -5.55 | 118.08 | 120.30 |
| 8 | G | 740 | U | N3-C2-O2 | -5.54 | 118.32 | 122.20 |
| 23 | V | 2295 | C | C5-C6-N1 | 5.54 | 123.77 | 121.00 |
| 23 | V | 2064 | C | C6-N1-C2 | -5.54 | 118.08 | 120.30 |
| 23 | V | 2333 | A | N7-C8-N9 | 5.54 | 116.57 | 113.80 |
| 23 | V | 754 | C | C6-N1-C2 | -5.54 | 118.08 | 120.30 |
| 23 | V | 1057 | A | C8-N9-C4 | -5.54 | 103.58 | 105.80 |
| 23 | V | 1471 | A | N3-C4-C5 | -5.54 | 122.93 | 126.80 |
| 55 | DD | 40 | C | N1-C2-O2 | 5.54 | 122.22 | 118.90 |
| 8 | G | 252 | U | N3-C2-O2 | -5.53 | 118.33 | 122.20 |
| 25 | Y | 185 | LEU | CA-CB-CG | -5.53 | 102.57 | 115.30 |
| 23 | V | 2333 | A | N3-C4-N9 | 5.53 | 131.83 | 127.40 |
| 8 | G | 1401 | G | N3-C4-N9 | 5.53 | 129.32 | 126.00 |
| 23 | V | 176 | G | C4-N9-C1' | -5.53 | 119.31 | 126.50 |
| 8 | G | 455 | C | C2-N1-C1' | 5.53 | 124.88 | 118.80 |
| 8 | G | 1265 | G | C5-C6-O6 | -5.53 | 125.28 | 128.60 |
| 23 | V | 991 | C | C6-N1-C2 | -5.53 | 118.09 | 120.30 |
| 23 | V | 1537 | C | N3-C2-O2 | -5.52 | 118.04 | 121.90 |
| 8 | G | 1109 | C | N1-C2-O2 | 5.51 | 122.21 | 118.90 |
| 23 | V | 2681 | C | P-O3'-C3' | 5.51 | 126.31 | 119.70 |
| 24 | X | 8 | U | N1-C2-O2 | 5.51 | 126.66 | 122.80 |
| 23 | V | 918 | A | N7-C8-N9 | 5.51 | 116.55 | 113.80 |
| 23 | V | 1498 | C | N3-C2-O2 | -5.51 | 118.05 | 121.90 |
| 23 | V | 69 | C | N1-C2-O2 | 5.50 | 122.20 | 118.90 |
| 44 | r | 66 | PRO | C-N-CA | 5.50 | 135.46 | 121.70 |
| 8 | G | 129(A) | G | O5'-P-OP2 | -5.50 | 100.75 | 105.70 |
| 23 | V | 1306 | C | N3-C2-O2 | -5.50 | 118.05 | 121.90 |
| 23 | V | 32 | C | C5-C6-N1 | 5.49 | 123.75 | 121.00 |
| 8 | G | 992 | U | OP2-P-O3' | 5.49 | 117.28 | 105.20 |
| 23 | V | 1048 | A | C8-N9-C4 | -5.48 | 103.61 | 105.80 |
| 8 | G | 1388 | C | N1-C2-O2 | 5.48 | 122.19 | 118.90 |
| 8 | G | 1031 | G | C8-N9-C1' | -5.48 | 119.88 | 127.00 |
| 8 | G | 679 | C | N3-C2-O2 | -5.48 | 118.07 | 121.90 |
| 24 | X | 27 | C | C2-N1-C1' | 5.48 | 124.83 | 118.80 |
| 56 | EE | 223 | LEU | CA-CB-CG | 5.47 | 127.89 | 115.30 |
| 8 | G | 115 | G | N3-C4-N9 | 5.47 | 129.28 | 126.00 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 23 | V | 235 | U | N3-C2-O2 | -5.47 | 118.37 | 122.20 |
| 23 | V | 1351 | C | C6-N1-C1' | -5.47 | 114.23 | 120.80 |
| 23 | V | 2044 | C | C6-N1-C2 | -5.47 | 118.11 | 120.30 |
| 8 | G | 1395 | C | N1-C2-O2 | 5.47 | 122.18 | 118.90 |
| 23 | V | 1318 | C | N1-C2-O2 | 5.47 | 122.18 | 118.90 |
| 23 | V | 1083 | U | N1-C2-O2 | 5.46 | 126.62 | 122.80 |
| 8 | G | 1027 | C | C2-N1-C1' | 5.46 | 124.81 | 118.80 |
| 8 | G | 711 | G | N9-C4-C5 | 5.46 | 107.58 | 105.40 |
| 23 | V | 866 | A | C2-N3-C4 | 5.46 | 113.33 | 110.60 |
| 23 | V | 1406 | U | N3-C2-O2 | -5.45 | 118.39 | 122.20 |
| 23 | V | 1830 | C | C2-N1-C1' | 5.45 | 124.80 | 118.80 |
| 23 | V | 2020 | A | P-O3'-C3' | 5.45 | 126.24 | 119.70 |
| 23 | V | 2402 | C | P-O3'-C3' | 5.45 | 126.24 | 119.70 |
| 9 | H | 155 | LEU | CA-CB-CG | 5.45 | 127.83 | 115.30 |
| 23 | V | 1778 | U | P-O3'-C3' | 5.45 | 126.24 | 119.70 |
| 23 | V | 29 | U | N3-C2-O2 | -5.44 | 118.39 | 122.20 |
| 23 | V | 130 | C | N1-C2-O2 | 5.44 | 122.17 | 118.90 |
| 23 | V | 176 | G | N1-C2-N2 | 5.44 | 121.10 | 116.20 |
| 8 | G | 328 | C | C2-N1-C1' | 5.44 | 124.78 | 118.80 |
| 23 | V | 1461 | G | N3-C4-N9 | 5.44 | 129.26 | 126.00 |
| 23 | V | 29 | U | N1-C2-O2 | 5.44 | 126.61 | 122.80 |
| 8 | G | 1203 | C | C2-N1-C1' | 5.44 | 124.78 | 118.80 |
| 23 | V | 446 | G | C4-N9-C1' | 5.44 | 133.57 | 126.50 |
| 8 | G | 1440 | C | N3-C2-O2 | -5.43 | 118.10 | 121.90 |
| 23 | V | 527 | C | N3-C2-O2 | -5.43 | 118.10 | 121.90 |
| 23 | V | 1025 | G | N3-C4-N9 | 5.43 | 129.26 | 126.00 |
| 8 | G | 1429 | C | C6-N1-C2 | -5.43 | 118.13 | 120.30 |
| 8 | G | 139 | G | N9-C4-C5 | -5.43 | 103.23 | 105.40 |
| 8 | G | 918 | A | P-O3'-C3' | 5.43 | 126.21 | 119.70 |
| 23 | V | 121 | G | C8-N9-C1' | -5.42 | 119.95 | 127.00 |
| 23 | V | 1119 | C | C5-C6-N1 | 5.42 | 123.71 | 121.00 |
| 23 | V | 1804 | C | C6-N1-C2 | -5.42 | 118.13 | 120.30 |
| 23 | V | 637 | A | C6-C5-N7 | -5.42 | 128.51 | 132.30 |
| 23 | V | 1051 | G | C5'-C4'-O4' | -5.42 | 102.60 | 109.10 |
| 23 | V | 1376 | C | C5-C6-N1 | 5.41 | 123.71 | 121.00 |
| 55 | DD | 40 | C | C5-C6-N1 | 5.41 | 123.71 | 121.00 |
| 23 | V | 1090 | U | C5-C6-N1 | 5.41 | 125.41 | 122.70 |
| 8 | G | 620 | C | N3-C2-O2 | -5.41 | 118.11 | 121.90 |
| 23 | V | 1626 | G | C2-N3-C4 | 5.41 | 114.61 | 111.90 |
| 23 | V | 2582 | G | C4-N9-C1' | 5.41 | 133.53 | 126.50 |
| 23 | V | 512 | G | C5-C6-O6 | -5.41 | 125.36 | 128.60 |
| 8 | G | 1031 | G | C2-N3-C4 | 5.40 | 114.60 | 111.90 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 23 | V | 624 | C | C2-N1-C1' | 5.40 | 124.74 | 118.80 |
| 13 | L | 30 | LEU | CA-CB-CG | 5.39 | 127.71 | 115.30 |
| 23 | V | 842 | G | N9-C4-C5 | -5.39 | 103.24 | 105.40 |
| 23 | V | 1988 | C | C6-N1-C2 | -5.39 | 118.14 | 120.30 |
| 23 | V | 2164 | C | C5-C6-N1 | 5.39 | 123.69 | 121.00 |
| 23 | V | 2510 | C | C6-N1-C1' | -5.39 | 114.33 | 120.80 |
| 23 | V | 510 | C | C2-N1-C1' | 5.39 | 124.72 | 118.80 |
| 8 | G | 139 | G | C8-N9-C1' | -5.38 | 120.00 | 127.00 |
| 23 | V | 1833 | U | P-O3'-C3' | 5.38 | 126.16 | 119.70 |
| 23 | V | 1461 | G | C6-C5-N7 | -5.38 | 127.17 | 130.40 |
| 23 | V | 2006 | C | C5-C6-N1 | 5.38 | 123.69 | 121.00 |
| 23 | V | 827 | U | P-O3'-C3' | 5.38 | 126.15 | 119.70 |
| 23 | V | 2858 | C | N1-C2-O2 | 5.38 | 122.13 | 118.90 |
| 23 | V | 1403 | C | C2-N1-C1' | 5.38 | 124.71 | 118.80 |
| 23 | V | 1256 | G | C4-N9-C1' | 5.37 | 133.49 | 126.50 |
| 8 | G | 434 | U | C2-N1-C1' | 5.37 | 124.14 | 117.70 |
| 23 | V | 1083 | U | C6-N1-C2 | -5.37 | 117.78 | 121.00 |
| 23 | V | 2471 | C | C5-C6-N1 | 5.37 | 123.69 | 121.00 |
| 23 | V | 1053 | C | C5-C6-N1 | 5.37 | 123.68 | 121.00 |
| 23 | V | 828 | U | C6-N1-C2 | -5.36 | 117.78 | 121.00 |
| 23 | V | 842 | G | C8-N9-C1' | -5.36 | 120.03 | 127.00 |
| 8 | G | 1148 | U | N1-C2-O2 | 5.36 | 126.55 | 122.80 |
| 8 | G | 754 | C | C6-N1-C2 | -5.36 | 118.16 | 120.30 |
| 8 | G | 150 | C | N1-C2-O2 | 5.36 | 122.11 | 118.90 |
| 23 | V | 1058 | G | N9-C1'-C2' | 5.36 | 120.96 | 114.00 |
| 8 | G | 139 | G | C6-C5-N7 | -5.35 | 127.19 | 130.40 |
| 23 | V | 1205 | U | C6-N1-C2 | -5.35 | 117.79 | 121.00 |
| 23 | V | 1390 | U | N1-C2-O2 | 5.35 | 126.55 | 122.80 |
| 23 | V | 1252 | G | O4'-C1'-N9 | -5.35 | 103.92 | 108.20 |
| 23 | V | 2506 | U | C2-N1-C1' | 5.35 | 124.12 | 117.70 |
| 55 | DD | 68 | C | C2-N1-C1' | 5.35 | 124.69 | 118.80 |
| 23 | V | 2368 | C | C6-N1-C2 | -5.35 | 118.16 | 120.30 |
| 23 | V | 823 | G | C4-N9-C1' | 5.35 | 133.45 | 126.50 |
| 23 | V | 1182 | A | N7-C8-N9 | 5.35 | 116.47 | 113.80 |
| 23 | V | 1312 | U | C6-N1-C2 | -5.35 | 117.79 | 121.00 |
| 23 | V | 739 | G | O4'-C1'-N9 | 5.35 | 112.48 | 108.20 |
| 23 | V | 1021 | A | C8-N9-C4 | -5.35 | 103.66 | 105.80 |
| 23 | V | 2349 | G | O4'-C1'-N9 | 5.34 | 112.47 | 108.20 |
| 23 | V | 2342 | C | C6-N1-C2 | -5.34 | 118.16 | 120.30 |
| 8 | G | 1037 | C | N3-C2-O2 | -5.34 | 118.16 | 121.90 |
| 8 | G | 1406 | U | C2-N1-C1' | 5.34 | 124.10 | 117.70 |
| 23 | V | 1050 | A | N1-C2-N3 | -5.33 | 126.63 | 129.30 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 23 | V | 2295 | C | C6-N1-C2 | -5.33 | 118.17 | 120.30 |
| 31 | e | 33 | PRO | CA-C-N | 5.33 | 128.94 | 117.20 |
| 23 | V | 1313 | U | C6-N1-C1' | 5.33 | 128.66 | 121.20 |
| 8 | G | 718 | G | N3-C4-N9 | 5.33 | 129.20 | 126.00 |
| 23 | V | 728 | G | O4'-C1'-N9 | 5.33 | 112.46 | 108.20 |
| 8 | G | 686 | U | P-O3'-C3' | 5.32 | 126.09 | 119.70 |
| 23 | V | 2392 | A | O4'-C1'-N9 | 5.32 | 112.46 | 108.20 |
| 38 | l | 26 | LEU | CA-CB-CG | 5.32 | 127.54 | 115.30 |
| 38 | l | 78 | LEU | CA-CB-CG | 5.32 | 127.54 | 115.30 |
| 8 | G | 1344 | C | C6-N1-C2 | -5.32 | 118.17 | 120.30 |
| 55 | DD | 70 | C | N1-C2-O2 | 5.32 | 122.09 | 118.90 |
| 23 | V | 637 | A | C8-N9-C4 | -5.31 | 103.67 | 105.80 |
| 23 | V | 1247 | A | OP1-P-O3' | 5.31 | 116.88 | 105.20 |
| 23 | V | 1119 | C | N1-C2-O2 | 5.31 | 122.08 | 118.90 |
| 23 | V | 673 | C | C6-N1-C2 | -5.30 | 118.18 | 120.30 |
| 23 | V | 1058 | G | N3-C4-C5 | -5.30 | 125.95 | 128.60 |
| 23 | V | 1840 | G | C6-C5-N7 | -5.30 | 127.22 | 130.40 |
| 23 | V | 449 | A | C8-N9-C4 | -5.30 | 103.68 | 105.80 |
| 23 | V | 347 | A | N3-C4-C5 | -5.30 | 123.09 | 126.80 |
| 8 | G | 563 | A | C4-N9-C1' | 5.30 | 135.84 | 126.30 |
| 23 | V | 571 | A | C2-N3-C4 | 5.29 | 113.25 | 110.60 |
| 23 | V | 1181 | C | C6-N1-C2 | -5.29 | 118.18 | 120.30 |
| 23 | V | 1817 | G | N3-C4-N9 | 5.29 | 129.18 | 126.00 |
| 43 | q | 57 | LEU | CA-CB-CG | 5.29 | 127.48 | 115.30 |
| 23 | V | 446 | G | P-O3'-C3' | 5.29 | 126.05 | 119.70 |
| 45 | s | 31 | ARG | C-N-CA | 5.29 | 134.93 | 121.70 |
| 3 | B | 44 | LEU | CA-CB-CG | 5.29 | 127.46 | 115.30 |
| 8 | G | 1449 | C | C5-C6-N1 | 5.29 | 123.64 | 121.00 |
| 23 | V | 304 | G | C8-N9-C1' | -5.29 | 120.13 | 127.00 |
| 8 | G | 378 | G | N3-C4-N9 | -5.29 | 122.83 | 126.00 |
| 23 | V | 1626 | G | C8-N9-C1' | -5.29 | 120.13 | 127.00 |
| 23 | V | 445 | C | C6-N1-C2 | -5.28 | 118.19 | 120.30 |
| 23 | V | 1518 | C | C5-C6-N1 | 5.28 | 123.64 | 121.00 |
| 8 | G | 924 | C | C6-N1-C2 | -5.28 | 118.19 | 120.30 |
| 23 | V | 2083 | G | N3-C4-N9 | 5.28 | 129.17 | 126.00 |
| 23 | V | 2471 | C | C6-N1-C1' | -5.28 | 114.47 | 120.80 |
| 23 | V | 874 | G | C8-N9-C4 | -5.28 | 104.29 | 106.40 |
| 8 | G | 1076 | C | C5-C6-N1 | 5.28 | 123.64 | 121.00 |
| 23 | V | 333 | G | C4-N9-C1' | 5.28 | 133.36 | 126.50 |
| 23 | V | 1437 | C | C2-N1-C1' | 5.27 | 124.60 | 118.80 |
| 8 | G | 1440 | C | C6-N1-C2 | -5.27 | 118.19 | 120.30 |
| 23 | V | 1515 | C | C6-N1-C1' | 5.27 | 127.12 | 120.80 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 23 | V | 1840 | G | C8-N9-C1' | -5.27 | 120.15 | 127.00 |
| 24 | X | 91 | C | N3-C2-O2 | -5.27 | 118.21 | 121.90 |
| 8 | G | 679 | C | C2-N1-C1' | 5.27 | 124.59 | 118.80 |
| 8 | G | 711 | G | N3-C4-N9 | -5.27 | 122.84 | 126.00 |
| 8 | G | 1367 | C | C6-N1-C2 | -5.27 | 118.19 | 120.30 |
| 23 | V | 174 | C | N3-C2-O2 | -5.27 | 118.21 | 121.90 |
| 8 | G | 740 | U | N1-C2-O2 | 5.27 | 126.49 | 122.80 |
| 23 | V | 480 | A | OP1-P-O3' | 5.27 | 116.78 | 105.20 |
| 8 | G | 1242 | C | C6-N1-C2 | -5.26 | 118.19 | 120.30 |
| 23 | V | 2866 | U | C5-C6-N1 | 5.26 | 125.33 | 122.70 |
| 23 | V | 86 | C | C2-N3-C4 | 5.26 | 122.53 | 119.90 |
| 36 | j | 23 | GLY | N-CA-C | 5.26 | 126.26 | 113.10 |
| 23 | V | 2014 | A | C8-N9-C4 | -5.26 | 103.70 | 105.80 |
| 23 | V | 384 | U | N1-C2-O2 | 5.25 | 126.48 | 122.80 |
| 15 | N | 8 | ASP | CB-CG-OD1 | 5.25 | 123.03 | 118.30 |
| 8 | G | 921 | U | C2-N1-C1' | 5.25 | 124.00 | 117.70 |
| 23 | V | 2310 | A | N3-C4-N9 | 5.25 | 131.60 | 127.40 |
| 9 | H | 180 | LEU | CA-CB-CG | 5.25 | 127.37 | 115.30 |
| 23 | V | 1463 | C | N1-C2-O2 | 5.25 | 122.05 | 118.90 |
| 8 | G | 1257 | U | P-O3'-C3' | 5.25 | 126.00 | 119.70 |
| 23 | V | 2164 | C | N3-C2-O2 | -5.25 | 118.23 | 121.90 |
| 23 | V | 2704 | C | N3-C2-O2 | -5.25 | 118.23 | 121.90 |
| 23 | V | 1256 | G | C8-N9-C1' | -5.25 | 120.18 | 127.00 |
| 23 | V | 396 | G | C6-C5-N7 | -5.24 | 127.25 | 130.40 |
| 23 | V | 2594 | C | C6-N1-C2 | -5.24 | 118.20 | 120.30 |
| 23 | V | 774 | A | C5-N7-C8 | -5.24 | 101.28 | 103.90 |
| 8 | G | 1260 | C | C6-N1-C1' | -5.23 | 114.52 | 120.80 |
| 23 | V | 842 | G | C6-C5-N7 | -5.23 | 127.26 | 130.40 |
| 23 | V | 2512 | C | C5-C6-N1 | 5.23 | 123.62 | 121.00 |
| 24 | X | 84 | C | C5-C6-N1 | 5.23 | 123.62 | 121.00 |
| 23 | V | 1221 | C | C5-C6-N1 | 5.23 | 123.62 | 121.00 |
| 23 | V | 1025 | G | C8-N9-C4 | -5.23 | 104.31 | 106.40 |
| 24 | X | 4 | C | N3-C2-O2 | -5.23 | 118.24 | 121.90 |
| 23 | V | 1304 | C | N3-C2-O2 | -5.23 | 118.24 | 121.90 |
| 23 | V | 1493 | C | C5-C6-N1 | 5.23 | 123.61 | 121.00 |
| 39 | m | 82 | LEU | CA-CB-CG | 5.23 | 127.32 | 115.30 |
| 2 | A | 67 | LYS | C-N-CA | 5.22 | 134.76 | 121.70 |
| 8 | G | 1019 | C | C6-N1-C2 | -5.22 | 118.21 | 120.30 |
| 23 | V | 1314 | C | O5'-P-OP1 | -5.22 | 101.00 | 105.70 |
| 23 | V | 2359 | C | C6-N1-C2 | -5.22 | 118.21 | 120.30 |
| 40 | n | 39 | LEU | CA-CB-CG | 5.22 | 127.31 | 115.30 |
| 23 | V | 1381 | G | C4-N9-C1' | 5.22 | 133.29 | 126.50 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 23 | V | 601 | C | C6-N1-C2 | -5.22 | 118.21 | 120.30 |
| 23 | V | 842 | G | C4-C5-N7 | 5.22 | 112.89 | 110.80 |
| 8 | G | 1190 | G | C4-N9-C1' | 5.22 | 133.28 | 126.50 |
| 8 | G | 872 | A | P-O3'-C3' | 5.21 | 125.96 | 119.70 |
| 23 | V | 606 | U | O4'-C1'-N1 | 5.21 | 112.37 | 108.20 |
| 23 | V | 1205 | U | C5-C6-N1 | 5.21 | 125.31 | 122.70 |
| 23 | V | 2349 | G | N9-C4-C5 | 5.21 | 107.48 | 105.40 |
| 8 | G | 488 | C | C5-C6-N1 | 5.21 | 123.61 | 121.00 |
| 55 | DD | 40 | C | C6-N1-C2 | -5.21 | 118.22 | 120.30 |
| 8 | G | 115 | G | N3-C4-C5 | -5.21 | 126.00 | 128.60 |
| 23 | V | 627 | A | C8-N9-C4 | -5.21 | 103.72 | 105.80 |
| 23 | V | 1058 | G | C5-C6-N1 | 5.21 | 114.10 | 111.50 |
| 23 | V | 1827 | C | C5-C6-N1 | 5.21 | 123.60 | 121.00 |
| 23 | V | 1914 | C | C6-N1-C2 | -5.21 | 118.22 | 120.30 |
| 23 | V | 783 | A | N7-C8-N9 | 5.20 | 116.40 | 113.80 |
| 23 | V | 1421 | G | N3-C4-C5 | -5.20 | 126.00 | 128.60 |
| 8 | G | 1406 | U | N1-C2-O2 | 5.20 | 126.44 | 122.80 |
| 23 | V | 527 | C | N1-C2-O2 | 5.20 | 122.02 | 118.90 |
| 8 | G | 1436 | U | N1-C2-O2 | 5.20 | 126.44 | 122.80 |
| 23 | V | 2006 | C | C2-N1-C1' | 5.20 | 124.52 | 118.80 |
| 23 | V | 530 | G | C8-N9-C1' | -5.20 | 120.24 | 127.00 |
| 23 | V | 559 | G | P-O3'-C3' | 5.20 | 125.93 | 119.70 |
| 23 | V | 2138 | C | C6-N1-C2 | -5.20 | 118.22 | 120.30 |
| 8 | G | 384 | G | N3-C4-N9 | 5.19 | 129.12 | 126.00 |
| 8 | G | 615 | C | C5-C6-N1 | 5.19 | 123.60 | 121.00 |
| 29 | c | 135 | LEU | CA-CB-CG | 5.19 | 127.25 | 115.30 |
| 8 | G | 346 | G | C4-N9-C1' | 5.19 | 133.25 | 126.50 |
| 23 | V | 1306 | C | C6-N1-C2 | -5.19 | 118.22 | 120.30 |
| 23 | V | 1423 | G | N3-C4-N9 | 5.19 | 129.12 | 126.00 |
| 2 | A | 43 | LEU | CA-CB-CG | 5.19 | 127.23 | 115.30 |
| 23 | V | 426 | C | C5-C6-N1 | 5.19 | 123.59 | 121.00 |
| 23 | V | 2847 | U | C5-C6-N1 | 5.19 | 125.29 | 122.70 |
| 24 | X | 38 | C | C6-N1-C2 | -5.19 | 118.22 | 120.30 |
| 23 | V | 1057 | A | OP1-P-OP2 | -5.18 | 111.82 | 119.60 |
| 32 | f | 77 | LEU | CA-CB-CG | 5.18 | 127.22 | 115.30 |
| 23 | V | 66 | C | C5-C6-N1 | 5.18 | 123.59 | 121.00 |
| 23 | V | 1604 | C | C6-N1-C1' | -5.18 | 114.58 | 120.80 |
| 23 | V | 347 | A | N3-C4-N9 | 5.18 | 131.54 | 127.40 |
| 23 | V | 289 | A | P-O3'-C3' | 5.18 | 125.92 | 119.70 |
| 23 | V | 66 | C | C2-N1-C1' | 5.18 | 124.50 | 118.80 |
| 8 | G | 579 | G | C4-N9-C1' | 5.18 | 133.23 | 126.50 |
| 8 | G | 1147 | C | N1-C2-O2 | 5.17 | 122.00 | 118.90 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 23 | V | 1351 | C | C6-N1-C2 | -5.17 | 118.23 | 120.30 |
| 23 | V | 2456 | C | C5-C6-N1 | 5.17 | 123.59 | 121.00 |
| 23 | V | 2574 | G | C6-C5-N7 | -5.17 | 127.30 | 130.40 |
| 8 | G | 615 | C | C6-N1-C2 | -5.17 | 118.23 | 120.30 |
| 23 | V | 2407 | G | C8-N9-C1' | -5.17 | 120.28 | 127.00 |
| 23 | V | 1075 | C | N3-C4-C5 | 5.17 | 123.97 | 121.90 |
| 8 | G | 1027 | C | C5-C6-N1 | 5.17 | 123.58 | 121.00 |
| 8 | G | 1158 | C | C2-N1-C1' | 5.17 | 124.48 | 118.80 |
| 23 | V | 719 | C | C2-N1-C1' | 5.16 | 124.48 | 118.80 |
| 23 | V | 2236 | C | N1-C2-O2 | 5.16 | 122.00 | 118.90 |
| 23 | V | 86 | C | C6-N1-C1' | -5.16 | 114.61 | 120.80 |
| 23 | V | 876 | C | C5-C6-N1 | 5.16 | 123.58 | 121.00 |
| 23 | V | 2112 | G | N3-C4-C5 | -5.16 | 126.02 | 128.60 |
| 8 | G | 240 | C | C5-C6-N1 | 5.16 | 123.58 | 121.00 |
| 8 | G | 1388 | C | N3-C2-O2 | -5.16 | 118.29 | 121.90 |
| 23 | V | 1795 | C | N3-C2-O2 | -5.16 | 118.29 | 121.90 |
| 23 | V | 862 | G | N3-C4-C5 | -5.15 | 126.02 | 128.60 |
| 23 | V | 1048 | A | C4-N9-C1' | 5.15 | 135.57 | 126.30 |
| 23 | V | 2615 | U | C6-N1-C2 | -5.15 | 117.91 | 121.00 |
| 23 | V | 1048 | A | C2-N3-C4 | 5.15 | 113.17 | 110.60 |
| 56 | EE | 314 | ASP | CB-CG-OD1 | 5.15 | 122.93 | 118.30 |
| 8 | G | 1436 | U | N3-C2-O2 | -5.14 | 118.60 | 122.20 |
| 23 | V | 754 | C | C5-C6-N1 | 5.14 | 123.57 | 121.00 |
| 24 | X | 30 | C | C2-N1-C1' | 5.14 | 124.46 | 118.80 |
| 24 | X | 30 | C | C5-C6-N1 | 5.14 | 123.57 | 121.00 |
| 23 | V | 1830 | C | N1-C2-O2 | 5.14 | 121.99 | 118.90 |
| 35 | i | 6 | LEU | CA-CB-CG | 5.14 | 127.12 | 115.30 |
| 23 | V | 1077 | A | C2-N3-C4 | 5.14 | 113.17 | 110.60 |
| 25 | Y | 181 | PRO | C-N-CD | 5.14 | 139.19 | 128.40 |
| 8 | G | 1265 | G | N3-C4-N9 | 5.14 | 129.08 | 126.00 |
| 8 | G | 352 | C | C6-N1-C2 | -5.13 | 118.25 | 120.30 |
| 8 | G | 384 | G | C4-N9-C1' | 5.13 | 133.18 | 126.50 |
| 23 | V | 1566 | A | N7-C8-N9 | 5.13 | 116.37 | 113.80 |
| 23 | V | 311 | A | P-O3'-C3' | 5.13 | 125.86 | 119.70 |
| 23 | V | 1421 | G | N3-C4-N9 | 5.13 | 129.08 | 126.00 |
| 33 | g | 66 | LYS | C-N-CA | 5.13 | 134.53 | 121.70 |
| 23 | V | 1515 | C | C5-C6-N1 | 5.13 | 123.56 | 121.00 |
| 23 | V | 2321 | G | C8-N9-C1' | -5.13 | 120.33 | 127.00 |
| 23 | V | 418 | G | C8-N9-C1' | -5.12 | 120.34 | 127.00 |
| 23 | V | 1301 | A | O4'-C1'-N9 | 5.12 | 112.30 | 108.20 |
| 23 | V | 2277 | G | N3-C4-C5 | -5.12 | 126.04 | 128.60 |
| 23 | V | 1052 | C | O5'-C5'-C4' | 5.12 | 121.43 | 111.70 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 23 | V | 1112 | G | N3-C4-N9 | -5.12 | 122.92 | 126.00 |
| 24 | X | 97 | G | N3-C4-N9 | 5.12 | 129.07 | 126.00 |
| 8 | G | 1027 | C | C6-N1-C2 | -5.12 | 118.25 | 120.30 |
| 23 | V | 270(E) | G | O4'-C1'-N9 | 5.12 | 112.30 | 108.20 |
| 23 | V | 816 | C | C5-C6-N1 | 5.12 | 123.56 | 121.00 |
| 24 | X | 5 | C | C2-N1-C1' | 5.12 | 124.43 | 118.80 |
| 8 | G | 736 | C | N1-C2-O2 | 5.12 | 121.97 | 118.90 |
| 23 | V | 347 | A | C4-N9-C1' | 5.12 | 135.51 | 126.30 |
| 23 | V | 1147 | C | C6-N1-C2 | -5.12 | 118.25 | 120.30 |
| 55 | DD | 26 | C | C2-N1-C1' | 5.12 | 124.43 | 118.80 |
| 8 | G | 1085 | U | C2-N1-C1' | 5.11 | 123.84 | 117.70 |
| 23 | V | 1506 | C | C5-C6-N1 | 5.11 | 123.56 | 121.00 |
| 23 | V | 2681 | C | C2-N1-C1' | 5.11 | 124.42 | 118.80 |
| 8 | G | 328 | C | N3-C2-O2 | -5.11 | 118.33 | 121.90 |
| 23 | V | 1101 | U | C6-N1-C2 | -5.11 | 117.94 | 121.00 |
| 23 | V | 304 | G | C4-N9-C1' | 5.10 | 133.13 | 126.50 |
| 23 | V | 1300 | U | P-O3'-C3' | 5.10 | 125.82 | 119.70 |
| 10 | I | 12 | LEU | CA-CB-CG | 5.10 | 127.03 | 115.30 |
| 23 | V | 1461 | G | C4-C5-N7 | 5.10 | 112.84 | 110.80 |
| 23 | V | 838 | C | C6-N1-C2 | -5.10 | 118.26 | 120.30 |
| 23 | V | 1233 | C | C6-N1-C2 | -5.10 | 118.26 | 120.30 |
| 23 | V | 2049 | G | P-O3'-C3' | 5.09 | 125.81 | 119.70 |
| 23 | V | 1058 | G | C4-C5-N7 | -5.09 | 108.76 | 110.80 |
| 8 | G | 1149 | C | N3-C2-O2 | -5.09 | 118.34 | 121.90 |
| 23 | V | 1064 | C | C2-N1-C1' | 5.09 | 124.40 | 118.80 |
| 23 | V | 1146 | C | C5-C6-N1 | 5.09 | 123.55 | 121.00 |
| 23 | V | 1381 | G | C8-N9-C1' | -5.09 | 120.38 | 127.00 |
| 23 | V | 1893 | C | N3-C2-O2 | -5.09 | 118.34 | 121.90 |
| 23 | V | 2841 | C | C5-C6-N1 | 5.09 | 123.54 | 121.00 |
| 23 | V | 2699 | C | C5-C6-N1 | 5.09 | 123.54 | 121.00 |
| 8 | G | 1203 | C | C5-C6-N1 | 5.08 | 123.54 | 121.00 |
| 23 | V | 2238 | G | N3-C4-N9 | 5.08 | 129.05 | 126.00 |
| 23 | V | 2701 | C | C2-N1-C1' | 5.08 | 124.39 | 118.80 |
| 23 | V | 1050 | A | N9-C4-C5 | 5.08 | 107.83 | 105.80 |
| 23 | V | 2774 | C | N1-C2-O2 | 5.08 | 121.94 | 118.90 |
| 8 | G | 312 | C | N1-C2-O2 | 5.07 | 121.94 | 118.90 |
| 8 | G | 400 | C | N1-C2-O2 | 5.07 | 121.94 | 118.90 |
| 8 | G | 1239 | A | P-O3'-C3' | 5.07 | 125.79 | 119.70 |
| 8 | G | 39 | G | C4-N9-C1' | -5.07 | 119.91 | 126.50 |
| 8 | G | 1367 | C | C5-C6-N1 | 5.07 | 123.54 | 121.00 |
| 23 | V | 449 | A | N7-C8-N9 | 5.07 | 116.33 | 113.80 |
| 23 | V | 1048 | A | N7-C8-N9 | 5.07 | 116.33 | 113.80 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 23 | V | 1449(A) | G | OP2-P-O3' | 5.07 | 116.35 | 105.20 |
| 23 | V | 459 | U | C2-N1-C1' | 5.07 | 123.78 | 117.70 |
| 23 | V | 2407 | G | N3-C4-N9 | 5.07 | 129.04 | 126.00 |
| 23 | V | 459 | U | C5-C6-N1 | 5.06 | 125.23 | 122.70 |
| 23 | V | 1049 | C | C6-N1-C2 | -5.06 | 118.28 | 120.30 |
| 23 | V | 573 | G | N7-C8-N9 | 5.06 | 115.63 | 113.10 |
| 48 | v | 23 | LEU | CA-CB-CG | 5.06 | 126.94 | 115.30 |
| 23 | V | 360 | G | N3-C4-N9 | 5.06 | 129.03 | 126.00 |
| 23 | V | 1256 | G | N3-C4-C5 | -5.06 | 126.07 | 128.60 |
| 23 | V | 88 | G | N3-C4-N9 | 5.06 | 129.03 | 126.00 |
| 23 | V | 1846 | G | C6-C5-N7 | -5.06 | 127.37 | 130.40 |
| 47 | u | 41 | GLN | C-N-CA | 5.06 | 134.34 | 121.70 |
| 8 | G | 252 | U | C2-N1-C1' | 5.05 | 123.76 | 117.70 |
| 23 | V | 2236 | C | C2-N1-C1' | 5.05 | 124.36 | 118.80 |
| 23 | V | 818 | G | N3-C4-C5 | -5.05 | 126.08 | 128.60 |
| 23 | V | 727 | A | N7-C8-N9 | 5.05 | 116.32 | 113.80 |
| 8 | G | 525 | C | C2-N1-C1' | 5.04 | 124.35 | 118.80 |
| 8 | G | 1424 | C | N1-C2-O2 | 5.04 | 121.93 | 118.90 |
| 8 | G | 123 | C | C5-C6-N1 | 5.04 | 123.52 | 121.00 |
| 8 | G | 834 | C | N1-C2-O2 | 5.04 | 121.92 | 118.90 |
| 23 | V | 1691 | C | C6-N1-C2 | -5.04 | 118.28 | 120.30 |
| 23 | V | 865 | C | N1-C2-O2 | 5.04 | 121.92 | 118.90 |
| 23 | V | 1506 | C | N3-C2-O2 | -5.04 | 118.38 | 121.90 |
| 23 | V | 2514 | U | C5-C6-N1 | 5.04 | 125.22 | 122.70 |
| 8 | G | 943 | U | N1-C2-O2 | 5.03 | 126.32 | 122.80 |
| 23 | V | 1920 | C | C6-N1-C2 | -5.03 | 118.29 | 120.30 |
| 23 | V | 739 | G | N7-C8-N9 | 5.03 | 115.61 | 113.10 |
| 23 | V | 1461 | G | N9-C4-C5 | -5.03 | 103.39 | 105.40 |
| 23 | V | 2874 | C | C2-N1-C1' | 5.03 | 124.33 | 118.80 |
| 23 | V | 174 | C | C6-N1-C2 | -5.03 | 118.29 | 120.30 |
| 23 | V | 2333 | A | C8-N9-C1' | -5.03 | 118.65 | 127.70 |
| 23 | V | 358 | U | C6-N1-C2 | -5.03 | 117.98 | 121.00 |
| 23 | V | 788 | A | OP2-P-O3' | 5.03 | 116.26 | 105.20 |
| 23 | V | 1958 | C | C5-C6-N1 | 5.03 | 123.51 | 121.00 |
| 23 | V | 1258 | C | C6-N1-C2 | -5.02 | 118.29 | 120.30 |
| 23 | V | 1404 | C | C6-N1-C2 | -5.02 | 118.29 | 120.30 |
| 41 | o | 99 | ILE | CG1-CB-CG2 | -5.02 | 100.35 | 111.40 |
| 23 | V | 1947 | C | N3-C2-O2 | -5.02 | 118.39 | 121.90 |
| 23 | V | 199 | A | O4'-C1'-N9 | 5.02 | 112.21 | 108.20 |
| 23 | V | 76 | C | C6-N1-C2 | -5.02 | 118.29 | 120.30 |
| 23 | V | 1182 | A | C8-N9-C4 | -5.02 | 103.79 | 105.80 |
| 23 | V | 1049 | C | C5-C6-N1 | 5.01 | 123.51 | 121.00 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 23 | V | 1051 | G | C2-N3-C4 | 5.01 | 114.41 | 111.90 |
| 23 | V | 1449(A) | G | C2'-C3'-O3' | 5.01 | 121.72 | 113.70 |
| 23 | V | 1330 | C | C6-N1-C2 | -5.01 | 118.30 | 120.30 |
| 8 | G | 328 | C | C6-N1-C2 | -5.01 | 118.30 | 120.30 |
| 8 | G | 711 | G | C8-N9-C1' | 5.01 | 133.51 | 127.00 |
| 23 | V | 464 | U | N1-C2-O2 | 5.01 | 126.30 | 122.80 |
| 23 | V | 1034 | G | N3-C4-N9 | 5.01 | 129.00 | 126.00 |
| 23 | V | 1043 | C | C6-N1-C1' | 5.01 | 126.81 | 120.80 |
| 8 | G | 139 | G | C4-N9-C1' | 5.00 | 133.01 | 126.50 |
| 8 | G | 1260 | C | C2-N3-C4 | 5.00 | 122.40 | 119.90 |
| 23 | V | 403 | U | C2'-C3'-O3' | 5.00 | 121.70 | 113.70 |
| 23 | V | 704 | G | P-O3'-C3' | 5.00 | 125.70 | 119.70 |
| 24 | X | 12 | C | C2-N1-C1' | 5.00 | 124.30 | 118.80 |
| 8 | G | 1038 | C | N1-C2-N3 | 5.00 | 122.70 | 119.20 |
| 16 | O | 40 | LEU | CA-CB-CG | 5.00 | 126.81 | 115.30 |
| 23 | V | 2342 | C | N1-C2-O2 | 5.00 | 121.90 | 118.90 |
| 27 | a | 5 | LEU | CA-CB-CG | 5.00 | 126.80 | 115.30 |

There are no chirality outliers.

All (129) planarity outliers are listed below:

| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 53 | AA | 53 | PRO | Peptide |
| 53 | AA | 62 | LEU | Peptide |
| 3 | B | 44 | LEU | Peptide |
| 3 | B | 83 | GLU | Peptide |
| 3 | B | 86 | VAL | Peptide |
| 4 | C | 75 | ASN | Peptide |
| 5 | D | 4 | SER | Peptide |
| 6 | E | 28 | ARG | Peptide |
| 6 | E | 40 | LEU | Peptide |
| 6 | E | 57 | LYS | Peptide |
| 6 | E | 90 | LEU | Peptide |
| 56 | EE | 194 | HIS | Peptide |
| 56 | EE | 289 | LEU | Peptide |
| 56 | EE | 343 | SER | Peptide |
| 56 | EE | 346 | ALA | Peptide |
| 56 | EE | 464 | ASP | Peptide |
| 56 | EE | 83 | ASP | Peptide |
| 9 | H | 152 | PHE | Peptide |
| 9 | H | 99 | GLY | Peptide |
| 11 | J | 28 | SER | Peptide |

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| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 11 | J | 34 | GLU | Peptide |
| 12 | K | 143 | ARG | Peptide |
| 13 | L | 22 | GLU | Peptide |
| 13 | L | 41 | GLU | Peptide |
| 14 | M | 112 | PRO | Peptide |
| 14 | M | 7 | ALA | Peptide |
| 15 | N | 73 | ASP | Peptide |
| 16 | O | 104 | ARG | Peptide |
| 16 | O | 54 | ASP | Peptide |
| 18 | Q | 104 | VAL | Peptide |
| 19 | R | 103 | THR | Peptide |
| 23 | V | 270(C) | C | Sidechain |
| 23 | V | 270(D) | C | Sidechain |
| 23 | V | 270(G) | C | Sidechain |
| 23 | V | 270(Q) | C | Sidechain |
| 23 | V | 273(C) | C | Sidechain |
| 23 | V | 273(D) | C | Sidechain |
| 25 | Y | 11 | LEU | Peptide |
| 25 | Y | 2 | LYS | Peptide |
| 25 | Y | 214 | VAL | Peptide |
| 25 | Y | 71 | GLN | Peptide |
| 26 | Z | 148 | GLU | Peptide |
| 26 | Z | 158 | ALA | Peptide |
| 26 | Z | 211 | ARG | Peptide |
| 26 | Z | 244 | ARG | Peptide |
| 26 | Z | 271 | ILE | Peptide |
| 26 | Z | 272 | ALA | Peptide |
| 26 | Z | 28 | GLU | Peptide |
| 26 | Z | 35 | LYS | Peptide |
| 27 | a | 38 | THR | Peptide |
| 27 | a | 74 | PRO | Peptide |
| 28 | b | 125 | LEU | Peptide |
| 28 | b | 176 | LEU | Peptide |
| 28 | b | 19 | GLU | Peptide |
| 28 | b | 59 | TYR | Peptide |
| 28 | b | 61 | GLY | Peptide |
| 29 | c | 130 | ASN | Peptide |
| 29 | c | 145 | THR | Peptide |
| 29 | c | 181 | ARG | Peptide |
| 29 | c | 23 | PHE | Peptide |
| 30 | d | 110 | SER | Peptide |
| 30 | d | 40 | GLU | Peptide |

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| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 31 | e | 29 | TYR | Peptide |
| 31 | e | 32 | LEU | Mainchain |
| 31 | e | 33 | PRO | Peptide |
| 31 | e | 36 | GLU | Peptide |
| 31 | e | 37 | THR | Peptide |
| 31 | e | 43 | ALA | Peptide |
| 31 | e | 53 | VAL | Peptide |
| 31 | e | 80 | VAL | Peptide |
| 32 | f | 108 | ALA | Peptide |
| 32 | f | 118 | THR | Peptide |
| 33 | g | 34 | LEU | Peptide |
| 33 | g | 77 | GLY | Peptide |
| 34 | h | 102 | VAL | Peptide |
| 34 | h | 103 | ALA | Peptide |
| 34 | h | 118 | ALA | Peptide |
| 34 | h | 13 | ASN | Peptide |
| 34 | h | 26 | LYS | Peptide |
| 34 | h | 52 | VAL | Peptide |
| 34 | h | 62 | VAL | Peptide |
| 34 | h | 63 | VAL | Peptide |
| 34 | h | 73 | ASP | Peptide |
| 34 | h | 87 | ILE | Peptide |
| 35 | i | 108 | LYS | Peptide |
| 35 | i | 15 | ARG | Peptide |
| 35 | i | 18 | ARG | Peptide |
| 35 | i | 30 | THR | Peptide |
| 35 | i | 32 | THR | Peptide |
| 35 | i | 34 | GLY | Peptide |
| 35 | i | 57 | THR | Peptide |
| 35 | i | 9 | ASN | Peptide |
| 36 | j | 118 | LEU | Peptide |
| 36 | j | 123 | HIS | Peptide |
| 36 | j | 58 | PHE | Peptide |
| 36 | j | 77 | LYS | Peptide |
| 36 | j | 92 | GLY | Peptide |
| 36 | j | 93 | TYR | Peptide |
| 38 | l | 55 | ALA | Peptide |
| 39 | m | 49 | VAL | Peptide |
| 39 | m | 57 | PHE | Peptide |
| 39 | m | 59 | THR | Peptide |
| 39 | m | 6 | LEU | Peptide |
| 39 | m | 63 | VAL | Peptide |

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| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 39 | m | 71 | GLY | Peptide |
| 39 | m | 75 | ILE | Peptide |
| 39 | m | 97 | ALA | Peptide |
| 41 | o | 45 | THR | Peptide |
| 41 | o | 50 | PRO | Peptide |
| 41 | o | 51 | VAL | Peptide |
| 41 | o | 91 | TYR | Peptide |
| 43 | q | 62 | LYS | Peptide |
| 43 | q | 88 | LYS | Peptide |
| 44 | r | 31 | LEU | Peptide |
| 44 | r | 37 | VAL | Peptide |
| 44 | r | 6 | HIS | Peptide |
| 44 | r | 70 | SER | Peptide |
| 44 | r | 79 | CYS | Peptide |
| 44 | r | 86 | ARG | Peptide |
| 44 | r | 98 | VAL | Peptide |
| 46 | t | 83 | PRO | Peptide |
| 47 | u | 37 | GLY | Peptide |
| 47 | u | 43 | HIS | Peptide |
| 48 | v | 27 | GLY | Peptide |
| 49 | w | 2 | LYS | Peptide |
| 49 | w | 53 | GLU | Peptide |
| 50 | x | 58 | LEU | Peptide |
| 51 | y | 20 | ASN | Peptide |
| 52 | z | 41 | ARG | 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 |
|---|---|---|---|---|---|---|
| 2 | A | 95/104 (91%) | 82 (86%) | 12 (13%) | 1 (1%) | 14 53 |
| 3 | B | 71/73 (97%) | 59 (83%) | 12 (17%) | 0 | 100 100 |
| 4 | C | 97/106 (92%) | 85 (88%) | 10 (10%) | 2 (2%) | 7 40 |
| 5 | D | 80/93 (86%) | 64 (80%) | 16 (20%) | 0 | 100 100 |
| 6 | E | 96/105 (91%) | 81 (84%) | 14 (15%) | 1 (1%) | 15 55 |
| 7 | F | 22/27 (82%) | 20 (91%) | 2 (9%) | 0 | 100 100 |
| 9 | H | 220/256 (86%) | 195 (89%) | 23 (10%) | 2 (1%) | 17 57 |
| 10 | I | 204/239 (85%) | 174 (85%) | 30 (15%) | 0 | 100 100 |
| 11 | J | 206/209 (99%) | 178 (86%) | 27 (13%) | 1 (0%) | 29 68 |
| 12 | K | 148/162 (91%) | 129 (87%) | 18 (12%) | 1 (1%) | 22 61 |
| 13 | L | 99/101 (98%) | 84 (85%) | 14 (14%) | 1 (1%) | 15 55 |
| 14 | M | 153/156 (98%) | 135 (88%) | 16 (10%) | 2 (1%) | 12 50 |
| 15 | N | 136/138 (99%) | 118 (87%) | 17 (12%) | 1 (1%) | 22 61 |
| 16 | O | 125/128 (98%) | 97 (78%) | 28 (22%) | 0 | 100 100 |
| 17 | P | 117/129 (91%) | 103 (88%) | 14 (12%) | 0 | 100 100 |
| 18 | Q | 122/132 (92%) | 96 (79%) | 25 (20%) | 1 (1%) | 19 59 |
| 19 | R | 112/126 (89%) | 86 (77%) | 23 (20%) | 3 (3%) | 5 35 |
| 20 | S | 58/61 (95%) | 39 (67%) | 18 (31%) | 1 (2%) | 9 45 |
| 21 | T | 86/89 (97%) | 83 (96%) | 3 (4%) | 0 | 100 100 |
| 22 | U | 81/88 (92%) | 70 (86%) | 11 (14%) | 0 | 100 100 |
| 25 | Y | 226/229 (99%) | 179 (79%) | 39 (17%) | 8 (4%) | 3 30 |
| 26 | Z | 271/276 (98%) | 232 (86%) | 38 (14%) | 1 (0%) | 34 71 |
| 27 | a | 204/206 (99%) | 162 (79%) | 42 (21%) | 0 | 100 100 |
| 28 | b | 206/210 (98%) | 156 (76%) | 48 (23%) | 2 (1%) | 15 55 |
| 29 | c | 177/182 (97%) | 121 (68%) | 45 (25%) | 11 (6%) | 1 17 |
| 30 | d | 174/180 (97%) | 135 (78%) | 27 (16%) | 12 (7%) | 1 14 |
| 31 | e | 124/173 (72%) | 79 (64%) | 39 (32%) | 6 (5%) | 2 22 |
| 32 | f | 132/147 (90%) | 86 (65%) | 34 (26%) | 12 (9%) | 1 9 |
| 33 | g | 115/140 (82%) | 92 (80%) | 21 (18%) | 2 (2%) | 9 45 |
| 34 | h | 120/122 (98%) | 76 (63%) | 39 (32%) | 5 (4%) | 3 25 |
| 35 | i | 143/150 (95%) | 95 (66%) | 41 (29%) | 7 (5%) | 2 21 |
| 36 | j | 134/141 (95%) | 94 (70%) | 37 (28%) | 3 (2%) | 6 39 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|---|---|---|---|---|---|---|---|
| 37 | k | 115/118 (98%) | 97 (84%) | 18 (16%) | 0 | 100 | 100 |
| 38 | l | 108/112 (96%) | 82 (76%) | 23 (21%) | 3 (3%) | 5 | 34 |
| 39 | m | 115/146 (79%) | 78 (68%) | 34 (30%) | 3 (3%) | 5 | 35 |
| 40 | n | 115/118 (98%) | 103 (90%) | 12 (10%) | 0 | 100 | 100 |
| 41 | o | 99/101 (98%) | 79 (80%) | 19 (19%) | 1 (1%) | 15 | 55 |
| 42 | p | 108/113 (96%) | 92 (85%) | 15 (14%) | 1 (1%) | 17 | 57 |
| 43 | q | 92/96 (96%) | 76 (83%) | 14 (15%) | 2 (2%) | 6 | 39 |
| 44 | r | 108/110 (98%) | 66 (61%) | 40 (37%) | 2 (2%) | 8 | 42 |
| 45 | s | 178/206 (86%) | 128 (72%) | 41 (23%) | 9 (5%) | 2 | 20 |
| 46 | t | 78/85 (92%) | 64 (82%) | 13 (17%) | 1 (1%) | 12 | 50 |
| 47 | u | 65/67 (97%) | 55 (85%) | 9 (14%) | 1 (2%) | 10 | 47 |
| 48 | v | 57/60 (95%) | 46 (81%) | 10 (18%) | 1 (2%) | 8 | 43 |
| 49 | CC | 30/71 (42%) | 18 (60%) | 12 (40%) | 0 | 100 | 100 |
| 49 | w | 69/71 (97%) | 43 (62%) | 23 (33%) | 3 (4%) | 2 | 24 |
| 50 | x | 55/60 (92%) | 35 (64%) | 18 (33%) | 2 (4%) | 3 | 29 |
| 51 | y | 47/54 (87%) | 29 (62%) | 17 (36%) | 1 (2%) | 7 | 40 |
| 52 | z | 47/49 (96%) | 40 (85%) | 7 (15%) | 0 | 100 | 100 |
| 53 | AA | 62/65 (95%) | 50 (81%) | 9 (14%) | 3 (5%) | 2 | 22 |
| 54 | BB | 35/37 (95%) | 32 (91%) | 3 (9%) | 0 | 100 | 100 |
| 56 | EE | 488/497 (98%) | 386 (79%) | 98 (20%) | 4 (1%) | 19 | 59 |
| All | All | 6425/6914 (93%) | 5084 (79%) | 1218 (19%) | 123 (2%) | 11 | 42 |

All (123) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 4 | C | 75 | ASN |
| 9 | H | 78 | GLN |
| 25 | Y | 161 | ILE |
| 25 | Y | 179 | SER |
| 29 | c | 31 | VAL |
| 29 | c | 32 | PRO |
| 29 | c | 77 | ILE |
| 29 | c | 81 | LYS |
| 29 | c | 86 | MET |
| 29 | c | 87 | PRO |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 30 | d | 12 | PRO |
| 30 | d | 17 | VAL |
| 30 | d | 21 | PRO |
| 30 | d | 126 | PRO |
| 30 | d | 127 | GLU |
| 30 | d | 128 | PRO |
| 31 | e | 32 | LEU |
| 32 | f | 19 | PRO |
| 32 | f | 54 | PRO |
| 32 | f | 67 | PHE |
| 32 | f | 68 | VAL |
| 32 | f | 69 | THR |
| 35 | i | 48 | PRO |
| 38 | l | 100 | ALA |
| 39 | m | 59 | THR |
| 43 | q | 88 | LYS |
| 43 | q | 89 | ILE |
| 45 | s | 93 | ASP |
| 45 | s | 94 | GLU |
| 45 | s | 97 | GLU |
| 49 | w | 50 | VAL |
| 53 | AA | 12 | LYS |
| 53 | AA | 13 | ARG |
| 56 | EE | 150 | LEU |
| 56 | EE | 296 | PRO |
| 4 | C | 74 | LYS |
| 6 | E | 57 | LYS |
| 9 | H | 153 | ARG |
| 25 | Y | 37 | PHE |
| 25 | Y | 160 | ARG |
| 25 | Y | 184 | LYS |
| 26 | Z | 273 | ARG |
| 29 | c | 79 | ASN |
| 29 | c | 84 | LYS |
| 30 | d | 13 | LYS |
| 30 | d | 41 | MET |
| 31 | e | 7 | VAL |
| 31 | e | 12 | THR |
| 32 | f | 56 | GLU |
| 34 | h | 14 | THR |
| 34 | h | 103 | ALA |
| 36 | j | 99 | PRO |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 38 | l | 91 | PRO |
| 41 | o | 46 | VAL |
| 44 | r | 87 | LYS |
| 45 | s | 90 | VAL |
| 45 | s | 92 | SER |
| 45 | s | 152 | ALA |
| 49 | w | 11 | PRO |
| 56 | EE | 100 | MET |
| 56 | EE | 347 | ASP |
| 2 | A | 67 | LYS |
| 14 | M | 113 | GLU |
| 25 | Y | 36 | LYS |
| 25 | Y | 182 | PRO |
| 31 | e | 10 | LEU |
| 32 | f | 61 | ALA |
| 32 | f | 101 | TRP |
| 32 | f | 110 | GLN |
| 33 | g | 66 | LYS |
| 35 | i | 33 | ARG |
| 42 | p | 90 | ARG |
| 45 | s | 42 | VAL |
| 46 | t | 8 | GLY |
| 11 | J | 35 | ARG |
| 12 | K | 141 | GLN |
| 25 | Y | 162 | GLU |
| 28 | b | 62 | ARG |
| 29 | c | 29 | TRP |
| 29 | c | 78 | SER |
| 29 | c | 142 | PRO |
| 30 | d | 40 | GLU |
| 30 | d | 111 | HIS |
| 32 | f | 52 | ILE |
| 35 | i | 35 | HIS |
| 36 | j | 60 | ARG |
| 39 | m | 99 | LEU |
| 45 | s | 32 | HIS |
| 47 | u | 13 | PRO |
| 19 | R | 100 | GLY |
| 19 | R | 101 | GLN |
| 19 | R | 108 | ARG |
| 30 | d | 15 | VAL |
| 31 | e | 54 | ALA |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 32 | f | 66 | THR |
| 33 | g | 45 | ASN |
| 35 | i | 46 | LYS |
| 49 | w | 58 | ARG |
| 51 | y | 19 | ARG |
| 35 | i | 47 | ASP |
| 39 | m | 97 | ALA |
| 14 | M | 112 | PRO |
| 34 | h | 119 | PRO |
| 44 | r | 38 | ILE |
| 50 | x | 40 | LYS |
| 30 | d | 39 | PRO |
| 34 | h | 15 | GLY |
| 35 | i | 34 | GLY |
| 36 | j | 78 | PRO |
| 53 | AA | 62 | LEU |
| 13 | L | 96 | PRO |
| 31 | e | 33 | PRO |
| 45 | s | 96 | VAL |
| 48 | v | 12 | PRO |
| 18 | Q | 7 | ILE |
| 20 | S | 14 | PRO |
| 28 | b | 178 | PRO |
| 32 | f | 21 | PRO |
| 34 | h | 4 | PRO |
| 35 | i | 71 | VAL |
| 15 | N | 74 | PRO |
| 38 | l | 96 | GLY |
| 50 | x | 5 | PRO |

### 5.3.2 Protein sidechains (i)

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

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

| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles |
|---|---|---|---|---|---|
| 2 | A | 92/96 (96%) | 91 (99%) | 1 (1%) | 73 88 |
| 3 | B | 64/64 (100%) | 64 (100%) | 0 | 100 100 |

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| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles |
|---|---|---|---|---|---|
| 4 | C | 76/82 (93%) | 75 (99%) | 1 (1%) | 69 86 |
| 5 | D | 72/80 (90%) | 69 (96%) | 3 (4%) | 30 63 |
| 6 | E | 88/92 (96%) | 88 (100%) | 0 | 100 100 |
| 7 | F | 19/22 (86%) | 19 (100%) | 0 | 100 100 |
| 9 | H | 191/220 (87%) | 186 (97%) | 5 (3%) | 46 74 |
| 10 | I | 160/188 (85%) | 157 (98%) | 3 (2%) | 57 80 |
| 11 | J | 180/181 (99%) | 176 (98%) | 4 (2%) | 52 77 |
| 12 | K | 115/123 (94%) | 114 (99%) | 1 (1%) | 78 90 |
| 13 | L | 90/90 (100%) | 90 (100%) | 0 | 100 100 |
| 14 | M | 126/127 (99%) | 124 (98%) | 2 (2%) | 62 83 |
| 15 | N | 119/119 (100%) | 118 (99%) | 1 (1%) | 81 91 |
| 16 | O | 98/99 (99%) | 96 (98%) | 2 (2%) | 55 79 |
| 17 | P | 90/99 (91%) | 87 (97%) | 3 (3%) | 38 69 |
| 18 | Q | 104/109 (95%) | 104 (100%) | 0 | 100 100 |
| 19 | R | 92/101 (91%) | 91 (99%) | 1 (1%) | 73 88 |
| 20 | S | 49/50 (98%) | 41 (84%) | 8 (16%) | 2 15 |
| 21 | T | 79/80 (99%) | 77 (98%) | 2 (2%) | 47 75 |
| 22 | U | 72/74 (97%) | 71 (99%) | 1 (1%) | 67 85 |
| 25 | Y | 180/181 (99%) | 174 (97%) | 6 (3%) | 38 69 |
| 26 | Z | 215/218 (99%) | 209 (97%) | 6 (3%) | 43 72 |
| 27 | a | 166/166 (100%) | 163 (98%) | 3 (2%) | 59 81 |
| 28 | b | 164/166 (99%) | 160 (98%) | 4 (2%) | 49 75 |
| 29 | c | 152/156 (97%) | 139 (91%) | 13 (9%) | 10 41 |
| 30 | d | 142/148 (96%) | 130 (92%) | 12 (8%) | 10 41 |
| 32 | f | 101/111 (91%) | 92 (91%) | 9 (9%) | 9 40 |
| 33 | g | 99/119 (83%) | 94 (95%) | 5 (5%) | 24 58 |
| 34 | h | 100/100 (100%) | 99 (99%) | 1 (1%) | 76 88 |
| 35 | i | 112/116 (97%) | 107 (96%) | 5 (4%) | 27 62 |
| 36 | j | 106/111 (96%) | 104 (98%) | 2 (2%) | 57 80 |
| 37 | k | 100/101 (99%) | 99 (99%) | 1 (1%) | 76 88 |
| 38 | l | 87/88 (99%) | 76 (87%) | 11 (13%) | 4 24 |

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| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles |
|---|---|---|---|---|---|
| 39 | m | 105/127 (83%) | 101 (96%) | 4 (4%) | 33 66 |
| 40 | n | 93/94 (99%) | 92 (99%) | 1 (1%) | 73 88 |
| 41 | o | 82/82 (100%) | 79 (96%) | 3 (4%) | 34 66 |
| 42 | p | 90/92 (98%) | 87 (97%) | 3 (3%) | 38 69 |
| 43 | q | 76/78 (97%) | 76 (100%) | 0 | 100 100 |
| 44 | r | 91/91 (100%) | 90 (99%) | 1 (1%) | 73 88 |
| 45 | s | 159/179 (89%) | 155 (98%) | 4 (2%) | 47 75 |
| 46 | t | 63/67 (94%) | 61 (97%) | 2 (3%) | 39 70 |
| 47 | u | 62/62 (100%) | 60 (97%) | 2 (3%) | 39 70 |
| 48 | v | 51/52 (98%) | 50 (98%) | 1 (2%) | 55 79 |
| 49 | w | 63/63 (100%) | 61 (97%) | 2 (3%) | 39 70 |
| 50 | x | 50/52 (96%) | 46 (92%) | 4 (8%) | 12 43 |
| 51 | y | 47/52 (90%) | 42 (89%) | 5 (11%) | 6 32 |
| 52 | z | 42/42 (100%) | 41 (98%) | 1 (2%) | 49 75 |
| 53 | AA | 54/55 (98%) | 53 (98%) | 1 (2%) | 57 80 |
| 54 | BB | 34/34 (100%) | 33 (97%) | 1 (3%) | 42 72 |
| 56 | EE | 412/419 (98%) | 386 (94%) | 26 (6%) | 18 53 |
| All | All | 5274/5518 (96%) | 5097 (97%) | 177 (3%) | 40 69 |

All (177) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 2 | A | 17 | LYS |
| 4 | C | 38 | LYS |
| 5 | D | 7 | LYS |
| 5 | D | 23 | ASN |
| 5 | D | 37 | ARG |
| 9 | H | 21 | ARG |
| 9 | H | 56 | ARG |
| 9 | H | 64 | ARG |
| 9 | H | 130 | ARG |
| 9 | H | 169 | LYS |
| 10 | I | 10 | PHE |
| 10 | I | 21 | ARG |
| 10 | I | 132 | ARG |
| 11 | J | 25 | ARG |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 11 | J | 49 | ARG |
| 11 | J | 50 | ARG |
| 11 | J | 132 | ARG |
| 12 | K | 25 | ARG |
| 14 | M | 30 | ILE |
| 14 | M | 155 | ARG |
| 15 | N | 41 | ARG |
| 16 | O | 89 | ASN |
| 16 | O | 128 | ARG |
| 17 | P | 11 | LYS |
| 17 | P | 82 | VAL |
| 17 | P | 91 | ARG |
| 19 | R | 102 | ARG |
| 20 | S | 21 | TYR |
| 20 | S | 29 | ARG |
| 20 | S | 31 | ARG |
| 20 | S | 35 | ARG |
| 20 | S | 36 | PHE |
| 20 | S | 39 | LEU |
| 20 | S | 41 | ARG |
| 20 | S | 42 | ILE |
| 21 | T | 47 | LYS |
| 21 | T | 63 | ARG |
| 22 | U | 8 | ARG |
| 25 | Y | 2 | LYS |
| 25 | Y | 73 | ARG |
| 25 | Y | 164 | ARG |
| 25 | Y | 188 | ASN |
| 25 | Y | 216 | THR |
| 25 | Y | 223 | ARG |
| 26 | Z | 5 | LYS |
| 26 | Z | 38 | LYS |
| 26 | Z | 43 | ARG |
| 26 | Z | 65 | ILE |
| 26 | Z | 157 | ARG |
| 26 | Z | 274 | ARG |
| 27 | a | 2 | LYS |
| 27 | a | 61 | ARG |
| 27 | a | 170 | LEU |
| 28 | b | 72 | ARG |
| 28 | b | 106 | ARG |
| 28 | b | 168 | ARG |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 28 | b | 205 | ARG |
| 29 | c | 16 | ARG |
| 29 | c | 28 | VAL |
| 29 | c | 33 | ARG |
| 29 | c | 47 | LYS |
| 29 | c | 79 | ASN |
| 29 | c | 80 | PHE |
| 29 | c | 81 | LYS |
| 29 | c | 82 | LEU |
| 29 | c | 86 | MET |
| 29 | c | 90 | LEU |
| 29 | c | 115 | ARG |
| 29 | c | 123 | ASN |
| 29 | c | 138 | GLN |
| 30 | d | 13 | LYS |
| 30 | d | 15 | VAL |
| 30 | d | 23 | ARG |
| 30 | d | 25 | LYS |
| 30 | d | 27 | LYS |
| 30 | d | 42 | ARG |
| 30 | d | 51 | ARG |
| 30 | d | 95 | ARG |
| 30 | d | 124 | GLU |
| 30 | d | 127 | GLU |
| 30 | d | 131 | VAL |
| 30 | d | 133 | VAL |
| 32 | f | 11 | GLN |
| 32 | f | 42 | ASN |
| 32 | f | 63 | ARG |
| 32 | f | 68 | VAL |
| 32 | f | 77 | LEU |
| 32 | f | 86 | LYS |
| 32 | f | 89 | HIS |
| 32 | f | 95 | LYS |
| 32 | f | 115 | LEU |
| 33 | g | 7 | LYS |
| 33 | g | 25 | ARG |
| 33 | g | 48 | MET |
| 33 | g | 61 | ARG |
| 33 | g | 115 | ARG |
| 34 | h | 64 | ARG |
| 35 | i | 15 | ARG |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 35 | i | 46 | LYS |
| 35 | i | 51 | PHE |
| 35 | i | 52 | GLU |
| 35 | i | 61 | ARG |
| 36 | j | 10 | ARG |
| 36 | j | 60 | ARG |
| 37 | k | 105 | ARG |
| 38 | l | 9 | ARG |
| 38 | l | 10 | ARG |
| 38 | l | 12 | PHE |
| 38 | l | 15 | ARG |
| 38 | l | 17 | ARG |
| 38 | l | 20 | ARG |
| 38 | l | 78 | LEU |
| 38 | l | 88 | ASP |
| 38 | l | 92 | TYR |
| 38 | l | 97 | ARG |
| 38 | l | 98 | VAL |
| 39 | m | 29 | ARG |
| 39 | m | 99 | LEU |
| 39 | m | 103 | ARG |
| 39 | m | 111 | ARG |
| 40 | n | 27 | LEU |
| 41 | o | 66 | ARG |
| 41 | o | 83 | ARG |
| 41 | o | 97 | LYS |
| 42 | p | 11 | ARG |
| 42 | p | 42 | ARG |
| 42 | p | 110 | LYS |
| 44 | r | 73 | ARG |
| 45 | s | 31 | ARG |
| 45 | s | 90 | VAL |
| 45 | s | 93 | ASP |
| 45 | s | 97 | GLU |
| 46 | t | 9 | SER |
| 46 | t | 10 | THR |
| 47 | u | 3 | LYS |
| 47 | u | 66 | ASN |
| 48 | v | 10 | LYS |
| 49 | w | 10 | VAL |
| 49 | w | 13 | ARG |
| 50 | x | 33 | CYS |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 50 | x | 37 | LYS |
| 50 | x | 39 | MET |
| 50 | x | 49 | CYS |
| 51 | y | 20 | ASN |
| 51 | y | 37 | ARG |
| 51 | y | 46 | HIS |
| 51 | y | 48 | VAL |
| 51 | y | 53 | LYS |
| 52 | z | 49 | ARG |
| 53 | AA | 8 | LYS |
| 54 | BB | 4 | ARG |
| 56 | EE | 35 | LEU |
| 56 | EE | 43 | LYS |
| 56 | EE | 63 | ARG |
| 56 | EE | 86 | MET |
| 56 | EE | 94 | ASN |
| 56 | EE | 95 | VAL |
| 56 | EE | 98 | ASP |
| 56 | EE | 100 | MET |
| 56 | EE | 101 | SER |
| 56 | EE | 104 | GLU |
| 56 | EE | 145 | PHE |
| 56 | EE | 188 | LYS |
| 56 | EE | 208 | ARG |
| 56 | EE | 294 | LYS |
| 56 | EE | 331 | ASN |
| 56 | EE | 371 | LYS |
| 56 | EE | 373 | VAL |
| 56 | EE | 374 | LEU |
| 56 | EE | 376 | PHE |
| 56 | EE | 377 | MET |
| 56 | EE | 403 | GLN |
| 56 | EE | 407 | SER |
| 56 | EE | 409 | LEU |
| 56 | EE | 410 | SER |
| 56 | EE | 413 | GLU |
| 56 | EE | 489 | ARG |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (38) such sidechains are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 9 | H | 94 | ASN |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 9 | H | 95 | GLN |
| 9 | H | 204 | ASN |
| 11 | J | 129 | ASN |
| 14 | M | 56 | GLN |
| 14 | M | 122 | HIS |
| 15 | N | 70 | GLN |
| 16 | O | 3 | GLN |
| 16 | O | 89 | ASN |
| 17 | P | 116 | HIS |
| 18 | Q | 99 | HIS |
| 19 | R | 62 | ASN |
| 21 | T | 37 | ASN |
| 25 | Y | 44 | HIS |
| 25 | Y | 56 | GLN |
| 25 | Y | 139 | ASN |
| 25 | Y | 188 | ASN |
| 26 | Z | 186 | HIS |
| 27 | a | 85 | ASN |
| 28 | b | 40 | GLN |
| 28 | b | 75 | HIS |
| 29 | c | 123 | ASN |
| 32 | f | 11 | GLN |
| 32 | f | 42 | ASN |
| 34 | h | 3 | GLN |
| 37 | k | 13 | HIS |
| 42 | p | 57 | ASN |
| 42 | p | 61 | ASN |
| 43 | q | 31 | HIS |
| 43 | q | 41 | ASN |
| 45 | s | 75 | ASN |
| 46 | t | 35 | ASN |
| 47 | u | 66 | ASN |
| 50 | x | 23 | HIS |
| 51 | y | 20 | ASN |
| 51 | y | 32 | ASN |
| 51 | y | 46 | HIS |
| 56 | EE | 285 | GLN |

### 5.3.3 RNA (i)

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| Mol | Chain | Analysed | Backbone Outliers | Pucker Outliers |
|---|---|---|---|---|

| Mol | Chain | Analysed | Backbone Outliers | Pucker Outliers |
|---|---|---|---|---|
| 1 | W | 6/25 (24%) | 6 (100%) | 1 (16%) |
| 23 | V | 2874/2875 (99%) | 1140 (39%) | 83 (2%) |
| 24 | X | 122/123 (99%) | 41 (33%) | 1 (0%) |
| 55 | DD | 76/77 (98%) | 31 (40%) | 4 (5%) |
| 8 | G | 1513/1514 (99%) | 479 (31%) | 37 (2%) |
| All | All | 4591/4614 (99%) | 1697 (36%) | 126 (2%) |

All (1697) RNA backbone outliers are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | W | 15 | A |
| 1 | W | 16 | A |
| 1 | W | 17 | U |
| 1 | W | 18 | G |
| 1 | W | 19 | U |
| 1 | W | 20 | U |
| 8 | G | 6 | G |
| 8 | G | 7 | G |
| 8 | G | 8 | A |
| 8 | G | 9 | G |
| 8 | G | 12 | U |
| 8 | G | 16 | A |
| 8 | G | 28 | G |
| 8 | G | 30 | U |
| 8 | G | 31 | G |
| 8 | G | 32 | A |
| 8 | G | 39 | G |
| 8 | G | 47 | C |
| 8 | G | 48 | C |
| 8 | G | 50 | A |
| 8 | G | 51 | A |
| 8 | G | 53 | A |
| 8 | G | 59 | A |
| 8 | G | 65 | U |
| 8 | G | 66 | G |
| 8 | G | 69 | G |
| 8 | G | 74 | C |
| 8 | G | 75 | C |
| 8 | G | 78 | G |
| 8 | G | 79 | G |
| 8 | G | 80 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 8 | G | 82 | U |
| 8 | G | 84 | U |
| 8 | G | 87 | A |
| 8 | G | 88 | C |
| 8 | G | 92 | G |
| 8 | G | 95 | G |
| 8 | G | 96 | G |
| 8 | G | 101 | A |
| 8 | G | 110 | C |
| 8 | G | 116 | A |
| 8 | G | 117 | G |
| 8 | G | 118 | U |
| 8 | G | 120 | A |
| 8 | G | 121 | C |
| 8 | G | 122 | G |
| 8 | G | 123 | C |
| 8 | G | 129(A) | G |
| 8 | G | 131 | C |
| 8 | G | 134 | A |
| 8 | G | 153 | C |
| 8 | G | 155 | C |
| 8 | G | 163 | C |
| 8 | G | 166 | G |
| 8 | G | 172 | A |
| 8 | G | 173 | U |
| 8 | G | 179 | A |
| 8 | G | 181 | G |
| 8 | G | 182 | U |
| 8 | G | 186(A) | C |
| 8 | G | 187 | C |
| 8 | G | 188 | U |
| 8 | G | 189 | U |
| 8 | G | 190 | G |
| 8 | G | 191(B) | G |
| 8 | G | 191(E) | G |
| 8 | G | 191 | G |
| 8 | G | 195 | A |
| 8 | G | 196 | A |
| 8 | G | 197 | A |
| 8 | G | 200 | G |
| 8 | G | 201 | C |
| 8 | G | 208 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 8 | G | 209 | U |
| 8 | G | 210 | U |
| 8 | G | 216 | G |
| 8 | G | 220 | G |
| 8 | G | 222 | U |
| 8 | G | 226 | G |
| 8 | G | 230 | G |
| 8 | G | 231 | G |
| 8 | G | 240 | C |
| 8 | G | 244 | U |
| 8 | G | 245 | C |
| 8 | G | 247 | G |
| 8 | G | 251 | G |
| 8 | G | 263 | A |
| 8 | G | 266 | G |
| 8 | G | 267 | C |
| 8 | G | 274 | A |
| 8 | G | 279 | A |
| 8 | G | 280 | C |
| 8 | G | 281 | G |
| 8 | G | 283 | C |
| 8 | G | 288 | A |
| 8 | G | 289 | G |
| 8 | G | 291 | C |
| 8 | G | 293 | G |
| 8 | G | 298 | A |
| 8 | G | 301 | G |
| 8 | G | 302 | G |
| 8 | G | 304 | U |
| 8 | G | 306 | G |
| 8 | G | 309 | G |
| 8 | G | 315 | A |
| 8 | G | 321 | A |
| 8 | G | 328 | C |
| 8 | G | 329 | A |
| 8 | G | 330 | C |
| 8 | G | 332 | G |
| 8 | G | 340 | U |
| 8 | G | 345 | C |
| 8 | G | 347 | G |
| 8 | G | 352 | C |
| 8 | G | 353 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 8 | G | 354 | G |
| 8 | G | 356 | A |
| 8 | G | 358 | U |
| 8 | G | 363 | A |
| 8 | G | 365 | U |
| 8 | G | 366 | C |
| 8 | G | 367 | U |
| 8 | G | 372 | C |
| 8 | G | 373 | A |
| 8 | G | 384 | G |
| 8 | G | 388 | G |
| 8 | G | 389 | A |
| 8 | G | 390 | C |
| 8 | G | 397 | A |
| 8 | G | 398 | C |
| 8 | G | 406 | G |
| 8 | G | 412 | A |
| 8 | G | 413 | G |
| 8 | G | 414 | A |
| 8 | G | 420 | U |
| 8 | G | 421 | U |
| 8 | G | 422 | C |
| 8 | G | 423 | G |
| 8 | G | 424 | G |
| 8 | G | 429 | U |
| 8 | G | 434 | U |
| 8 | G | 438 | G |
| 8 | G | 439 | A |
| 8 | G | 448 | A |
| 8 | G | 465 | A |
| 8 | G | 466 | C |
| 8 | G | 467 | G |
| 8 | G | 468 | A |
| 8 | G | 474 | G |
| 8 | G | 481 | G |
| 8 | G | 482 | A |
| 8 | G | 483 | C |
| 8 | G | 484 | G |
| 8 | G | 485 | G |
| 8 | G | 489 | C |
| 8 | G | 492 | G |
| 8 | G | 494 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 8 | G | 496 | A |
| 8 | G | 497 | U |
| 8 | G | 505 | G |
| 8 | G | 515 | G |
| 8 | G | 517 | G |
| 8 | G | 518 | C |
| 8 | G | 527 | G |
| 8 | G | 532 | A |
| 8 | G | 533 | A |
| 8 | G | 543 | C |
| 8 | G | 545 | C |
| 8 | G | 547 | A |
| 8 | G | 548 | G |
| 8 | G | 557 | G |
| 8 | G | 559 | A |
| 8 | G | 560 | U |
| 8 | G | 563 | A |
| 8 | G | 564 | C |
| 8 | G | 567 | G |
| 8 | G | 568 | G |
| 8 | G | 571 | U |
| 8 | G | 572 | A |
| 8 | G | 573 | A |
| 8 | G | 576 | G |
| 8 | G | 577 | G |
| 8 | G | 579 | G |
| 8 | G | 586 | C |
| 8 | G | 592 | G |
| 8 | G | 596 | C |
| 8 | G | 598 | U |
| 8 | G | 602 | A |
| 8 | G | 607 | A |
| 8 | G | 609 | A |
| 8 | G | 618 | C |
| 8 | G | 619 | U |
| 8 | G | 623 | C |
| 8 | G | 627 | G |
| 8 | G | 629 | G |
| 8 | G | 639 | G |
| 8 | G | 642 | A |
| 8 | G | 643 | C |
| 8 | G | 648 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 8 | G | 652 | U |
| 8 | G | 653 | A |
| 8 | G | 654 | G |
| 8 | G | 661 | G |
| 8 | G | 663 | A |
| 8 | G | 665 | A |
| 8 | G | 666 | G |
| 8 | G | 667 | G |
| 8 | G | 674 | G |
| 8 | G | 679 | C |
| 8 | G | 686 | U |
| 8 | G | 687 | A |
| 8 | G | 688 | G |
| 8 | G | 694 | A |
| 8 | G | 696 | A |
| 8 | G | 701 | C |
| 8 | G | 702 | A |
| 8 | G | 703 | G |
| 8 | G | 707 | C |
| 8 | G | 714 | G |
| 8 | G | 715 | A |
| 8 | G | 717 | C |
| 8 | G | 718 | G |
| 8 | G | 719 | C |
| 8 | G | 721 | G |
| 8 | G | 724 | G |
| 8 | G | 725 | G |
| 8 | G | 729 | A |
| 8 | G | 731 | G |
| 8 | G | 733 | A |
| 8 | G | 748 | C |
| 8 | G | 755 | G |
| 8 | G | 761 | G |
| 8 | G | 773 | G |
| 8 | G | 777 | A |
| 8 | G | 781 | A |
| 8 | G | 782 | A |
| 8 | G | 785 | G |
| 8 | G | 793 | U |
| 8 | G | 794 | A |
| 8 | G | 801 | U |
| 8 | G | 803 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 8 | G | 810 | C |
| 8 | G | 812 | C |
| 8 | G | 813 | U |
| 8 | G | 816 | A |
| 8 | G | 817 | C |
| 8 | G | 818 | G |
| 8 | G | 819 | A |
| 8 | G | 820 | U |
| 8 | G | 821 | G |
| 8 | G | 828 | A |
| 8 | G | 838 | G |
| 8 | G | 843 | U |
| 8 | G | 848 | C |
| 8 | G | 852 | G |
| 8 | G | 869 | G |
| 8 | G | 870 | U |
| 8 | G | 871 | U |
| 8 | G | 872 | A |
| 8 | G | 873 | A |
| 8 | G | 885 | G |
| 8 | G | 890 | G |
| 8 | G | 891 | U |
| 8 | G | 900 | A |
| 8 | G | 902 | G |
| 8 | G | 905 | U |
| 8 | G | 907 | A |
| 8 | G | 914 | A |
| 8 | G | 919 | A |
| 8 | G | 927 | G |
| 8 | G | 934 | C |
| 8 | G | 941 | G |
| 8 | G | 945 | G |
| 8 | G | 947 | G |
| 8 | G | 960 | U |
| 8 | G | 962 | C |
| 8 | G | 966 | G |
| 8 | G | 967 | C |
| 8 | G | 968 | A |
| 8 | G | 969 | A |
| 8 | G | 971 | G |
| 8 | G | 972 | C |
| 8 | G | 974 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 8 | G | 975 | A |
| 8 | G | 976 | G |
| 8 | G | 982 | U |
| 8 | G | 984 | C |
| 8 | G | 992 | U |
| 8 | G | 993 | G |
| 8 | G | 994 | A |
| 8 | G | 998 | G |
| 8 | G | 998(A) | C |
| 8 | G | 999 | U |
| 8 | G | 1000 | A |
| 8 | G | 1001 | G |
| 8 | G | 1002 | G |
| 8 | G | 1003 | G |
| 8 | G | 1004 | A |
| 8 | G | 1005 | A |
| 8 | G | 1006 | C |
| 8 | G | 1009 | G |
| 8 | G | 1015 | A |
| 8 | G | 1016 | A |
| 8 | G | 1022 | G |
| 8 | G | 1024 | G |
| 8 | G | 1025 | U |
| 8 | G | 1026 | G |
| 8 | G | 1027 | C |
| 8 | G | 1028 | C |
| 8 | G | 1029 | G |
| 8 | G | 1030 | C |
| 8 | G | 1031 | G |
| 8 | G | 1032 | A |
| 8 | G | 1032(A) | G |
| 8 | G | 1032(B) | G |
| 8 | G | 1033 | G |
| 8 | G | 1035 | A |
| 8 | G | 1036 | G |
| 8 | G | 1042 | G |
| 8 | G | 1045 | C |
| 8 | G | 1046 | A |
| 8 | G | 1053 | G |
| 8 | G | 1054 | C |
| 8 | G | 1060 | C |
| 8 | G | 1061 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 8 | G | 1064 | G |
| 8 | G | 1065 | U |
| 8 | G | 1066 | C |
| 8 | G | 1067 | A |
| 8 | G | 1073 | U |
| 8 | G | 1078 | U |
| 8 | G | 1079 | G |
| 8 | G | 1084 | G |
| 8 | G | 1085 | U |
| 8 | G | 1086 | U |
| 8 | G | 1089 | G |
| 8 | G | 1090 | U |
| 8 | G | 1094 | G |
| 8 | G | 1095 | U |
| 8 | G | 1099 | G |
| 8 | G | 1101 | A |
| 8 | G | 1103 | C |
| 8 | G | 1117 | G |
| 8 | G | 1123 | A |
| 8 | G | 1124 | G |
| 8 | G | 1125 | U |
| 8 | G | 1126 | U |
| 8 | G | 1129 | C |
| 8 | G | 1130 | A |
| 8 | G | 1131 | G |
| 8 | G | 1132 | C |
| 8 | G | 1136 | U |
| 8 | G | 1137 | C |
| 8 | G | 1138 | G |
| 8 | G | 1139 | G |
| 8 | G | 1140 | C |
| 8 | G | 1146 | A |
| 8 | G | 1154 | G |
| 8 | G | 1158 | C |
| 8 | G | 1159 | U |
| 8 | G | 1166 | G |
| 8 | G | 1175 | G |
| 8 | G | 1181 | G |
| 8 | G | 1182 | G |
| 8 | G | 1183 | A |
| 8 | G | 1184 | G |
| 8 | G | 1186 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 8 | G | 1187 | G |
| 8 | G | 1189 | C |
| 8 | G | 1190 | G |
| 8 | G | 1192 | C |
| 8 | G | 1196 | U |
| 8 | G | 1197 | G |
| 8 | G | 1201 | A |
| 8 | G | 1207 | G |
| 8 | G | 1209 | C |
| 8 | G | 1211 | U |
| 8 | G | 1212 | U |
| 8 | G | 1213 | A |
| 8 | G | 1218 | C |
| 8 | G | 1226 | C |
| 8 | G | 1227 | A |
| 8 | G | 1236 | A |
| 8 | G | 1239 | A |
| 8 | G | 1240 | U |
| 8 | G | 1241 | G |
| 8 | G | 1249 | C |
| 8 | G | 1250 | A |
| 8 | G | 1253 | G |
| 8 | G | 1257 | U |
| 8 | G | 1258 | G |
| 8 | G | 1260 | C |
| 8 | G | 1270 | C |
| 8 | G | 1273 | G |
| 8 | G | 1275 | A |
| 8 | G | 1278 | U |
| 8 | G | 1279 | A |
| 8 | G | 1280 | A |
| 8 | G | 1281 | U |
| 8 | G | 1285 | A |
| 8 | G | 1286 | A |
| 8 | G | 1287 | A |
| 8 | G | 1288 | A |
| 8 | G | 1296 | C |
| 8 | G | 1298 | C |
| 8 | G | 1299 | A |
| 8 | G | 1300 | G |
| 8 | G | 1302 | U |
| 8 | G | 1305 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 8 | G | 1308 | U |
| 8 | G | 1309 | G |
| 8 | G | 1310 | G |
| 8 | G | 1311 | G |
| 8 | G | 1312 | G |
| 8 | G | 1314 | C |
| 8 | G | 1317 | C |
| 8 | G | 1320 | C |
| 8 | G | 1322 | C |
| 8 | G | 1323 | G |
| 8 | G | 1329 | A |
| 8 | G | 1330 | U |
| 8 | G | 1331 | G |
| 8 | G | 1332 | A |
| 8 | G | 1336 | C |
| 8 | G | 1339 | A |
| 8 | G | 1347 | G |
| 8 | G | 1351 | U |
| 8 | G | 1353 | G |
| 8 | G | 1359 | C |
| 8 | G | 1360 | A |
| 8 | G | 1361 | G |
| 8 | G | 1362 | C |
| 8 | G | 1362(A) | C |
| 8 | G | 1363 | A |
| 8 | G | 1364 | U |
| 8 | G | 1365 | G |
| 8 | G | 1367 | C |
| 8 | G | 1372 | U |
| 8 | G | 1378 | C |
| 8 | G | 1379 | G |
| 8 | G | 1381 | U |
| 8 | G | 1396 | A |
| 8 | G | 1397 | C |
| 8 | G | 1398 | A |
| 8 | G | 1400 | C |
| 8 | G | 1401 | G |
| 8 | G | 1409 | C |
| 8 | G | 1416 | G |
| 8 | G | 1438 | G |
| 8 | G | 1442 | G |
| 8 | G | 1443 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 8 | G | 1446 | A |
| 8 | G | 1447 | G |
| 8 | G | 1449 | C |
| 8 | G | 1451 | A |
| 8 | G | 1452 | C |
| 8 | G | 1460 | A |
| 8 | G | 1461 | G |
| 8 | G | 1469 | G |
| 8 | G | 1477 | C |
| 8 | G | 1481 | U |
| 8 | G | 1492 | A |
| 8 | G | 1493 | A |
| 8 | G | 1494 | G |
| 8 | G | 1497 | G |
| 8 | G | 1498 | U |
| 8 | G | 1502 | A |
| 8 | G | 1503 | A |
| 8 | G | 1504 | G |
| 8 | G | 1505 | G |
| 8 | G | 1506 | U |
| 8 | G | 1507 | A |
| 8 | G | 1508 | G |
| 8 | G | 1510 | U |
| 8 | G | 1517 | G |
| 8 | G | 1520 | G |
| 8 | G | 1525 | G |
| 8 | G | 1529 | G |
| 8 | G | 1530 | G |
| 8 | G | 1531 | A |
| 8 | G | 1533 | C |
| 8 | G | 1535 | C |
| 8 | G | 1536 | C |
| 8 | G | 1538 | C |
| 8 | G | 1539 | C |
| 23 | V | 6 | A |
| 23 | V | 7 | G |
| 23 | V | 8 | A |
| 23 | V | 9 | U |
| 23 | V | 10 | G |
| 23 | V | 11 | G |
| 23 | V | 12 | U |
| 23 | V | 13 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 23 | V | 14 | A |
| 23 | V | 21 | A |
| 23 | V | 26 | G |
| 23 | V | 28 | A |
| 23 | V | 29 | U |
| 23 | V | 32 | C |
| 23 | V | 34 | C |
| 23 | V | 35 | G |
| 23 | V | 43 | G |
| 23 | V | 46 | C |
| 23 | V | 47 | C |
| 23 | V | 49 | A |
| 23 | V | 50 | U |
| 23 | V | 51 | G |
| 23 | V | 52 | A |
| 23 | V | 63 | U |
| 23 | V | 71 | A |
| 23 | V | 72 | U |
| 23 | V | 74 | A |
| 23 | V | 75 | G |
| 23 | V | 83 | G |
| 23 | V | 84 | A |
| 23 | V | 85 | G |
| 23 | V | 88 | G |
| 23 | V | 90 | U |
| 23 | V | 91 | A |
| 23 | V | 93 | C |
| 23 | V | 94 | G |
| 23 | V | 96 | G |
| 23 | V | 97 | C |
| 23 | V | 98 | G |
| 23 | V | 99 | U |
| 23 | V | 101 | G |
| 23 | V | 102 | G |
| 23 | V | 118 | A |
| 23 | V | 120 | U |
| 23 | V | 121 | G |
| 23 | V | 125 | G |
| 23 | V | 126 | A |
| 23 | V | 131 | G |
| 23 | V | 134 | C |
| 23 | V | 136 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 23 | V | 137 | C |
| 23 | V | 137(A) | G |
| 23 | V | 138 | G |
| 23 | V | 139 | G |
| 23 | V | 140 | A |
| 23 | V | 141 | A |
| 23 | V | 142 | G |
| 23 | V | 143 | C |
| 23 | V | 145 | G |
| 23 | V | 146 | G |
| 23 | V | 149 | A |
| 23 | V | 161 | U |
| 23 | V | 164 | U |
| 23 | V | 171 | G |
| 23 | V | 177 | G |
| 23 | V | 178 | G |
| 23 | V | 181 | A |
| 23 | V | 182 | A |
| 23 | V | 190 | A |
| 23 | V | 196 | A |
| 23 | V | 198 | C |
| 23 | V | 199 | A |
| 23 | V | 204 | A |
| 23 | V | 205 | G |
| 23 | V | 207 | A |
| 23 | V | 216 | A |
| 23 | V | 217 | G |
| 23 | V | 221 | A |
| 23 | V | 222 | A |
| 23 | V | 223 | A |
| 23 | V | 224 | G |
| 23 | V | 226 | G |
| 23 | V | 228 | A |
| 23 | V | 229 | A |
| 23 | V | 230 | U |
| 23 | V | 233 | A |
| 23 | V | 245 | G |
| 23 | V | 248 | G |
| 23 | V | 249 | C |
| 23 | V | 251 | A |
| 23 | V | 252 | G |
| 23 | V | 263 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 23 | V | 264 | C |
| 23 | V | 265 | A |
| 23 | V | 266 | G |
| 23 | V | 267 | C |
| 23 | V | 270 | A |
| 23 | V | 270(A) | A |
| 23 | V | 270(B) | A |
| 23 | V | 270(C) | C |
| 23 | V | 270(E) | G |
| 23 | V | 270(G) | C |
| 23 | V | 270(K) | C |
| 23 | V | 270(L) | U |
| 23 | V | 270(M) | U |
| 23 | V | 270(N) | G |
| 23 | V | 270(V) | G |
| 23 | V | 270(Z) | U |
| 23 | V | 271 | C |
| 23 | V | 271(A) | G |
| 23 | V | 271(B) | U |
| 23 | V | 271(C) | G |
| 23 | V | 272 | G |
| 23 | V | 273(F) | C |
| 23 | V | 275 | G |
| 23 | V | 276 | A |
| 23 | V | 277 | C |
| 23 | V | 280 | C |
| 23 | V | 283 | A |
| 23 | V | 284 | U |
| 23 | V | 285 | C |
| 23 | V | 286 | C |
| 23 | V | 287 | C |
| 23 | V | 288 | C |
| 23 | V | 289 | A |
| 23 | V | 290 | G |
| 23 | V | 293 | U |
| 23 | V | 296 | C |
| 23 | V | 299 | A |
| 23 | V | 300 | A |
| 23 | V | 304 | G |
| 23 | V | 305 | U |
| 23 | V | 306 | U |
| 23 | V | 307 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 23 | V | 308 | G |
| 23 | V | 310 | A |
| 23 | V | 311 | A |
| 23 | V | 312 | G |
| 23 | V | 323 | G |
| 23 | V | 324 | A |
| 23 | V | 327 | G |
| 23 | V | 329 | G |
| 23 | V | 330 | A |
| 23 | V | 332 | A |
| 23 | V | 333 | G |
| 23 | V | 334 | C |
| 23 | V | 338 | G |
| 23 | V | 339 | U |
| 23 | V | 340 | A |
| 23 | V | 341 | G |
| 23 | V | 345 | A |
| 23 | V | 347 | A |
| 23 | V | 348 | G |
| 23 | V | 349 | G |
| 23 | V | 350 | U |
| 23 | V | 351 | G |
| 23 | V | 352 | G |
| 23 | V | 354 | G |
| 23 | V | 356 | G |
| 23 | V | 358 | U |
| 23 | V | 359 | A |
| 23 | V | 360 | G |
| 23 | V | 361 | G |
| 23 | V | 363(A) | A |
| 23 | V | 363(E) | U |
| 23 | V | 363(F) | G |
| 23 | V | 365 | C |
| 23 | V | 366 | C |
| 23 | V | 370 | G |
| 23 | V | 371 | A |
| 23 | V | 372 | G |
| 23 | V | 373 | U |
| 23 | V | 374 | A |
| 23 | V | 380 | U |
| 23 | V | 383 | U |
| 23 | V | 386 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 23 | V | 388 | G |
| 23 | V | 394 | A |
| 23 | V | 399 | G |
| 23 | V | 404 | C |
| 23 | V | 405 | U |
| 23 | V | 411 | G |
| 23 | V | 412 | A |
| 23 | V | 413 | C |
| 23 | V | 417 | C |
| 23 | V | 418 | G |
| 23 | V | 419 | C |
| 23 | V | 428 | A |
| 23 | V | 433 | C |
| 23 | V | 434 | U |
| 23 | V | 435 | C |
| 23 | V | 443 | A |
| 23 | V | 444 | C |
| 23 | V | 447 | A |
| 23 | V | 448 | U |
| 23 | V | 449 | A |
| 23 | V | 451 | C |
| 23 | V | 452 | G |
| 23 | V | 455 | C |
| 23 | V | 456 | C |
| 23 | V | 457 | A |
| 23 | V | 458 | G |
| 23 | V | 459 | U |
| 23 | V | 467 | G |
| 23 | V | 471 | A |
| 23 | V | 473 | G |
| 23 | V | 479 | A |
| 23 | V | 480 | A |
| 23 | V | 481 | G |
| 23 | V | 485 | C |
| 23 | V | 489 | G |
| 23 | V | 491 | G |
| 23 | V | 501 | A |
| 23 | V | 504 | U |
| 23 | V | 505 | A |
| 23 | V | 508 | G |
| 23 | V | 512 | G |
| 23 | V | 526 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 23 | V | 527 | C |
| 23 | V | 528 | A |
| 23 | V | 529 | A |
| 23 | V | 530 | G |
| 23 | V | 531 | C |
| 23 | V | 532 | A |
| 23 | V | 533 | G |
| 23 | V | 536 | A |
| 23 | V | 537 | C |
| 23 | V | 540 | G |
| 23 | V | 545 | G |
| 23 | V | 551 | G |
| 23 | V | 556 | G |
| 23 | V | 560 | C |
| 23 | V | 563 | G |
| 23 | V | 568 | U |
| 23 | V | 570 | G |
| 23 | V | 573 | G |
| 23 | V | 574 | C |
| 23 | V | 575 | A |
| 23 | V | 586 | A |
| 23 | V | 588 | U |
| 23 | V | 598 | G |
| 23 | V | 599 | G |
| 23 | V | 603 | A |
| 23 | V | 607 | U |
| 23 | V | 608 | A |
| 23 | V | 613 | U |
| 23 | V | 615 | G |
| 23 | V | 616 | A |
| 23 | V | 617 | G |
| 23 | V | 618(A) | C |
| 23 | V | 619 | G |
| 23 | V | 621 | A |
| 23 | V | 622 | G |
| 23 | V | 624 | C |
| 23 | V | 626 | U |
| 23 | V | 627 | A |
| 23 | V | 628 | G |
| 23 | V | 631 | A |
| 23 | V | 632 | A |
| 23 | V | 637 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 23 | V | 638 | G |
| 23 | V | 639 | U |
| 23 | V | 642 | G |
| 23 | V | 643 | A |
| 23 | V | 644 | A |
| 23 | V | 645 | C |
| 23 | V | 646 | A |
| 23 | V | 648 | G |
| 23 | V | 649 | G |
| 23 | V | 652 | C |
| 23 | V | 653 | A |
| 23 | V | 654 | A |
| 23 | V | 655 | A |
| 23 | V | 656 | G |
| 23 | V | 669 | G |
| 23 | V | 671 | C |
| 23 | V | 677 | A |
| 23 | V | 682 | G |
| 23 | V | 684 | G |
| 23 | V | 686 | G |
| 23 | V | 688 | U |
| 23 | V | 693 | C |
| 23 | V | 699 | A |
| 23 | V | 715 | G |
| 23 | V | 717 | G |
| 23 | V | 719 | C |
| 23 | V | 725 | G |
| 23 | V | 726 | G |
| 23 | V | 727 | A |
| 23 | V | 728 | G |
| 23 | V | 729 | G |
| 23 | V | 730 | C |
| 23 | V | 731 | C |
| 23 | V | 739 | G |
| 23 | V | 740 | U |
| 23 | V | 743 | G |
| 23 | V | 744 | G |
| 23 | V | 747 | U |
| 23 | V | 748 | G |
| 23 | V | 750 | A |
| 23 | V | 755 | C |
| 23 | V | 756 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 23 | V | 758 | C |
| 23 | V | 762 | U |
| 23 | V | 764 | A |
| 23 | V | 775 | G |
| 23 | V | 777 | A |
| 23 | V | 779 | U |
| 23 | V | 782 | A |
| 23 | V | 783 | A |
| 23 | V | 784 | A |
| 23 | V | 785 | G |
| 23 | V | 789 | A |
| 23 | V | 790 | C |
| 23 | V | 791 | C |
| 23 | V | 792 | G |
| 23 | V | 793 | A |
| 23 | V | 794 | G |
| 23 | V | 795 | C |
| 23 | V | 800 | A |
| 23 | V | 801 | G |
| 23 | V | 805 | G |
| 23 | V | 811 | U |
| 23 | V | 812 | C |
| 23 | V | 817 | C |
| 23 | V | 823 | G |
| 23 | V | 825 | C |
| 23 | V | 827 | U |
| 23 | V | 828 | U |
| 23 | V | 830 | G |
| 23 | V | 832 | G |
| 23 | V | 837 | C |
| 23 | V | 843 | G |
| 23 | V | 847 | U |
| 23 | V | 850 | C |
| 23 | V | 853 | G |
| 23 | V | 855 | G |
| 23 | V | 859 | G |
| 23 | V | 860 | U |
| 23 | V | 865 | C |
| 23 | V | 866 | A |
| 23 | V | 870 | A |
| 23 | V | 873 | G |
| 23 | V | 874 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 23 | V | 875 | G |
| 23 | V | 876 | C |
| 23 | V | 881 | G |
| 23 | V | 882 | G |
| 23 | V | 883 | G |
| 23 | V | 884 | C |
| 23 | V | 886 | C |
| 23 | V | 887 | A |
| 23 | V | 889 | C |
| 23 | V | 890 | A |
| 23 | V | 892 | G |
| 23 | V | 893 | C |
| 23 | V | 894 | C |
| 23 | V | 895 | U |
| 23 | V | 896 | A |
| 23 | V | 898 | C |
| 23 | V | 900 | A |
| 23 | V | 901 | A |
| 23 | V | 902 | C |
| 23 | V | 903 | C |
| 23 | V | 904 | C |
| 23 | V | 906 | G |
| 23 | V | 907 | U |
| 23 | V | 910 | A |
| 23 | V | 915 | C |
| 23 | V | 926 | A |
| 23 | V | 929 | G |
| 23 | V | 930 | U |
| 23 | V | 931 | G |
| 23 | V | 932 | G |
| 23 | V | 941 | A |
| 23 | V | 945 | A |
| 23 | V | 946 | G |
| 23 | V | 957 | A |
| 23 | V | 961 | C |
| 23 | V | 966 | G |
| 23 | V | 968 | G |
| 23 | V | 973 | A |
| 23 | V | 974 | G |
| 23 | V | 974(A) | C |
| 23 | V | 980 | A |
| 23 | V | 981 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 23 | V | 982 | C |
| 23 | V | 983 | A |
| 23 | V | 987 | G |
| 23 | V | 988 | A |
| 23 | V | 989 | G |
| 23 | V | 995 | C |
| 23 | V | 996 | A |
| 23 | V | 999 | U |
| 23 | V | 1000 | A |
| 23 | V | 1004 | C |
| 23 | V | 1005 | C |
| 23 | V | 1006 | C |
| 23 | V | 1007 | C |
| 23 | V | 1008 | C |
| 23 | V | 1011 | G |
| 23 | V | 1013 | C |
| 23 | V | 1016 | G |
| 23 | V | 1021 | A |
| 23 | V | 1022 | G |
| 23 | V | 1023 | U |
| 23 | V | 1024 | G |
| 23 | V | 1025 | G |
| 23 | V | 1026 | U |
| 23 | V | 1027 | A |
| 23 | V | 1033 | U |
| 23 | V | 1034 | G |
| 23 | V | 1038 | C |
| 23 | V | 1041 | C |
| 23 | V | 1042 | G |
| 23 | V | 1044 | G |
| 23 | V | 1045 | A |
| 23 | V | 1046 | A |
| 23 | V | 1047 | G |
| 23 | V | 1050 | A |
| 23 | V | 1051 | G |
| 23 | V | 1052 | C |
| 23 | V | 1053 | C |
| 23 | V | 1054 | A |
| 23 | V | 1055 | G |
| 23 | V | 1056 | G |
| 23 | V | 1057 | A |
| 23 | V | 1058 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 23 | V | 1059 | G |
| 23 | V | 1060 | U |
| 23 | V | 1061 | U |
| 23 | V | 1062 | G |
| 23 | V | 1063 | G |
| 23 | V | 1064 | C |
| 23 | V | 1065 | U |
| 23 | V | 1066 | U |
| 23 | V | 1068 | G |
| 23 | V | 1069 | A |
| 23 | V | 1070 | A |
| 23 | V | 1071 | G |
| 23 | V | 1073 | A |
| 23 | V | 1075 | C |
| 23 | V | 1076 | C |
| 23 | V | 1077 | A |
| 23 | V | 1078 | U |
| 23 | V | 1079 | C |
| 23 | V | 1083 | U |
| 23 | V | 1085 | A |
| 23 | V | 1086 | A |
| 23 | V | 1087 | G |
| 23 | V | 1088 | A |
| 23 | V | 1089 | G |
| 23 | V | 1090 | U |
| 23 | V | 1093 | G |
| 23 | V | 1094 | U |
| 23 | V | 1096 | A |
| 23 | V | 1099 | G |
| 23 | V | 1101 | U |
| 23 | V | 1102 | C |
| 23 | V | 1104 | C |
| 23 | V | 1105 | U |
| 23 | V | 1106 | G |
| 23 | V | 1107 | G |
| 23 | V | 1110 | G |
| 23 | V | 1111 | A |
| 23 | V | 1112 | G |
| 23 | V | 1118 | C |
| 23 | V | 1124 | C |
| 23 | V | 1126 | A |
| 23 | V | 1130 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 23 | V | 1131 | G |
| 23 | V | 1134 | G |
| 23 | V | 1135 | C |
| 23 | V | 1140 | C |
| 23 | V | 1141 | U |
| 23 | V | 1142 | U |
| 23 | V | 1142(A) | A |
| 23 | V | 1143 | A |
| 23 | V | 1144 | G |
| 23 | V | 1151 | G |
| 23 | V | 1155 | A |
| 23 | V | 1156 | A |
| 23 | V | 1158 | C |
| 23 | V | 1162 | G |
| 23 | V | 1170 | G |
| 23 | V | 1173 | G |
| 23 | V | 1174 | A |
| 23 | V | 1175 | U |
| 23 | V | 1176 | G |
| 23 | V | 1177 | A |
| 23 | V | 1178 | C |
| 23 | V | 1180 | C |
| 23 | V | 1183 | G |
| 23 | V | 1186 | G |
| 23 | V | 1190 | G |
| 23 | V | 1193 | G |
| 23 | V | 1195 | G |
| 23 | V | 1199 | U |
| 23 | V | 1200 | C |
| 23 | V | 1201 | C |
| 23 | V | 1203 | G |
| 23 | V | 1204 | A |
| 23 | V | 1205 | U |
| 23 | V | 1211 | U |
| 23 | V | 1215 | G |
| 23 | V | 1220 | A |
| 23 | V | 1221 | C |
| 23 | V | 1222 | C |
| 23 | V | 1229 | G |
| 23 | V | 1231 | G |
| 23 | V | 1233 | C |
| 23 | V | 1238 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 23 | V | 1240 | U |
| 23 | V | 1241 | A |
| 23 | V | 1242 | A |
| 23 | V | 1248 | G |
| 23 | V | 1250 | G |
| 23 | V | 1251 | C |
| 23 | V | 1252 | G |
| 23 | V | 1253 | A |
| 23 | V | 1255 | U |
| 23 | V | 1256 | G |
| 23 | V | 1258 | C |
| 23 | V | 1260 | G |
| 23 | V | 1262 | A |
| 23 | V | 1265 | A |
| 23 | V | 1266 | G |
| 23 | V | 1267 | U |
| 23 | V | 1268 | A |
| 23 | V | 1271 | G |
| 23 | V | 1272 | A |
| 23 | V | 1275 | A |
| 23 | V | 1284 | A |
| 23 | V | 1285 | G |
| 23 | V | 1286 | A |
| 23 | V | 1287 | A |
| 23 | V | 1289 | C |
| 23 | V | 1297 | C |
| 23 | V | 1300 | U |
| 23 | V | 1301 | A |
| 23 | V | 1302 | A |
| 23 | V | 1304 | C |
| 23 | V | 1308 | A |
| 23 | V | 1310 | G |
| 23 | V | 1313 | U |
| 23 | V | 1314 | C |
| 23 | V | 1321 | A |
| 23 | V | 1324 | G |
| 23 | V | 1325 | G |
| 23 | V | 1327 | C |
| 23 | V | 1329 | U |
| 23 | V | 1330 | C |
| 23 | V | 1332 | G |
| 23 | V | 1335 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 23 | V | 1338 | G |
| 23 | V | 1340 | U |
| 23 | V | 1341 | U |
| 23 | V | 1344 | G |
| 23 | V | 1351 | C |
| 23 | V | 1352 | U |
| 23 | V | 1354 | A |
| 23 | V | 1355 | G |
| 23 | V | 1359 | A |
| 23 | V | 1360 | A |
| 23 | V | 1362 | C |
| 23 | V | 1363 | C |
| 23 | V | 1364 | G |
| 23 | V | 1365 | A |
| 23 | V | 1366 | A |
| 23 | V | 1367 | A |
| 23 | V | 1368 | G |
| 23 | V | 1373 | A |
| 23 | V | 1376 | C |
| 23 | V | 1379 | A |
| 23 | V | 1384 | A |
| 23 | V | 1385 | G |
| 23 | V | 1390 | U |
| 23 | V | 1397 | U |
| 23 | V | 1398 | C |
| 23 | V | 1406 | U |
| 23 | V | 1411 | C |
| 23 | V | 1415 | U |
| 23 | V | 1416 | G |
| 23 | V | 1419 | A |
| 23 | V | 1420 | U |
| 23 | V | 1421 | G |
| 23 | V | 1428 | C |
| 23 | V | 1438 | U |
| 23 | V | 1443 | G |
| 23 | V | 1444 | G |
| 23 | V | 1445 | C |
| 23 | V | 1446 | C |
| 23 | V | 1447 | G |
| 23 | V | 1448 | G |
| 23 | V | 1449 | A |
| 23 | V | 1449(A) | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 23 | V | 1450 | C |
| 23 | V | 1451 | C |
| 23 | V | 1452 | A |
| 23 | V | 1453 | A |
| 23 | V | 1454 | U |
| 23 | V | 1455 | G |
| 23 | V | 1458 | C |
| 23 | V | 1460 | A |
| 23 | V | 1461 | G |
| 23 | V | 1462 | C |
| 23 | V | 1463 | C |
| 23 | V | 1467 | C |
| 23 | V | 1472 | A |
| 23 | V | 1474 | C |
| 23 | V | 1476 | C |
| 23 | V | 1477 | A |
| 23 | V | 1478 | G |
| 23 | V | 1479 | G |
| 23 | V | 1482 | U |
| 23 | V | 1483 | G |
| 23 | V | 1488 | G |
| 23 | V | 1490 | A |
| 23 | V | 1491 | G |
| 23 | V | 1492 | G |
| 23 | V | 1493 | C |
| 23 | V | 1494 | A |
| 23 | V | 1496 | A |
| 23 | V | 1497 | U |
| 23 | V | 1498 | C |
| 23 | V | 1503 | U |
| 23 | V | 1507 | A |
| 23 | V | 1508 | A |
| 23 | V | 1509 | C |
| 23 | V | 1513 | C |
| 23 | V | 1514 | U |
| 23 | V | 1515 | C |
| 23 | V | 1516 | U |
| 23 | V | 1519 | G |
| 23 | V | 1520 | U |
| 23 | V | 1522 | G |
| 23 | V | 1523 | U |
| 23 | V | 1527 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 23 | V | 1528 | A |
| 23 | V | 1529 | A |
| 23 | V | 1530 | G |
| 23 | V | 1534 | G |
| 23 | V | 1537 | C |
| 23 | V | 1540 | G |
| 23 | V | 1542 | G |
| 23 | V | 1543 | A |
| 23 | V | 1544 | C |
| 23 | V | 1545 | A |
| 23 | V | 1545(A) | A |
| 23 | V | 1546 | C |
| 23 | V | 1548 | C |
| 23 | V | 1549 | C |
| 23 | V | 1554 | A |
| 23 | V | 1555 | G |
| 23 | V | 1558 | A |
| 23 | V | 1559 | G |
| 23 | V | 1560 | G |
| 23 | V | 1561 | G |
| 23 | V | 1562 | A |
| 23 | V | 1563 | G |
| 23 | V | 1565 | C |
| 23 | V | 1566 | A |
| 23 | V | 1567 | A |
| 23 | V | 1568 | G |
| 23 | V | 1569 | A |
| 23 | V | 1571 | A |
| 23 | V | 1572 | A |
| 23 | V | 1573 | G |
| 23 | V | 1574 | C |
| 23 | V | 1577 | C |
| 23 | V | 1578 | U |
| 23 | V | 1579 | A |
| 23 | V | 1580 | A |
| 23 | V | 1581 | G |
| 23 | V | 1582 | C |
| 23 | V | 1583 | A |
| 23 | V | 1585 | C |
| 23 | V | 1586 | A |
| 23 | V | 1587 | A |
| 23 | V | 1588 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 23 | V | 1589 | C |
| 23 | V | 1591 | G |
| 23 | V | 1602 | U |
| 23 | V | 1603 | A |
| 23 | V | 1604 | C |
| 23 | V | 1607 | C |
| 23 | V | 1608 | A |
| 23 | V | 1609 | A |
| 23 | V | 1610 | A |
| 23 | V | 1612 | C |
| 23 | V | 1614 | A |
| 23 | V | 1617 | C |
| 23 | V | 1618 | A |
| 23 | V | 1619 | G |
| 23 | V | 1626 | G |
| 23 | V | 1627 | G |
| 23 | V | 1628 | G |
| 23 | V | 1630 | G |
| 23 | V | 1630(A) | C |
| 23 | V | 1632 | A |
| 23 | V | 1638 | C |
| 23 | V | 1640 | C |
| 23 | V | 1644 | C |
| 23 | V | 1646 | C |
| 23 | V | 1648 | C |
| 23 | V | 1653 | G |
| 23 | V | 1665 | A |
| 23 | V | 1672 | C |
| 23 | V | 1673 | U |
| 23 | V | 1674 | G |
| 23 | V | 1675 | C |
| 23 | V | 1680 | U |
| 23 | V | 1681 | G |
| 23 | V | 1694 | C |
| 23 | V | 1695 | G |
| 23 | V | 1696 | G |
| 23 | V | 1697 | G |
| 23 | V | 1698 | A |
| 23 | V | 1704 | G |
| 23 | V | 1710 | C |
| 23 | V | 1712 | C |
| 23 | V | 1716 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 23 | V | 1717 | G |
| 23 | V | 1718 | G |
| 23 | V | 1725 | G |
| 23 | V | 1726 | G |
| 23 | V | 1728 | G |
| 23 | V | 1729 | A |
| 23 | V | 1730 | U |
| 23 | V | 1731 | G |
| 23 | V | 1732 | A |
| 23 | V | 1733 | G |
| 23 | V | 1734 | C |
| 23 | V | 1735 | C |
| 23 | V | 1741 | C |
| 23 | V | 1743 | G |
| 23 | V | 1747 | G |
| 23 | V | 1753 | G |
| 23 | V | 1757 | U |
| 23 | V | 1758 | G |
| 23 | V | 1759 | A |
| 23 | V | 1762 | A |
| 23 | V | 1763 | G |
| 23 | V | 1764 | G |
| 23 | V | 1766 | U |
| 23 | V | 1773 | A |
| 23 | V | 1774 | C |
| 23 | V | 1776 | G |
| 23 | V | 1779 | U |
| 23 | V | 1780 | A |
| 23 | V | 1781 | C |
| 23 | V | 1782 | C |
| 23 | V | 1783 | A |
| 23 | V | 1784 | A |
| 23 | V | 1785 | A |
| 23 | V | 1786 | A |
| 23 | V | 1787 | A |
| 23 | V | 1788 | C |
| 23 | V | 1791 | A |
| 23 | V | 1799 | G |
| 23 | V | 1800 | C |
| 23 | V | 1801 | G |
| 23 | V | 1802 | A |
| 23 | V | 1809 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 23 | V | 1810 | A |
| 23 | V | 1811 | G |
| 23 | V | 1813 | G |
| 23 | V | 1814 | G |
| 23 | V | 1815 | A |
| 23 | V | 1816 | G |
| 23 | V | 1818 | U |
| 23 | V | 1819 | A |
| 23 | V | 1820 | U |
| 23 | V | 1821 | A |
| 23 | V | 1829 | A |
| 23 | V | 1834 | U |
| 23 | V | 1835 | G |
| 23 | V | 1838 | C |
| 23 | V | 1839 | G |
| 23 | V | 1846 | G |
| 23 | V | 1847 | A |
| 23 | V | 1848 | A |
| 23 | V | 1858 | G |
| 23 | V | 1860 | G |
| 23 | V | 1861 | G |
| 23 | V | 1864 | U |
| 23 | V | 1869 | G |
| 23 | V | 1870 | C |
| 23 | V | 1871 | A |
| 23 | V | 1872 | A |
| 23 | V | 1878 | G |
| 23 | V | 1880 | C |
| 23 | V | 1882 | C |
| 23 | V | 1884 | A |
| 23 | V | 1889 | A |
| 23 | V | 1898 | U |
| 23 | V | 1903 | G |
| 23 | V | 1905 | C |
| 23 | V | 1912 | A |
| 23 | V | 1913 | A |
| 23 | V | 1914 | C |
| 23 | V | 1916 | A |
| 23 | V | 1917 | U |
| 23 | V | 1919 | A |
| 23 | V | 1922 | G |
| 23 | V | 1929 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 23 | V | 1930 | G |
| 23 | V | 1934 | C |
| 23 | V | 1936 | A |
| 23 | V | 1937 | A |
| 23 | V | 1938 | A |
| 23 | V | 1939 | U |
| 23 | V | 1940 | U |
| 23 | V | 1943 | U |
| 23 | V | 1944 | U |
| 23 | V | 1945 | G |
| 23 | V | 1951 | U |
| 23 | V | 1955 | U |
| 23 | V | 1956 | U |
| 23 | V | 1963 | U |
| 23 | V | 1964 | G |
| 23 | V | 1965 | C |
| 23 | V | 1967 | C |
| 23 | V | 1970 | A |
| 23 | V | 1971 | A |
| 23 | V | 1972 | A |
| 23 | V | 1982 | C |
| 23 | V | 1987 | G |
| 23 | V | 1991 | U |
| 23 | V | 1993 | U |
| 23 | V | 1996 | C |
| 23 | V | 1997 | G |
| 23 | V | 2013 | A |
| 23 | V | 2018 | G |
| 23 | V | 2020 | A |
| 23 | V | 2021 | C |
| 23 | V | 2022 | U |
| 23 | V | 2023 | G |
| 23 | V | 2026 | C |
| 23 | V | 2028 | U |
| 23 | V | 2030 | A |
| 23 | V | 2031 | A |
| 23 | V | 2032 | G |
| 23 | V | 2033 | A |
| 23 | V | 2034 | U |
| 23 | V | 2036 | C |
| 23 | V | 2039 | C |
| 23 | V | 2040 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 23 | V | 2041 | U |
| 23 | V | 2049 | G |
| 23 | V | 2050 | C |
| 23 | V | 2055 | C |
| 23 | V | 2056 | G |
| 23 | V | 2060 | A |
| 23 | V | 2061 | G |
| 23 | V | 2062 | A |
| 23 | V | 2063 | C |
| 23 | V | 2064 | C |
| 23 | V | 2069 | G |
| 23 | V | 2070 | G |
| 23 | V | 2077 | A |
| 23 | V | 2087 | G |
| 23 | V | 2092 | U |
| 23 | V | 2093 | G |
| 23 | V | 2096 | U |
| 23 | V | 2097 | C |
| 23 | V | 2102 | U |
| 23 | V | 2105 | C |
| 23 | V | 2108 | C |
| 23 | V | 2109 | U |
| 23 | V | 2110 | G |
| 23 | V | 2111 | C |
| 23 | V | 2113 | U |
| 23 | V | 2114 | A |
| 23 | V | 2116 | G |
| 23 | V | 2117 | A |
| 23 | V | 2120 | G |
| 23 | V | 2122 | U |
| 23 | V | 2123 | G |
| 23 | V | 2125 | G |
| 23 | V | 2126 | A |
| 23 | V | 2128 | C |
| 23 | V | 2129 | C |
| 23 | V | 2131 | G |
| 23 | V | 2132 | U |
| 23 | V | 2133 | G |
| 23 | V | 2134 | A |
| 23 | V | 2135 | A |
| 23 | V | 2136 | C |
| 23 | V | 2138 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 23 | V | 2144 | U |
| 23 | V | 2147 | G |
| 23 | V | 2156 | G |
| 23 | V | 2158 | A |
| 23 | V | 2159 | G |
| 23 | V | 2167 | U |
| 23 | V | 2168 | G |
| 23 | V | 2171 | A |
| 23 | V | 2172 | U |
| 23 | V | 2173 | A |
| 23 | V | 2175 | C |
| 23 | V | 2177 | C |
| 23 | V | 2182 | G |
| 23 | V | 2183 | C |
| 23 | V | 2187 | G |
| 23 | V | 2189 | U |
| 23 | V | 2190 | G |
| 23 | V | 2194 | G |
| 23 | V | 2195 | C |
| 23 | V | 2199 | A |
| 23 | V | 2205 | C |
| 23 | V | 2206 | C |
| 23 | V | 2207 | C |
| 23 | V | 2208 | U |
| 23 | V | 2209 | C |
| 23 | V | 2210 | G |
| 23 | V | 2212 | A |
| 23 | V | 2213 | U |
| 23 | V | 2215 | G |
| 23 | V | 2218 | G |
| 23 | V | 2226 | C |
| 23 | V | 2238 | G |
| 23 | V | 2239 | G |
| 23 | V | 2243 | U |
| 23 | V | 2246 | G |
| 23 | V | 2247 | A |
| 23 | V | 2258 | C |
| 23 | V | 2259 | G |
| 23 | V | 2268 | A |
| 23 | V | 2270 | G |
| 23 | V | 2273 | A |
| 23 | V | 2283 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 23 | V | 2284 | C |
| 23 | V | 2286 | A |
| 23 | V | 2287 | A |
| 23 | V | 2288 | A |
| 23 | V | 2292 | C |
| 23 | V | 2294 | C |
| 23 | V | 2295 | C |
| 23 | V | 2296 | U |
| 23 | V | 2297 | C |
| 23 | V | 2304 | G |
| 23 | V | 2305 | A |
| 23 | V | 2308 | G |
| 23 | V | 2309 | A |
| 23 | V | 2310 | A |
| 23 | V | 2311 | A |
| 23 | V | 2312 | U |
| 23 | V | 2319 | G |
| 23 | V | 2320 | A |
| 23 | V | 2322 | A |
| 23 | V | 2325 | G |
| 23 | V | 2327 | A |
| 23 | V | 2333 | A |
| 23 | V | 2334 | G |
| 23 | V | 2335 | A |
| 23 | V | 2337 | G |
| 23 | V | 2338 | G |
| 23 | V | 2342 | C |
| 23 | V | 2343 | C |
| 23 | V | 2347 | C |
| 23 | V | 2348 | U |
| 23 | V | 2349 | G |
| 23 | V | 2350 | C |
| 23 | V | 2351 | G |
| 23 | V | 2356 | C |
| 23 | V | 2359 | C |
| 23 | V | 2361 | A |
| 23 | V | 2383 | G |
| 23 | V | 2385 | C |
| 23 | V | 2390 | U |
| 23 | V | 2403 | C |
| 23 | V | 2406 | U |
| 23 | V | 2407 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 23 | V | 2414 | G |
| 23 | V | 2417 | C |
| 23 | V | 2419 | U |
| 23 | V | 2423 | U |
| 23 | V | 2424 | C |
| 23 | V | 2425 | A |
| 23 | V | 2426 | A |
| 23 | V | 2429 | G |
| 23 | V | 2430 | A |
| 23 | V | 2437 | U |
| 23 | V | 2441 | C |
| 23 | V | 2443 | C |
| 23 | V | 2445 | G |
| 23 | V | 2448 | A |
| 23 | V | 2460 | U |
| 23 | V | 2462 | U |
| 23 | V | 2465 | C |
| 23 | V | 2467 | C |
| 23 | V | 2472 | G |
| 23 | V | 2475 | C |
| 23 | V | 2476 | A |
| 23 | V | 2482 | G |
| 23 | V | 2487 | G |
| 23 | V | 2493 | U |
| 23 | V | 2498 | C |
| 23 | V | 2502 | G |
| 23 | V | 2503 | A |
| 23 | V | 2504 | U |
| 23 | V | 2505 | G |
| 23 | V | 2510 | C |
| 23 | V | 2513 | G |
| 23 | V | 2514 | U |
| 23 | V | 2518 | A |
| 23 | V | 2519 | U |
| 23 | V | 2520 | C |
| 23 | V | 2530 | A |
| 23 | V | 2532 | G |
| 23 | V | 2534 | A |
| 23 | V | 2538 | C |
| 23 | V | 2553 | G |
| 23 | V | 2554 | U |
| 23 | V | 2556 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 23 | V | 2565 | A |
| 23 | V | 2566 | A |
| 23 | V | 2567 | G |
| 23 | V | 2570 | G |
| 23 | V | 2572 | A |
| 23 | V | 2573 | C |
| 23 | V | 2585 | U |
| 23 | V | 2599 | G |
| 23 | V | 2602 | A |
| 23 | V | 2603 | G |
| 23 | V | 2607 | G |
| 23 | V | 2608 | G |
| 23 | V | 2609 | U |
| 23 | V | 2611 | U |
| 23 | V | 2612 | C |
| 23 | V | 2613 | U |
| 23 | V | 2614 | A |
| 23 | V | 2615 | U |
| 23 | V | 2627 | G |
| 23 | V | 2628 | C |
| 23 | V | 2629 | A |
| 23 | V | 2630 | G |
| 23 | V | 2632 | A |
| 23 | V | 2638 | G |
| 23 | V | 2646 | C |
| 23 | V | 2652 | C |
| 23 | V | 2654 | A |
| 23 | V | 2655 | G |
| 23 | V | 2656 | U |
| 23 | V | 2659 | G |
| 23 | V | 2668 | G |
| 23 | V | 2670 | A |
| 23 | V | 2681 | C |
| 23 | V | 2682 | U |
| 23 | V | 2688 | U |
| 23 | V | 2689 | U |
| 23 | V | 2691 | C |
| 23 | V | 2693 | A |
| 23 | V | 2699 | C |
| 23 | V | 2701 | C |
| 23 | V | 2702 | U |
| 23 | V | 2712 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 23 | V | 2712(A) | A |
| 23 | V | 2713 | A |
| 23 | V | 2714 | G |
| 23 | V | 2718 | G |
| 23 | V | 2721 | A |
| 23 | V | 2727 | G |
| 23 | V | 2728 | U |
| 23 | V | 2730 | C |
| 23 | V | 2732 | G |
| 23 | V | 2733 | A |
| 23 | V | 2741 | A |
| 23 | V | 2744 | G |
| 23 | V | 2746 | U |
| 23 | V | 2748 | A |
| 23 | V | 2750 | A |
| 23 | V | 2751 | G |
| 23 | V | 2752 | C |
| 23 | V | 2753 | A |
| 23 | V | 2756 | U |
| 23 | V | 2757 | A |
| 23 | V | 2758 | A |
| 23 | V | 2759 | G |
| 23 | V | 2764 | A |
| 23 | V | 2765 | A |
| 23 | V | 2766 | G |
| 23 | V | 2770 | G |
| 23 | V | 2772 | C |
| 23 | V | 2774 | C |
| 23 | V | 2776 | A |
| 23 | V | 2777 | G |
| 23 | V | 2778 | A |
| 23 | V | 2779 | U |
| 23 | V | 2780 | G |
| 23 | V | 2781 | A |
| 23 | V | 2782 | G |
| 23 | V | 2783 | G |
| 23 | V | 2786 | U |
| 23 | V | 2789 | C |
| 23 | V | 2790 | A |
| 23 | V | 2791 | C |
| 23 | V | 2793 | G |
| 23 | V | 2794 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 23 | V | 2795 | G |
| 23 | V | 2797 | U |
| 23 | V | 2799 | A |
| 23 | V | 2801 | A |
| 23 | V | 2804 | C |
| 23 | V | 2805 | G |
| 23 | V | 2807 | G |
| 23 | V | 2809 | A |
| 23 | V | 2810 | A |
| 23 | V | 2818 | G |
| 23 | V | 2820 | A |
| 23 | V | 2821 | A |
| 23 | V | 2832 | U |
| 23 | V | 2833 | G |
| 23 | V | 2834 | G |
| 23 | V | 2835 | A |
| 23 | V | 2837 | G |
| 23 | V | 2844 | G |
| 23 | V | 2847 | U |
| 23 | V | 2849 | U |
| 23 | V | 2850 | A |
| 23 | V | 2859 | G |
| 23 | V | 2861 | G |
| 23 | V | 2864 | G |
| 23 | V | 2865 | U |
| 23 | V | 2867 | G |
| 23 | V | 2868 | A |
| 23 | V | 2869 | G |
| 23 | V | 2872 | G |
| 23 | V | 2873 | A |
| 23 | V | 2874 | C |
| 23 | V | 2876 | G |
| 23 | V | 2877 | G |
| 23 | V | 2879 | C |
| 23 | V | 2883 | A |
| 23 | V | 2884 | U |
| 23 | V | 2893 | G |
| 23 | V | 2894 | G |
| 23 | V | 2895 | U |
| 23 | V | 2896 | C |
| 24 | X | 0 | A |
| 24 | X | 1 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 24 | X | 8 | U |
| 24 | X | 9 | G |
| 24 | X | 11 | C |
| 24 | X | 12 | C |
| 24 | X | 13 | A |
| 24 | X | 25 | A |
| 24 | X | 27 | C |
| 24 | X | 30 | C |
| 24 | X | 31 | C |
| 24 | X | 33 | G |
| 24 | X | 35 | U |
| 24 | X | 36 | C |
| 24 | X | 37 | C |
| 24 | X | 38 | C |
| 24 | X | 40 | U |
| 24 | X | 41 | U |
| 24 | X | 45 | A |
| 24 | X | 46 | A |
| 24 | X | 53 | A |
| 24 | X | 56 | G |
| 24 | X | 57 | A |
| 24 | X | 62 | C |
| 24 | X | 66 | A |
| 24 | X | 67 | G |
| 24 | X | 71 | C |
| 24 | X | 76 | G |
| 24 | X | 84 | C |
| 24 | X | 86 | G |
| 24 | X | 88 | C |
| 24 | X | 89 | G |
| 24 | X | 89(A) | A |
| 24 | X | 90 | C |
| 24 | X | 99 | A |
| 24 | X | 101 | A |
| 24 | X | 105 | G |
| 24 | X | 107 | U |
| 24 | X | 108 | C |
| 24 | X | 109 | G |
| 24 | X | 120 | U |
| 55 | DD | 3 | C |
| 55 | DD | 4 | G |
| 55 | DD | 5 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 55 | DD | 6 | G |
| 55 | DD | 7 | G |
| 55 | DD | 8 | 4SU |
| 55 | DD | 9 | G |
| 55 | DD | 10 | G |
| 55 | DD | 11 | A |
| 55 | DD | 13 | C |
| 55 | DD | 16 | C |
| 55 | DD | 17 | C |
| 55 | DD | 18 | C |
| 55 | DD | 19 | G |
| 55 | DD | 20 | G |
| 55 | DD | 21 | U |
| 55 | DD | 22 | A |
| 55 | DD | 33 | OMC |
| 55 | DD | 34 | A |
| 55 | DD | 35 | C |
| 55 | DD | 36 | A |
| 55 | DD | 38 | A |
| 55 | DD | 47 | 7MG |
| 55 | DD | 48 | U |
| 55 | DD | 49 | C |
| 55 | DD | 50 | G |
| 55 | DD | 51 | U |
| 55 | DD | 56 | PSU |
| 55 | DD | 58 | A |
| 55 | DD | 65 | G |
| 55 | DD | 69 | C |

All (126) RNA pucker outliers are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | W | 19 | U |
| 8 | G | 115 | G |
| 8 | G | 119 | A |
| 8 | G | 129 | U |
| 8 | G | 129(A) | G |
| 8 | G | 196 | A |
| 8 | G | 208 | U |
| 8 | G | 243 | A |
| 8 | G | 266 | G |
| 8 | G | 328 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 8 | G | 352 | C |
| 8 | G | 413 | G |
| 8 | G | 484 | G |
| 8 | G | 517 | G |
| 8 | G | 559 | A |
| 8 | G | 595 | G |
| 8 | G | 641 | U |
| 8 | G | 652 | U |
| 8 | G | 686 | U |
| 8 | G | 812 | C |
| 8 | G | 820 | U |
| 8 | G | 872 | A |
| 8 | G | 913 | A |
| 8 | G | 918 | A |
| 8 | G | 975 | A |
| 8 | G | 992 | U |
| 8 | G | 1065 | U |
| 8 | G | 1145 | C |
| 8 | G | 1182 | G |
| 8 | G | 1239 | A |
| 8 | G | 1257 | U |
| 8 | G | 1285 | A |
| 8 | G | 1331 | G |
| 8 | G | 1346 | A |
| 8 | G | 1359 | C |
| 8 | G | 1362(A) | C |
| 8 | G | 1399 | C |
| 8 | G | 1446 | A |
| 23 | V | 6 | A |
| 23 | V | 51 | G |
| 23 | V | 71 | A |
| 23 | V | 83 | G |
| 23 | V | 99 | U |
| 23 | V | 119 | A |
| 23 | V | 120 | U |
| 23 | V | 136 | G |
| 23 | V | 215 | G |
| 23 | V | 270(B) | A |
| 23 | V | 270(L) | U |
| 23 | V | 270(M) | U |
| 23 | V | 270(Z) | U |
| 23 | V | 271(A) | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 23 | V | 289 | A |
| 23 | V | 311 | A |
| 23 | V | 362 | U |
| 23 | V | 403 | U |
| 23 | V | 446 | G |
| 23 | V | 451 | C |
| 23 | V | 456 | C |
| 23 | V | 458 | G |
| 23 | V | 470 | A |
| 23 | V | 489 | G |
| 23 | V | 527 | C |
| 23 | V | 559 | G |
| 23 | V | 587 | C |
| 23 | V | 627 | A |
| 23 | V | 630 | G |
| 23 | V | 644 | A |
| 23 | V | 776 | G |
| 23 | V | 788 | A |
| 23 | V | 801 | G |
| 23 | V | 827 | U |
| 23 | V | 846 | C |
| 23 | V | 930 | U |
| 23 | V | 972 | G |
| 23 | V | 1051 | G |
| 23 | V | 1052 | C |
| 23 | V | 1057 | A |
| 23 | V | 1061 | U |
| 23 | V | 1062 | G |
| 23 | V | 1085 | A |
| 23 | V | 1106 | G |
| 23 | V | 1139 | G |
| 23 | V | 1143 | A |
| 23 | V | 1221 | C |
| 23 | V | 1247 | A |
| 23 | V | 1266 | G |
| 23 | V | 1267 | U |
| 23 | V | 1300 | U |
| 23 | V | 1312 | U |
| 23 | V | 1313 | U |
| 23 | V | 1449(A) | G |
| 23 | V | 1489 | U |
| 23 | V | 1544 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 23 | V | 1778 | U |
| 23 | V | 1782 | C |
| 23 | V | 1786 | A |
| 23 | V | 1799 | G |
| 23 | V | 1833 | U |
| 23 | V | 2017 | U |
| 23 | V | 2020 | A |
| 23 | V | 2049 | G |
| 23 | V | 2110 | G |
| 23 | V | 2157 | G |
| 23 | V | 2158 | A |
| 23 | V | 2171 | A |
| 23 | V | 2176 | A |
| 23 | V | 2181 | G |
| 23 | V | 2225 | A |
| 23 | V | 2238 | G |
| 23 | V | 2319 | G |
| 23 | V | 2349 | G |
| 23 | V | 2402 | C |
| 23 | V | 2436 | G |
| 23 | V | 2447 | G |
| 23 | V | 2481 | G |
| 23 | V | 2614 | A |
| 23 | V | 2637 | U |
| 23 | V | 2712 | U |
| 23 | V | 2750 | A |
| 23 | V | 2820 | A |
| 24 | X | 56 | G |
| 55 | DD | 8 | 4SU |
| 55 | DD | 18 | C |
| 55 | DD | 33 | OMC |
| 55 | DD | 47 | 7MG |

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

5 non-standard protein/DNA/RNA residues are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection.

RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

| Mol | Type | Chain | Res | Link | Bond lengths | | | Bond angles | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Counts | RMSZ | $\#\|Z\|>2$ | Counts | RMSZ | $\#\|Z\|>2$ |
| 55 | OMC | DD | 33 | 55 | 19,22,23 | 0.82 | 0 | 26,31,34 | 1.04 | 1 (3%) |
| 55 | 7MG | DD | 47 | 55 | 22,26,27 | 1.32 | 3 (13%) | 29,39,42 | 2.65 | 8 (27%) |
| 55 | PSU | DD | 56 | 55 | 18,21,22 | 1.00 | 1 (5%) | 22,30,33 | 1.67 | 5 (22%) |
| 55 | 4SU | DD | 8 | 55 | 18,21,22 | 1.72 | 4 (22%) | 26,30,33 | 2.31 | 6 (23%) |
| 55 | 5MU | DD | 55 | 55 | 19,22,23 | 4.61 | 5 (26%) | 28,32,35 | 3.70 | 10 (35%) |

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

| Mol | Type | Chain | Res | Link | Chirals | Torsions | Rings |
|---|---|---|---|---|---|---|---|
| 55 | OMC | DD | 33 | 55 | - | 2/9/27/28 | 0/2/2/2 |
| 55 | 7MG | DD | 47 | 55 | - | 1/7/37/38 | 0/3/3/3 |
| 55 | PSU | DD | 56 | 55 | - | 2/7/25/26 | 0/2/2/2 |
| 55 | 4SU | DD | 8 | 55 | - | 1/7/25/26 | 0/2/2/2 |
| 55 | 5MU | DD | 55 | 55 | - | 1/7/25/26 | 0/2/2/2 |

All (13) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 55 | DD | 55 | 5MU | C2-N1 | 11.06 | 1.56 | 1.38 |
| 55 | DD | 55 | 5MU | C4-N3 | -9.89 | 1.20 | 1.38 |
| 55 | DD | 55 | 5MU | C4-C5 | 9.87 | 1.61 | 1.44 |
| 55 | DD | 55 | 5MU | C6-N1 | 7.96 | 1.51 | 1.38 |
| 55 | DD | 8 | 4SU | C4-S4 | -4.46 | 1.59 | 1.68 |
| 55 | DD | 55 | 5MU | C6-C5 | 4.40 | 1.41 | 1.34 |
| 55 | DD | 8 | 4SU | C4-N3 | -3.15 | 1.34 | 1.37 |
| 55 | DD | 47 | 7MG | C5-C4 | 2.99 | 1.47 | 1.38 |
| 55 | DD | 56 | PSU | C6-C5 | 2.93 | 1.38 | 1.35 |
| 55 | DD | 47 | 7MG | C4-N9 | -2.72 | 1.34 | 1.37 |
| 55 | DD | 8 | 4SU | C5-C4 | -2.45 | 1.39 | 1.42 |
| 55 | DD | 47 | 7MG | C6-N1 | -2.31 | 1.34 | 1.38 |
| 55 | DD | 8 | 4SU | C2-N3 | -2.08 | 1.34 | 1.38 |

All (30) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 55 | DD | 55 | 5MU | C5-C4-N3 | 12.26 | 125.78 | 115.31 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 55 | DD | 55 | 5MU | C5-C6-N1 | -9.85 | 113.21 | 123.34 |
| 55 | DD | 47 | 7MG | N9-C4-N3 | 9.15 | 139.16 | 125.47 |
| 55 | DD | 8 | 4SU | C4-N3-C2 | -6.88 | 120.66 | 127.34 |
| 55 | DD | 8 | 4SU | C5-C4-N3 | 5.94 | 120.20 | 114.69 |
| 55 | DD | 47 | 7MG | C5-C4-N3 | -5.49 | 117.66 | 128.13 |
| 55 | DD | 55 | 5MU | O4-C4-C5 | -5.42 | 118.62 | 124.90 |
| 55 | DD | 47 | 7MG | N9-C8-N7 | -5.28 | 95.82 | 103.38 |
| 55 | DD | 55 | 5MU | C4-N3-C2 | -4.81 | 121.12 | 127.35 |
| 55 | DD | 55 | 5MU | C5M-C5-C4 | 4.55 | 123.77 | 118.77 |
| 55 | DD | 55 | 5MU | C5M-C5-C6 | -4.46 | 116.90 | 122.85 |
| 55 | DD | 56 | PSU | C4-N3-C2 | -4.42 | 119.97 | 126.34 |
| 55 | DD | 47 | 7MG | C2-N3-C4 | 4.31 | 119.98 | 112.30 |
| 55 | DD | 55 | 5MU | N3-C2-N1 | 4.19 | 120.45 | 114.89 |
| 55 | DD | 56 | PSU | N1-C2-N3 | 4.18 | 119.86 | 115.13 |
| 55 | DD | 8 | 4SU | N3-C2-N1 | 4.06 | 120.27 | 114.89 |
| 55 | DD | 8 | 4SU | C5-C4-S4 | -3.55 | 119.90 | 124.47 |
| 55 | DD | 47 | 7MG | C5-C6-N1 | 2.68 | 115.72 | 110.99 |
| 55 | DD | 47 | 7MG | C3'-C2'-C1' | 2.56 | 106.30 | 101.43 |
| 55 | DD | 8 | 4SU | C3'-C2'-C1' | 2.54 | 106.26 | 101.43 |
| 55 | DD | 47 | 7MG | C5-C4-N9 | -2.44 | 103.18 | 106.35 |
| 55 | DD | 56 | PSU | O2-C2-N1 | -2.37 | 120.18 | 122.79 |
| 55 | DD | 55 | 5MU | O4-C4-N3 | -2.35 | 115.60 | 120.12 |
| 55 | DD | 33 | OMC | C2'-C1'-N1 | -2.30 | 109.76 | 114.22 |
| 55 | DD | 47 | 7MG | O6-C6-C5 | -2.21 | 122.12 | 127.54 |
| 55 | DD | 56 | PSU | C6-N1-C2 | -2.20 | 120.43 | 122.68 |
| 55 | DD | 55 | 5MU | C1'-N1-C2 | 2.20 | 121.56 | 117.57 |
| 55 | DD | 8 | 4SU | O2-C2-N1 | -2.18 | 119.89 | 122.79 |
| 55 | DD | 55 | 5MU | O2-C2-N1 | -2.05 | 120.06 | 122.79 |
| 55 | DD | 56 | PSU | O4'-C1'-C2' | 2.02 | 107.99 | 105.14 |

There are no chirality outliers.

All (7) torsion outliers are listed below:

| Mol | Chain | Res | Type | Atoms |
|---|---|---|---|---|
| 55 | DD | 8 | 4SU | O4'-C4'-C5'-O5' |
| 55 | DD | 33 | OMC | O4'-C4'-C5'-O5' |
| 55 | DD | 33 | OMC | C3'-C4'-C5'-O5' |
| 55 | DD | 56 | PSU | C3'-C4'-C5'-O5' |
| 55 | DD | 56 | PSU | O4'-C4'-C5'-O5' |
| 55 | DD | 47 | 7MG | C3'-C4'-C5'-O5' |
| 55 | DD | 55 | 5MU | O4'-C4'-C5'-O5' |

There are no ring outliers.

No monomer is involved in short contacts.

## 5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry (i)

Of 4 ligands modelled in this entry, 2 are monoatomic - leaving 2 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

| Mol | Type | Chain | Res | Link | Bond lengths | | | Bond angles | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Counts | RMSZ | $\#\|Z\| > 2$ | Counts | RMSZ | $\#\|Z\| > 2$ |
| 58 | ANP | EE | 501 | 56 | 29,33,33 | 1.86 | 5 (17%) | 31,52,52 | 1.88 | 8 (25%) |
| 58 | ANP | EE | 502 | - | 29,33,33 | 1.86 | 5 (17%) | 31,52,52 | 1.89 | 8 (25%) |

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

| Mol | Type | Chain | Res | Link | Chirals | Torsions | Rings |
|---|---|---|---|---|---|---|---|
| 58 | ANP | EE | 501 | 56 | - | 7/14/38/38 | 0/3/3/3 |
| 58 | ANP | EE | 502 | - | - | 6/14/38/38 | 0/3/3/3 |

All (10) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 58 | EE | 501 | ANP | PB-N3B | 4.63 | 1.75 | 1.63 |
| 58 | EE | 502 | ANP | PB-N3B | 4.62 | 1.75 | 1.63 |
| 58 | EE | 502 | ANP | PG-N3B | 4.62 | 1.75 | 1.63 |
| 58 | EE | 501 | ANP | PG-N3B | 4.60 | 1.75 | 1.63 |
| 58 | EE | 502 | ANP | PG-O1G | 3.37 | 1.51 | 1.46 |
| 58 | EE | 501 | ANP | PG-O1G | 3.37 | 1.51 | 1.46 |

*Continued on next page...*

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| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 58 | EE | 502 | ANP | PB-O1B | 3.34 | 1.51 | 1.46 |
| 58 | EE | 501 | ANP | PB-O1B | 3.31 | 1.51 | 1.46 |
| 58 | EE | 501 | ANP | C5-C4 | 2.53 | 1.47 | 1.40 |
| 58 | EE | 502 | ANP | C5-C4 | 2.49 | 1.47 | 1.40 |

All (16) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 58 | EE | 502 | ANP | O1G-PG-N3B | -4.85 | 104.63 | 111.77 |
| 58 | EE | 501 | ANP | O1G-PG-N3B | -4.84 | 104.64 | 111.77 |
| 58 | EE | 501 | ANP | O2B-PB-O1B | 4.04 | 118.40 | 109.92 |
| 58 | EE | 502 | ANP | O2B-PB-O1B | 4.04 | 118.40 | 109.92 |
| 58 | EE | 502 | ANP | PB-O3A-PA | -3.46 | 120.44 | 132.62 |
| 58 | EE | 502 | ANP | C3'-C2'-C1' | 3.44 | 106.15 | 100.98 |
| 58 | EE | 501 | ANP | PB-O3A-PA | -3.42 | 120.56 | 132.62 |
| 58 | EE | 501 | ANP | C3'-C2'-C1' | 3.37 | 106.05 | 100.98 |
| 58 | EE | 502 | ANP | N3-C2-N1 | -3.21 | 123.66 | 128.68 |
| 58 | EE | 501 | ANP | N3-C2-N1 | -3.17 | 123.73 | 128.68 |
| 58 | EE | 501 | ANP | C4-C5-N7 | -2.69 | 106.59 | 109.40 |
| 58 | EE | 502 | ANP | C4-C5-N7 | -2.69 | 106.59 | 109.40 |
| 58 | EE | 501 | ANP | O1B-PB-N3B | -2.51 | 108.08 | 111.77 |
| 58 | EE | 502 | ANP | O1B-PB-N3B | -2.48 | 108.12 | 111.77 |
| 58 | EE | 502 | ANP | O2G-PG-O3G | 2.34 | 113.88 | 107.64 |
| 58 | EE | 501 | ANP | O2G-PG-O3G | 2.32 | 113.81 | 107.64 |

There are no chirality outliers.

All (13) torsion outliers are listed below:

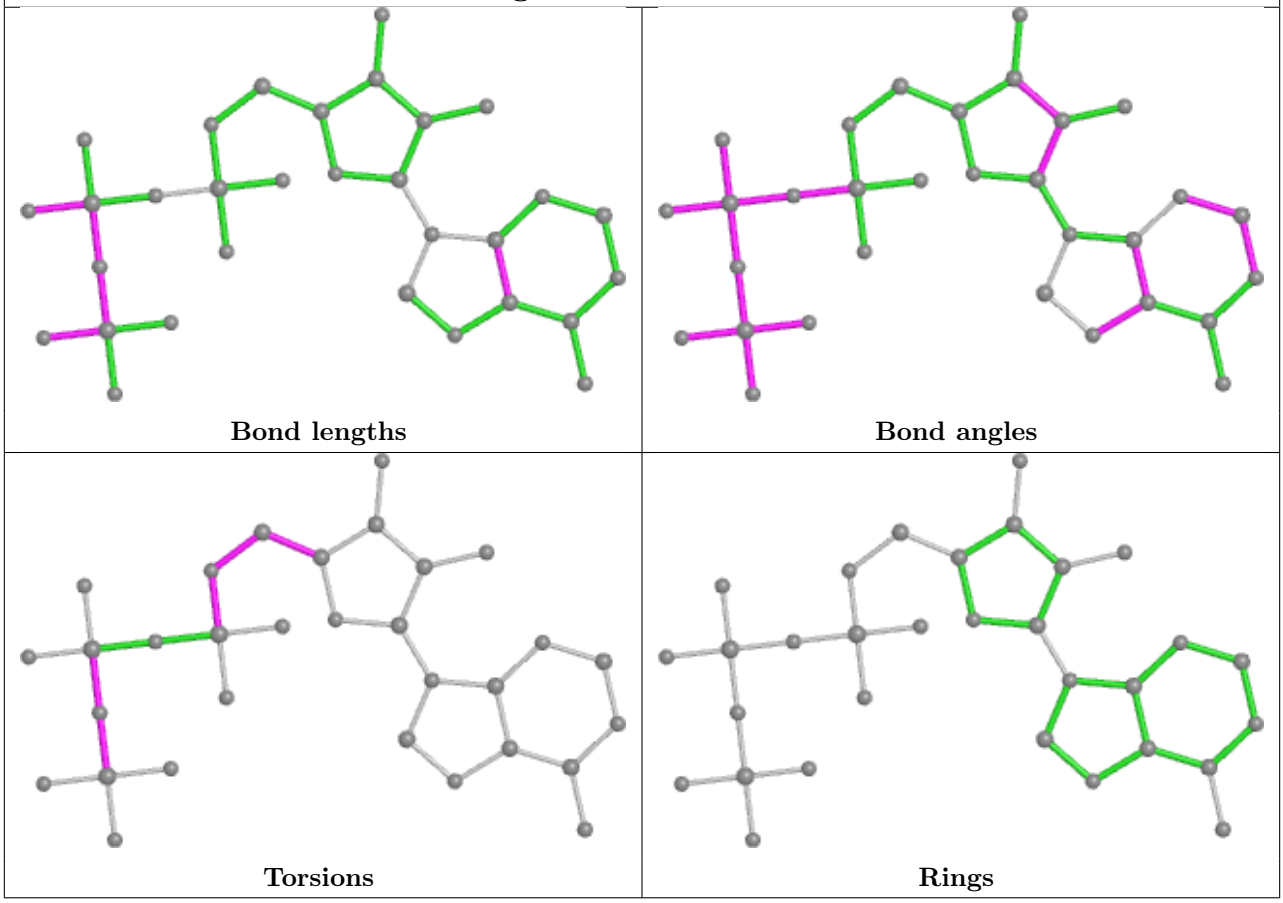
| Mol | Chain | Res | Type | Atoms |
|---|---|---|---|---|
| 58 | EE | 501 | ANP | PB-N3B-PG-O1G |
| 58 | EE | 501 | ANP | PG-N3B-PB-O1B |
| 58 | EE | 501 | ANP | C3'-C4'-C5'-O5' |
| 58 | EE | 502 | ANP | PB-N3B-PG-O1G |
| 58 | EE | 502 | ANP | PA-O3A-PB-O1B |
| 58 | EE | 502 | ANP | PA-O3A-PB-O2B |
| 58 | EE | 502 | ANP | C5'-O5'-PA-O1A |
| 58 | EE | 502 | ANP | C5'-O5'-PA-O2A |
| 58 | EE | 502 | ANP | C5'-O5'-PA-O3A |
| 58 | EE | 501 | ANP | C4'-C5'-O5'-PA |
| 58 | EE | 501 | ANP | O4'-C4'-C5'-O5' |
| 58 | EE | 501 | ANP | PG-N3B-PB-O3A |
| 58 | EE | 501 | ANP | C5'-O5'-PA-O3A |

There are no ring outliers.

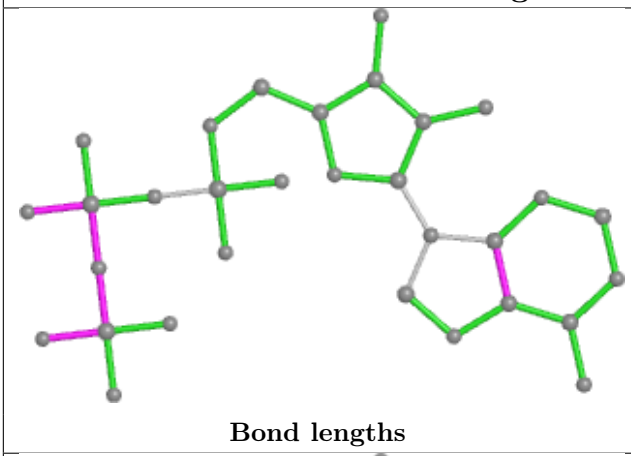
No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

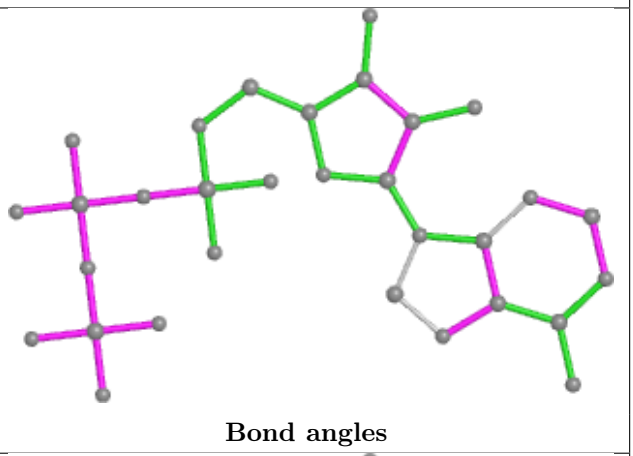
**Ligand ANP EE 501**



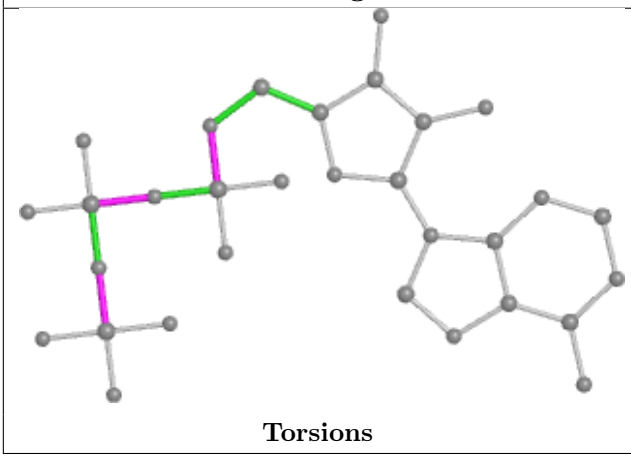
**Ligand ANP EE 502**



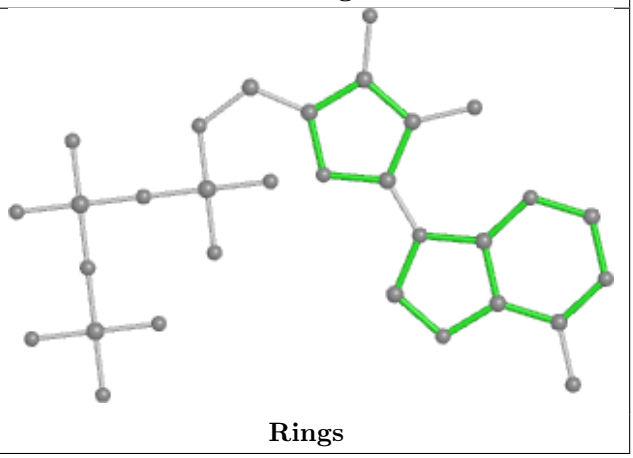
Bond lengths



Bond angles



Torsions



Rings

## 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.

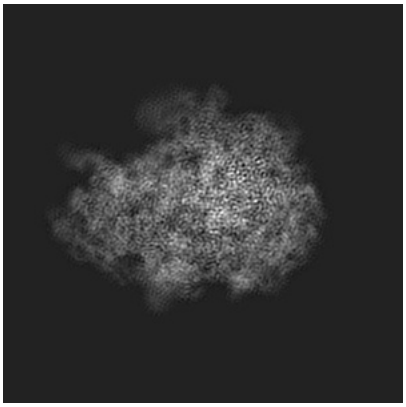
# 6 Map visualisation

This section contains visualisations of the EMDB entry EMD-6934. These allow visual inspection of the internal detail of the map and identification of artifacts.

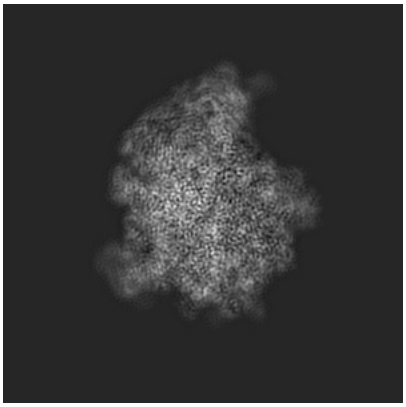
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

## 6.1 Orthogonal projections

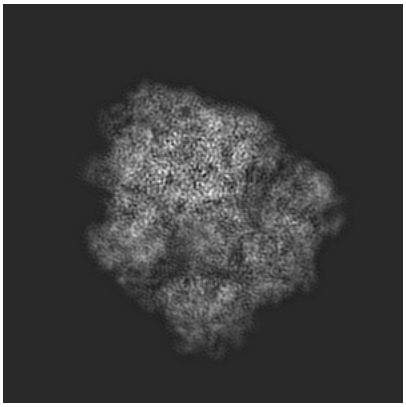
### 6.1.1 Primary map



X



Y

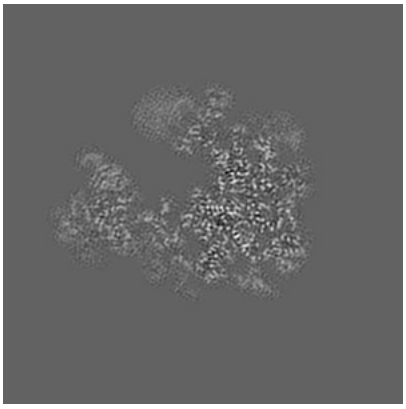


Z

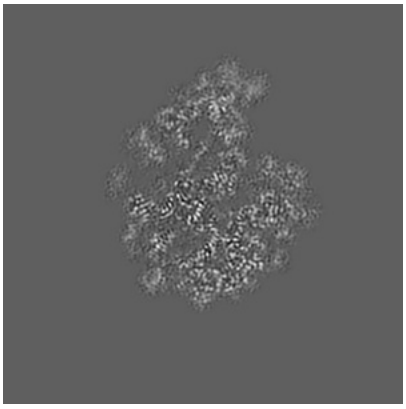
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices

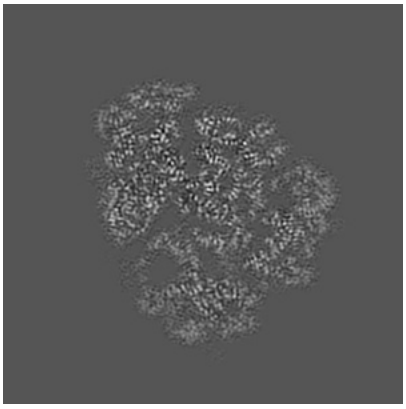
### 6.2.1 Primary map



X Index: 180



Y Index: 180

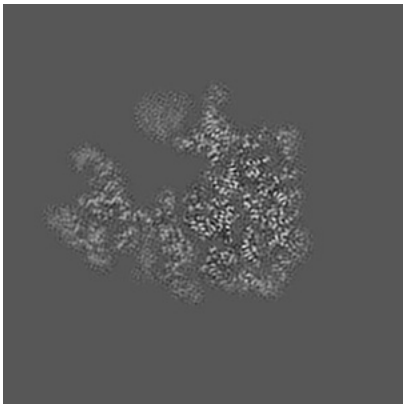


Z Index: 180

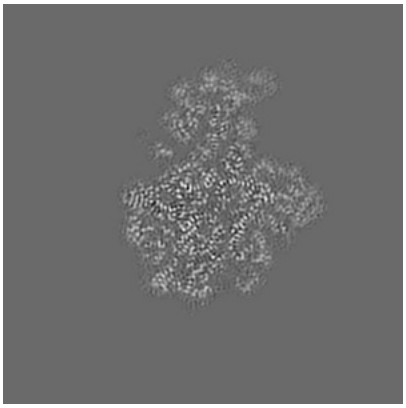
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices (i)

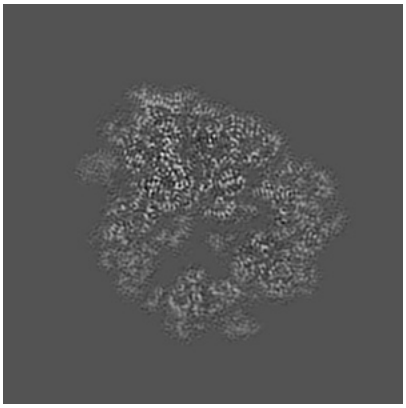
### 6.3.1 Primary map



X Index: 187



Y Index: 189



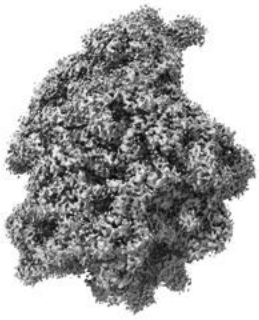
Z Index: 190

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

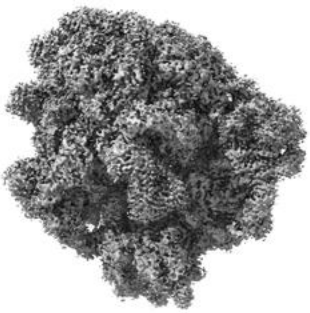
## 6.4 Orthogonal surface views (i)

### 6.4.1 Primary map

X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.052. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

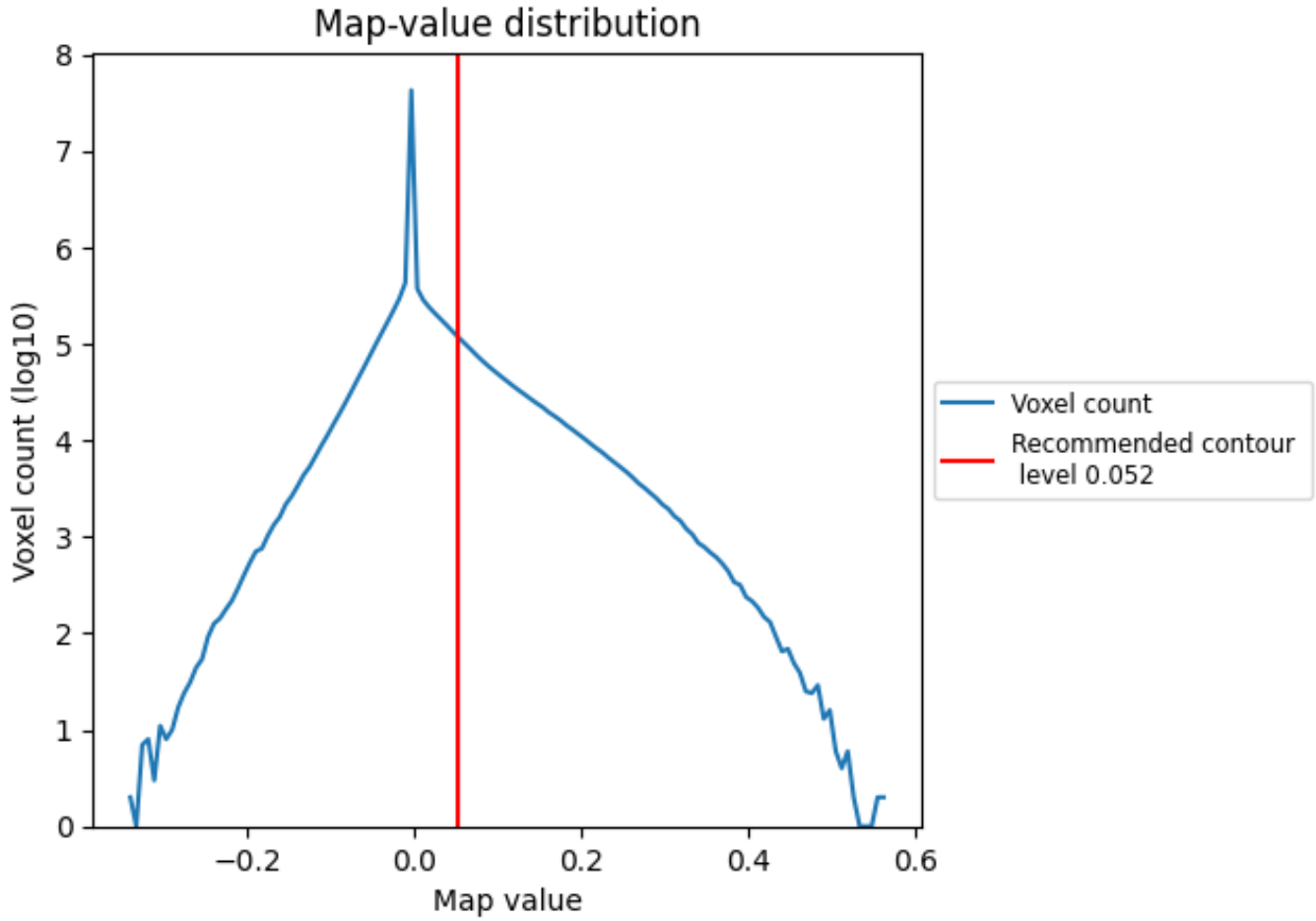
## 6.5 Mask visualisation (i)

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

# 7 Map analysis

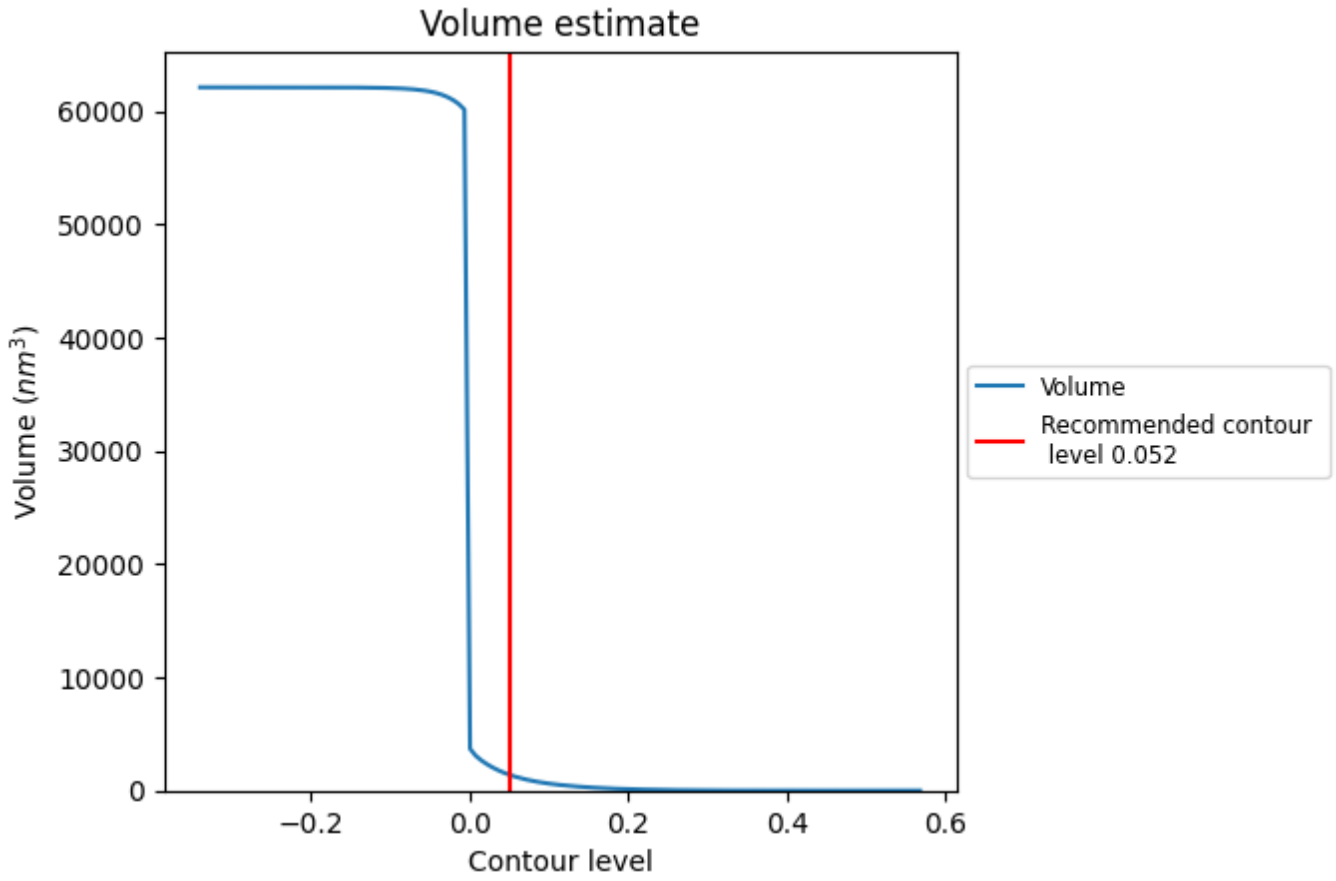
This section contains the results of statistical analysis of the map.

## 7.1 Map-value distribution




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

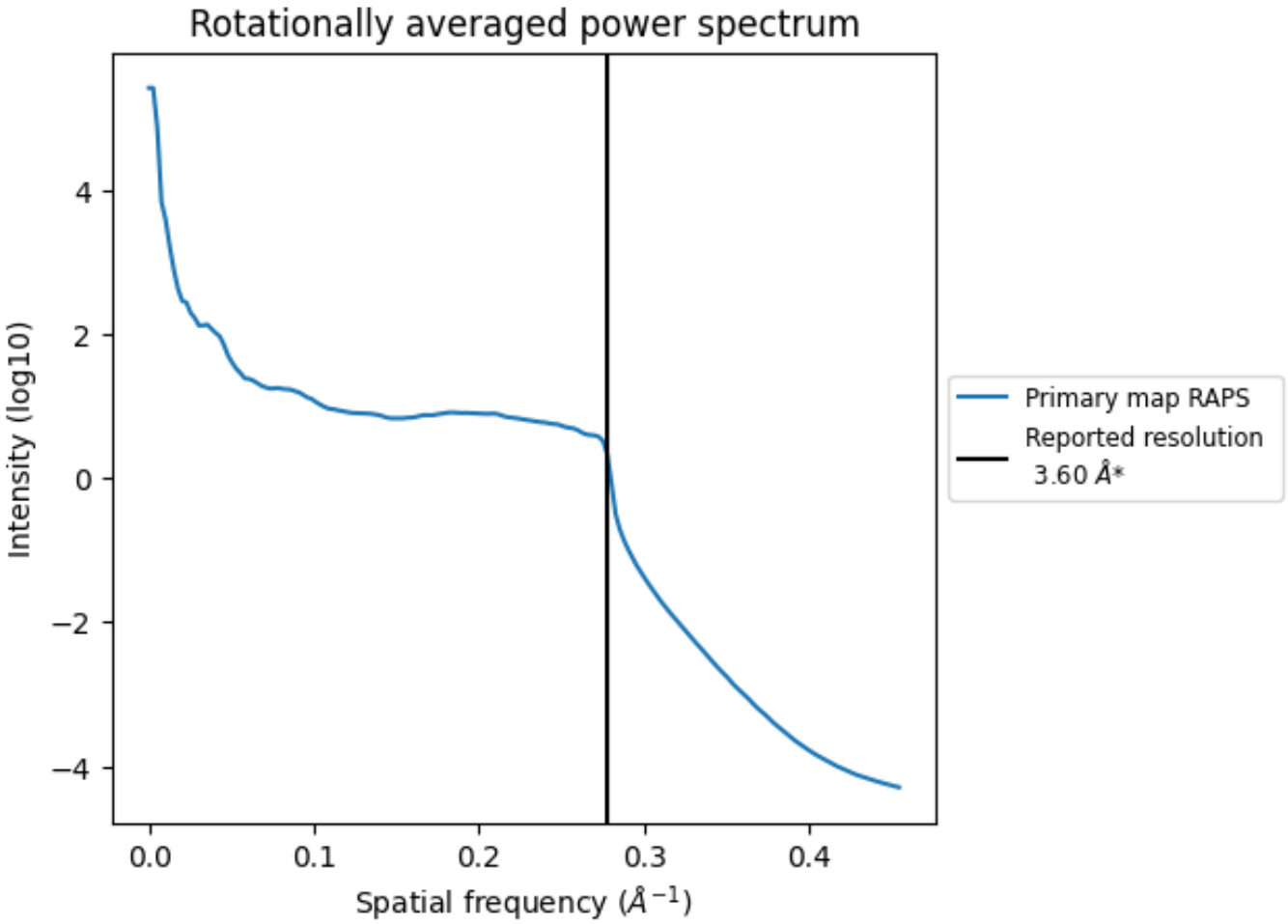
## 7.2 Volume estimate




The volume at the recommended contour level is 1361 $nm^3$; this corresponds to an approximate mass of 1230 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)

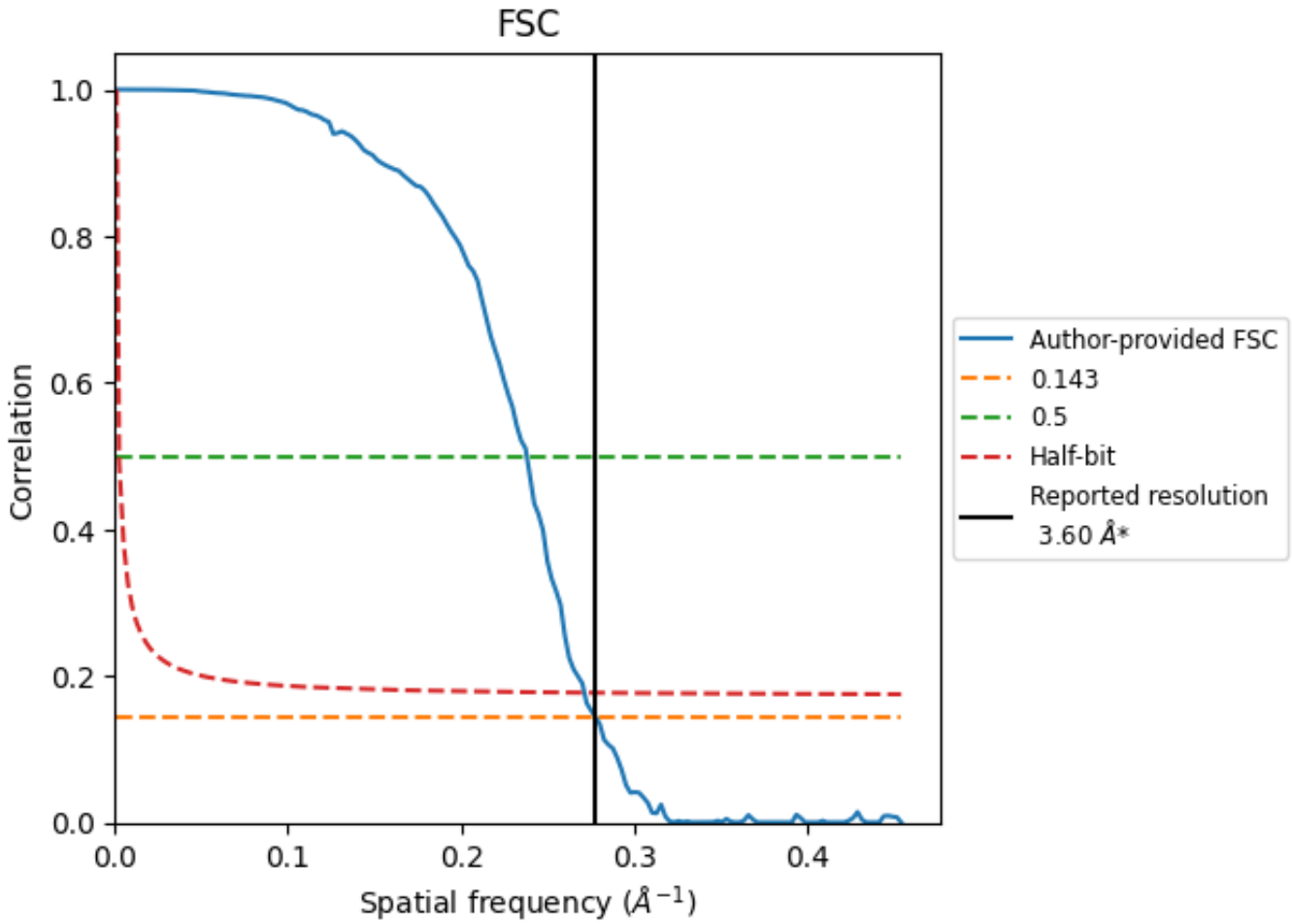



*Reported resolution corresponds to spatial frequency of 0.278 $Å^{-1}$

# 8 Fourier-Shell correlation

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

## 8.1 FSC




*Reported resolution corresponds to spatial frequency of 0.278 Å$^{-1}$

## 8.2 Resolution estimates (i)

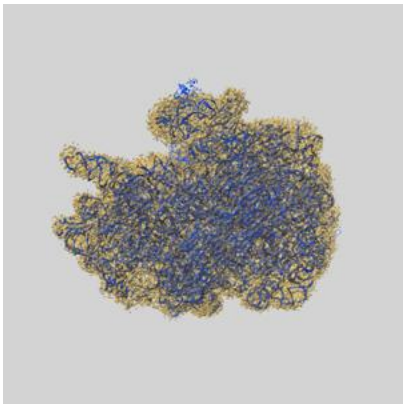
| Resolution estimate (Å) | Estimation criterion (FSC cut-off) | | |
|---|---|---|---|
| | 0.143 | 0.5 | Half-bit |
| Reported by author | 3.60 | - | - |
| Author-provided FSC curve | 3.60 | 4.20 | 3.68 |
| Unmasked-calculated* | - | - | - |

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

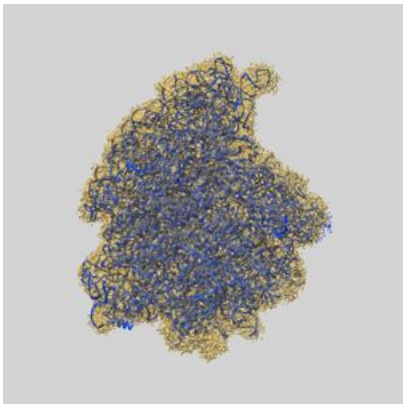
# 9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-6934 and PDB model 5ZLU. Per-residue inclusion information can be found in section 3 on page 15.

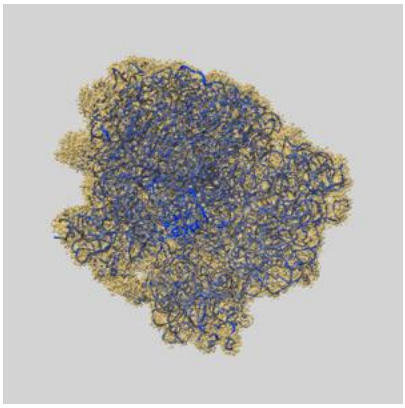
## 9.1 Map-model overlay



X



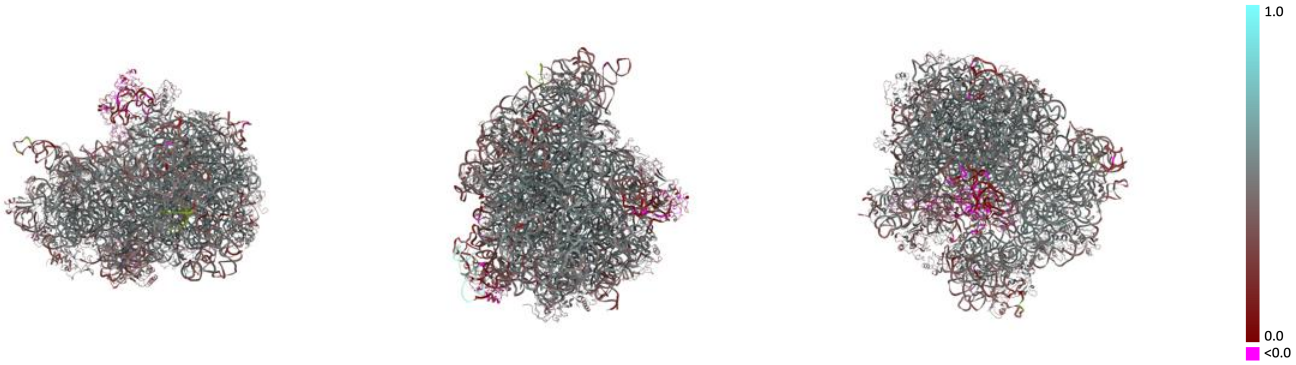
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.052 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

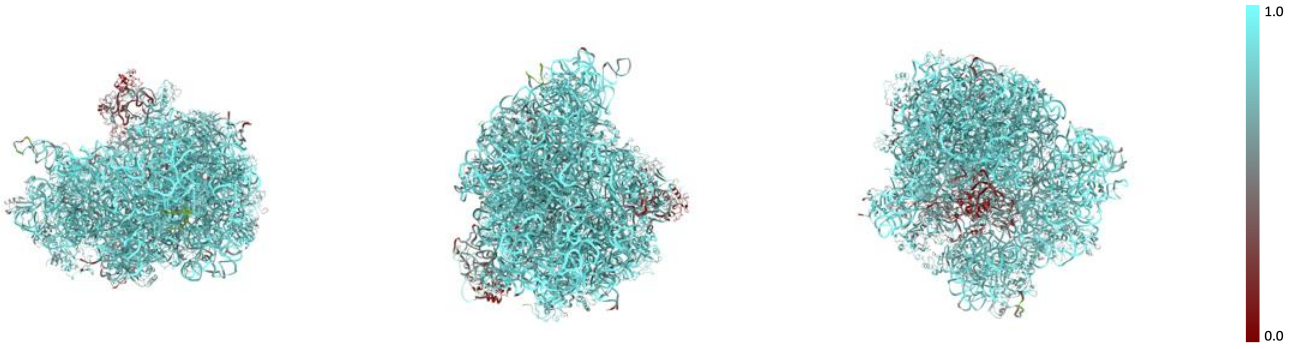
## 9.2 Q-score mapped to coordinate model




X Y Z

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

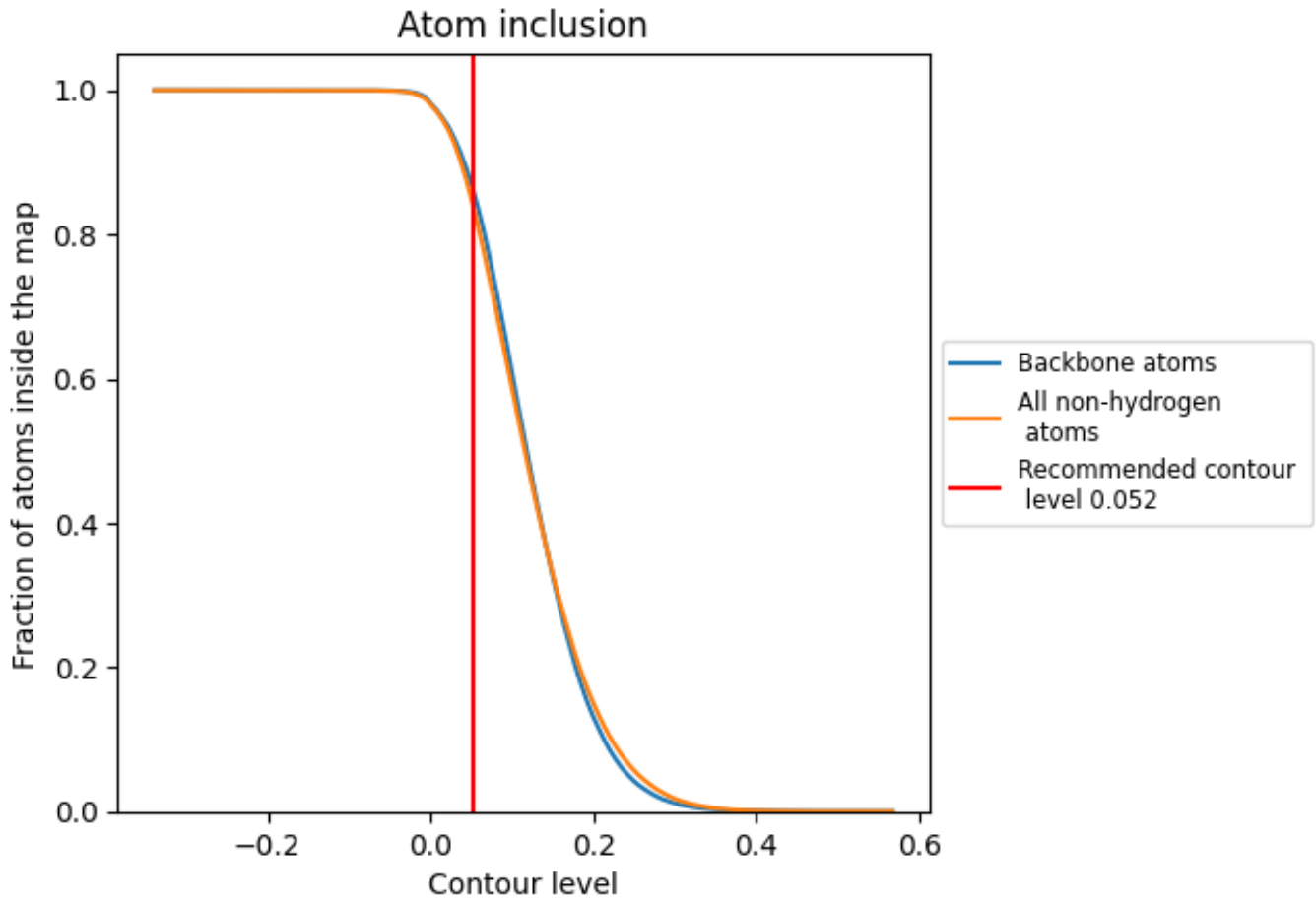
## 9.3 Atom inclusion mapped to coordinate model




X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.052).

## 9.4 Atom inclusion (i)




At the recommended contour level, 86% of all backbone atoms, 84% 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 (0.052) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion | Q-score |
|---|---|---|
| All | 0.8410 | 0.4410 |
| A | 0.8123 | 0.4810 |
| AA | 0.8012 | 0.4720 |
| B | 0.7003 | 0.3950 |
| BB | 0.8571 | 0.4720 |
| C | 0.8417 | 0.4670 |
| CC | 0.8280 | 0.3980 |
| D | 0.7641 | 0.3880 |
| DD | 0.7603 | 0.3870 |
| E | 0.7221 | 0.4220 |
| EE | 0.6979 | 0.4220 |
| F | 0.8377 | 0.4520 |
| G | 0.9125 | 0.4540 |
| H | 0.7459 | 0.4140 |
| I | 0.8112 | 0.4550 |
| J | 0.8128 | 0.4490 |
| K | 0.8209 | 0.4780 |
| L | 0.6814 | 0.3630 |
| M | 0.7666 | 0.4510 |
| N | 0.8138 | 0.4580 |
| O | 0.7819 | 0.4280 |
| P | 0.7671 | 0.4050 |
| Q | 0.7887 | 0.4870 |
| R | 0.7646 | 0.4160 |
| S | 0.8266 | 0.4560 |
| T | 0.8362 | 0.4370 |
| U | 0.8606 | 0.4590 |
| V | 0.8802 | 0.4530 |
| W | 0.7785 | 0.3830 |
| X | 0.9080 | 0.4350 |
| Y | 0.2396 | 0.1340 |
| Z | 0.8705 | 0.5170 |
| a | 0.8225 | 0.4760 |
| b | 0.8266 | 0.4600 |
| c | 0.7116 | 0.3730 |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| Chain | Atom inclusion | Q-score |
|---|---|---|
| d | 0.7704 | 0.4070 |
| e | 0.1417 | 0.0750 |
| f | 0.2853 | 0.1400 |
| g | 0.8148 | 0.4530 |
| h | 0.7670 | 0.4310 |
| i | 0.8183 | 0.4410 |
| j | 0.7837 | 0.4440 |
| k | 0.8836 | 0.5150 |
| l | 0.7948 | 0.4110 |
| m | 0.7419 | 0.4260 |
| n | 0.8774 | 0.5010 |
| o | 0.7756 | 0.4210 |
| p | 0.8909 | 0.5200 |
| q | 0.8487 | 0.4810 |
| r | 0.6747 | 0.3630 |
| s | 0.4746 | 0.2800 |
| t | 0.8669 | 0.5210 |
| u | 0.8263 | 0.4510 |
| v | 0.8399 | 0.4780 |
| w | 0.7268 | 0.3990 |
| x | 0.8476 | 0.4760 |
| y | 0.8074 | 0.4540 |
| z | 0.8568 | 0.5170 |