# Full wwPDB EM Validation Report

Aug 18, 2025 – 02:52 PM JST

| | | |
|---|---|---|
| PDB ID | : | 8YDE / pdb_00008yde |
| EMDB ID | : | EMD-39168 |
| Title | : | E.coli transcription translation coupling complex in TTC-B state 1 (subclass 3) containing mRNA with 39-mer spacer, NusG, NusA, fMet-tRNA(iMet), Phe-tRNA(Phe), and viomycin |
| Authors | : | Zhang, J.; Lu, G.; Wang, C.; Lin, J. |
| Deposited on | : | 2024-02-20 |
| Resolution | : | 5.00 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 (i) 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 (i)) were used in the production of this report:

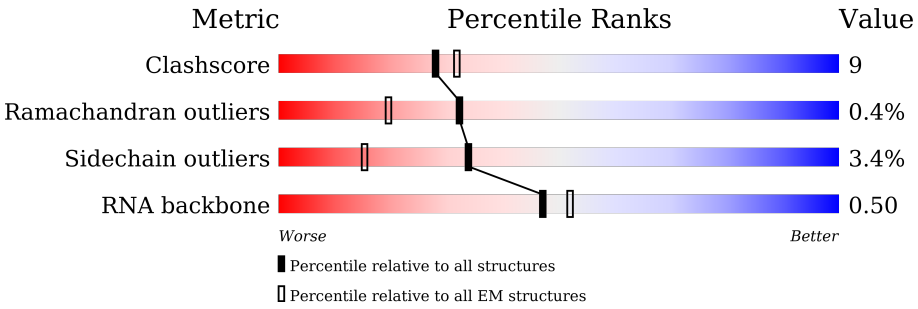
| | | |
|---|---|---|
| EMDB validation analysis | : | 0.0.1.dev126 |
| Mogul | : | 1.8.5 (274361), CSD as541be (2020) |
| MolProbity | : | 4-5-2 with Phenix2.0rc1 |
| Percentile statistics | : | 20231227.v01 (using entries in the PDB archive December 27th 2023) |
| MapQ | : | 1.9.13 |
| Ideal geometry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

# 1 Overall quality at a glance (i)

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

The reported resolution of this entry is 5.00 Å.

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




| Metric | Whole archive (#Entries) | EM structures (#Entries) |
|---|---|---|
| Clashscore | 210492 | 15764 |
| Ramachandran outliers | 207382 | 16835 |
| Sidechain outliers | 206894 | 16415 |
| RNA backbone | 6643 | 2191 |

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

| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 1 | A | 70 | 6%, 81%, 13%, 6% |
| 2 | B | 57 | 79%, 19%, · |
| 3 | C | 55 | 80%, 11%, 9% |
| 4 | D | 46 | ·, 76%, 22%, · |
| 5 | E | 65 | 89%, 9%, · |
| 6 | F | 38 | 66%, 32%, · |
| 7 | G | 241 | ·, 66%, 23%, ·, 10% |

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| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 8 | H | 233 |   |
| 9 | I | 206 |   |
| 10 | J | 167 |   |
| 11 | K | 135 |   |
| 12 | L | 179 |   |
| 13 | M | 130 |   |
| 14 | N | 130 |   |
| 15 | O | 103 |   |
| 16 | P | 129 |   |
| 17 | Q | 124 |   |
| 18 | R | 118 |   |
| 19 | S | 101 |   |
| 20 | T | 89 |   |
| 21 | U | 82 |   |
| 22 | V | 84 |   |
| 23 | W | 75 |   |
| 24 | X | 92 |   |
| 25 | Y | 87 |   |
| 26 | Z | 71 |   |
| 27 | b | 273 |   |
| 28 | c | 209 |   |
| 29 | d | 201 |   |
| 30 | e | 179 |   |
| 31 | f | 177 |   |
| 32 | g | 149 |   |

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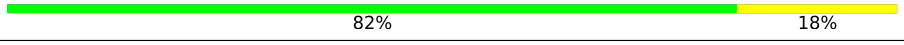
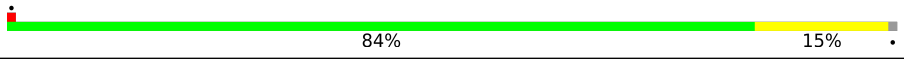
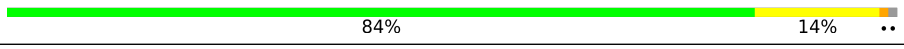
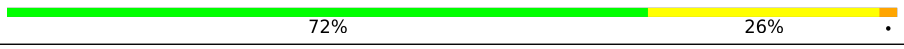
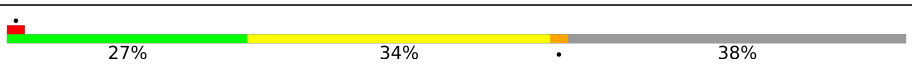
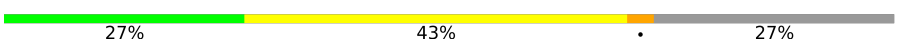
| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 33 | i | 142 |   |
| 34 | j | 142 |   |
| 35 | k | 123 |   |
| 36 | l | 144 |   |
| 37 | m | 136 |   |
| 38 | n | 127 |   |
| 39 | o | 117 |   |
| 40 | p | 115 |   |
| 41 | q | 118 |   |
| 42 | r | 103 |   |
| 43 | s | 110 |   |
| 44 | t | 100 |   |
| 45 | u | 104 |   |
| 46 | v | 94 |   |
| 47 | w | 85 |   |
| 48 | x | 78 |   |
| 49 | y | 63 |   |
| 50 | z | 59 |   |
| 51 | 1 | 2904 |   |
| 52 | 2 | 120 |   |
| 53 | 3 | 1542 |   |
| 54 | 4 | 56 |   |
| 55 | 8 | 37 |   |
| 56 | 9 | 37 |   |
| 57 | A1 | 329 |   |

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| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 57 | A2 | 329 | 50% 80% 7% 12% |
| 58 | B1 | 1407 | 16% 67% 24% 5% |
| 59 | B2 | 1342 | 23% 82% 17% |
| 60 | W0 | 91 | 49% 76% 14% 10% |
| 61 | NA | 495 | 69% 97% |
| 62 | NG | 181 | 18% 75% 10% 15% |
| 63 | 5 | 76 | 22% 47% 29% |
| 64 | 6 | 77 | 77% 19% |
| 64 | 7 | 77 | 8% 44% 45% 10% |
| 65 | h | 6 | 33% 67% |

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

| Mol | Type | Chain | Res | Chirality | Geometry | Clashes | Electron density |
|---|---|---|---|---|---|---|---|
| 65 | 5OH | h | 6 | - | - | X | - |

# 2 Entry composition

There are 66 unique types of molecules in this entry. The entry contains 178130 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called 50S ribosomal protein L31.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 1 | A | 66 | Total | C | N | O | S | 0 | 0 |
| | | | 522 | 323 | 99 | 94 | 6 | | |

- Molecule 2 is a protein called 50S ribosomal protein L32.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 2 | B | 56 | Total | C | N | O | S | 0 | 0 |
| | | | 444 | 269 | 94 | 80 | 1 | | |

- Molecule 3 is a protein called 50S ribosomal protein L33.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 3 | C | 50 | Total | C | N | O | 0 | 0 |
| | | | 409 | 263 | 75 | 71 | | |

- Molecule 4 is a protein called 50S ribosomal protein L34.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 4 | D | 46 | Total | C | N | O | S | 0 | 0 |
| | | | 377 | 228 | 90 | 57 | 2 | | |

- Molecule 5 is a protein called 50S ribosomal protein L35.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 5 | E | 64 | Total | C | N | O | S | 0 | 0 |
| | | | 504 | 323 | 105 | 74 | 2 | | |

- Molecule 6 is a protein called 50S ribosomal protein L36.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 6 | F | 38 | Total | C | N | O | S | 0 | 0 |
| | | | 302 | 185 | 65 | 48 | 4 | | |

- Molecule 7 is a protein called 30S ribosomal protein S2.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 7 | G | 218 | Total | C | N | O | S | 0 | 0 |
| | | | 1704 | 1081 | 305 | 311 | 7 | | |

- Molecule 8 is a protein called 30S ribosomal protein S3.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 8 | H | 206 | Total | C | N | O | S | 0 | 0 |
| | | | 1624 | 1028 | 305 | 288 | 3 | | |

- Molecule 9 is a protein called 30S ribosomal protein S4.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 9 | I | 205 | Total | C | N | O | S | 0 | 0 |
| | | | 1643 | 1026 | 315 | 298 | 4 | | |

- Molecule 10 is a protein called 30S ribosomal protein S5.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 10 | J | 157 | Total | C | N | O | S | 0 | 0 |
| | | | 1156 | 719 | 218 | 213 | 6 | | |

- Molecule 11 is a protein called 30S ribosomal protein S6, fully modified isoform.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 11 | K | 100 | Total | C | N | O | S | 0 | 0 |
| | | | 817 | 515 | 148 | 148 | 6 | | |

- Molecule 12 is a protein called 30S ribosomal protein S7.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 12 | L | 151 | Total | C | N | O | S | 0 | 0 |
| | | | 1181 | 735 | 227 | 215 | 4 | | |

- Molecule 13 is a protein called 30S ribosomal protein S8.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 13 | M | 129 | Total | C | N | O | S | 0 | 0 |
| | | | 979 | 616 | 173 | 184 | 6 | | |

- Molecule 14 is a protein called 30S ribosomal protein S9.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 14 | N | 127 | Total | C | N | O | S | 0 | 0 |
| | | | 1022 | 634 | 206 | 179 | 3 | | |

- Molecule 15 is a protein called 30S ribosomal protein S10.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 15 | O | 98 | Total | C | N | O | S | 0 | 0 |
| | | | 786 | 493 | 150 | 142 | 1 | | |

- Molecule 16 is a protein called 30S ribosomal protein S11.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 16 | P | 116 | Total | C | N | O | S | 0 | 0 |
| | | | 869 | 535 | 173 | 158 | 3 | | |

- Molecule 17 is a protein called 30S ribosomal protein S12.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 17 | Q | 123 | Total | C | N | O | S | 0 | 0 |
| | | | 955 | 590 | 196 | 165 | 4 | | |

- Molecule 18 is a protein called 30S ribosomal protein S13.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 18 | R | 114 | Total | C | N | O | S | 0 | 0 |
| | | | 883 | 546 | 178 | 156 | 3 | | |

- Molecule 19 is a protein called 30S ribosomal protein S14.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 19 | S | 100 | Total | C | N | O | S | 0 | 0 |
| | | | 805 | 499 | 164 | 139 | 3 | | |

- Molecule 20 is a protein called 30S ribosomal protein S15.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 20 | T | 88 | Total | C | N | O | S | 0 | 0 |
| | | | 714 | 439 | 144 | 130 | 1 | | |

- Molecule 21 is a protein called 30S ribosomal protein S16.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 21 | U | 82 | Total | C | N | O | S | 0 | 0 |
| | | | 649 | 406 | 128 | 114 | 1 | | |

- Molecule 22 is a protein called 30S ribosomal protein S17.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 22 | V | 80 | Total | C | N | O | S | 0 | 0 |
| | | | 648 | 411 | 121 | 113 | 3 | | |

- Molecule 23 is a protein called 30S ribosomal protein S18.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 23 | W | 65 | Total | C | N | O | S | 0 | 0 |
| | | | 535 | 339 | 100 | 95 | 1 | | |

- Molecule 24 is a protein called 30S ribosomal protein S19.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 24 | X | 79 | Total | C | N | O | S | 0 | 0 |
| | | | 637 | 408 | 120 | 107 | 2 | | |

- Molecule 25 is a protein called 30S ribosomal protein S20.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 25 | Y | 85 | Total | C | N | O | S | 0 | 0 |
| | | | 665 | 411 | 137 | 114 | 3 | | |

- Molecule 26 is a protein called 30S ribosomal protein S21.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 26 | Z | 65 | Total | C | N | O | S | 0 | 0 |
| | | | 544 | 335 | 117 | 91 | 1 | | |

- Molecule 27 is a protein called 50S ribosomal protein L2.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 27 | b | 271 | Total | C | N | O | S | 0 | 0 |
| | | | 2082 | 1288 | 423 | 364 | 7 | | |

- Molecule 28 is a protein called 50S ribosomal protein L3.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 28 | c | 209 | Total | C | N | O | S | 0 | 0 |
| | | | 1565 | 979 | 288 | 294 | 4 | | |

- Molecule 29 is a protein called 50S ribosomal protein L4.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 29 | d | 201 | Total | C | N | O | S | 0 | 0 |
| | | | 1552 | 974 | 283 | 290 | 5 | | |

- Molecule 30 is a protein called 50S ribosomal protein L5.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 30 | e | 177 | Total | C | N | O | S | 0 | 0 |
| | | | 1410 | 899 | 249 | 256 | 6 | | |

- Molecule 31 is a protein called 50S ribosomal protein L6.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 31 | f | 176 | Total | C | N | O | S | 0 | 0 |
| | | | 1323 | 832 | 243 | 246 | 2 | | |

- Molecule 32 is a protein called 50S ribosomal protein L9.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 32 | g | 52 | Total | C | N | O | S | 0 | 0 |
| | | | 400 | 256 | 73 | 70 | 1 | | |

- Molecule 33 is a protein called 50S ribosomal protein L11.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 33 | i | 141 | Total | C | N | O | S | 0 | 0 |
| | | | 1032 | 651 | 179 | 196 | 6 | | |

- Molecule 34 is a protein called 50S ribosomal protein L13.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 34 | j | 142 | Total | C | N | O | S | 0 | 0 |
| | | | 1129 | 714 | 212 | 199 | 4 | | |

- Molecule 35 is a protein called 50S ribosomal protein L14.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 35 | k | 122 | Total | C | N | O | S | 0 | 0 |
| | | | 938 | 587 | 180 | 165 | 6 | | |

- Molecule 36 is a protein called 50S ribosomal protein L15.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 36 | l | 143 | Total | C | N | O | S | 0 | 0 |
| | | | 1045 | 649 | 206 | 189 | 1 | | |

- Molecule 37 is a protein called 50S ribosomal protein L16.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 37 | m | 136 | Total | C | N | O | S | 0 | 0 |
| | | | 1074 | 686 | 205 | 177 | 6 | | |

- Molecule 38 is a protein called 50S ribosomal protein L17.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 38 | n | 120 | Total | C | N | O | S | 0 | 0 |
| | | | 960 | 593 | 196 | 166 | 5 | | |

- Molecule 39 is a protein called 50S ribosomal protein L18.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 39 | o | 116 | Total | C | N | O | 0 | 0 |
| | | | 892 | 552 | 178 | 162 | | |

- Molecule 40 is a protein called 50S ribosomal protein L19.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 40 | p | 114 | Total | C | N | O | S | 0 | 0 |
| | | | 917 | 574 | 179 | 163 | 1 | | |

- Molecule 41 is a protein called 50S ribosomal protein L20.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 41 | q | 117 | Total | C | N | O | 0 | 0 |
| | | | 947 | 604 | 192 | 151 | | |

- Molecule 42 is a protein called 50S ribosomal protein L21.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 42 | r | 103 | Total | C | N | O | S | 0 | 0 |
| | | | 816 | 516 | 153 | 145 | 2 | | |

- Molecule 43 is a protein called 50S ribosomal protein L22.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 43 | s | 110 | Total | C | N | O | S | 0 | 0 |
| | | | 857 | 532 | 166 | 156 | 3 | | |

- Molecule 44 is a protein called 50S ribosomal protein L23.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 44 | t | 93 | Total | C | N | O | S | 0 | 0 |
| | | | 738 | 466 | 139 | 131 | 2 | | |

- Molecule 45 is a protein called 50S ribosomal protein L24.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 45 | u | 102 | Total | C | N | O | 0 | 0 |
| | | | 779 | 492 | 146 | 141 | | |

- Molecule 46 is a protein called 50S ribosomal protein L25.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 46 | v | 94 | Total | C | N | O | S | 0 | 0 |
| | | | 753 | 479 | 137 | 134 | 3 | | |

- Molecule 47 is a protein called 50S ribosomal protein L27.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 47 | w | 75 | Total | C | N | O | S | 0 | 0 |
| | | | 575 | 356 | 116 | 102 | 1 | | |

- Molecule 48 is a protein called 50S ribosomal protein L28.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 48 | x | 77 | Total | C | N | O | S | 0 | 0 |
| | | | 625 | 388 | 129 | 106 | 2 | | |

- Molecule 49 is a protein called 50S ribosomal protein L29.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 49 | y | 63 | Total | C | N | O | S | 0 | 0 |
| | | | 509 | 313 | 99 | 95 | 2 | | |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 50 | z | 58 | Total | C | N | O | S | 0 | 0 |
| | | | 449 | 281 | 87 | 79 | 2 | | |

- Molecule 51 is a RNA chain called 23S rRNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 51 | 1 | 2903 | Total | C | N | O | P | 0 | 0 |
| | | | 62317 | 27801 | 11468 | 20146 | 2902 | | |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| 1 | 747 | C | U | conflict | GB 1929590828 |

- Molecule 52 is a RNA chain called 5S rRNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 52 | 2 | 120 | Total | C | N | O | P | 0 | 0 |
| | | | 2568 | 1145 | 471 | 833 | 119 | | |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| 2 | 120 | A | U | conflict | GB NR_103249 |

- Molecule 53 is a RNA chain called 16S rRNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 53 | 3 | 1539 | Total | C | N | O | P | 0 | 0 |
| | | | 33012 | 14725 | 6052 | 10697 | 1538 | | |

- Molecule 54 is a RNA chain called mRNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 54 | 4 | 35 | Total | C | N | O | P | 0 | 0 |
| | | | 729 | 326 | 105 | 263 | 35 | | |

- Molecule 55 is a DNA chain called templete DNA strand.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 55 | 8 | 27 | Total | C | N | O | P | 0 | 0 |
| | | | 539 | 257 | 88 | 167 | 27 | | |

- Molecule 56 is a DNA chain called non-templete DNA strand.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 56 | 9 | 20 | Total | C | N | O | P | 0 | 0 |
| | | | 417 | 195 | 84 | 118 | 20 | | |

- Molecule 57 is a protein called DNA-directed RNA polymerase subunit alpha.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 57 | A1 | 301 | Total | C | N | O | S | 0 | 0 |
| | | | 2088 | 1293 | 380 | 409 | 6 | | |
| 57 | A2 | 288 | Total | C | N | O | S | 0 | 0 |
| | | | 2029 | 1257 | 366 | 400 | 6 | | |

- Molecule 58 is a protein called DNA-directed RNA polymerase subunit beta'.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 58 | B1 | 1335 | Total | C | N | O | S | 0 | 0 |
| | | | 10353 | 6509 | 1842 | 1955 | 47 | | |

- Molecule 59 is a protein called DNA-directed RNA polymerase subunit beta.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 59 | B2 | 1340 | Total | C | N | O | S | 0 | 0 |
| | | | 10546 | 6616 | 1839 | 2048 | 43 | | |

- Molecule 60 is a protein called DNA-directed RNA polymerase subunit omega.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 60 | W0 | 82 | Total | C | N | O | S | 0 | 0 |
| | | | 650 | 396 | 122 | 131 | 1 | | |

- Molecule 61 is a protein called Transcription termination/antitermination protein NusA.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 61 | NA | 492 | Total | C | N | O | 0 | 0 |
| | | | 2432 | 1448 | 492 | 492 | | |

- Molecule 62 is a protein called Transcription termination/antitermination protein NusG.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 62 | NG | 154 | Total | C | N | O | 0 | 0 |
| | | | 758 | 450 | 154 | 154 | | |

- Molecule 63 is a RNA chain called tRNA(Phe).

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 63 | 5 | 76 | Total | C | N | O | P | 0 | 0 |
| | | | 1622 | 723 | 290 | 533 | 76 | | |

- Molecule 64 is a RNA chain called tRNA(fMet).

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 64 | 6 | 77 | Total | C | N | O | P | 0 | 0 |
| | | | 1640 | 732 | 297 | 535 | 76 | | |
| 64 | 7 | 77 | Total | C | N | O | P | 0 | 0 |
| | | | 1640 | 732 | 297 | 535 | 76 | | |

- Molecule 65 is a protein (with D amino acids) called Viomycin.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 65 | h | 6 | Total | C | N | O | 0 | 0 |
| | | | 48 | 25 | 13 | 10 | | |

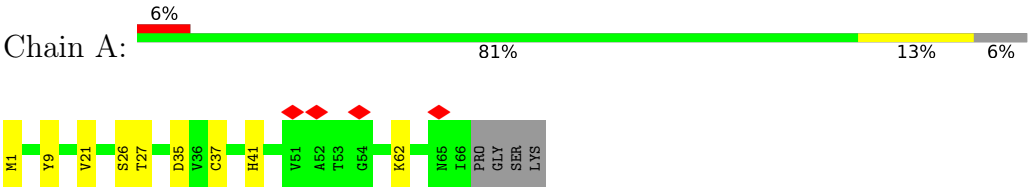
- Molecule 66 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

| Mol | Chain | Residues | Atoms | | AltConf |
|---|---|---|---|---|---|
| 66 | B1 | 1 | Total | Mg | 0 |
| | | | 1 | 1 | |

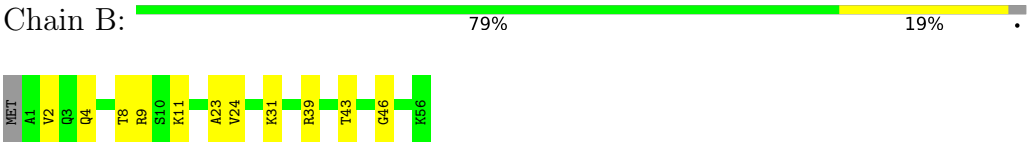
# 3 Residue-property plots (i)

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.

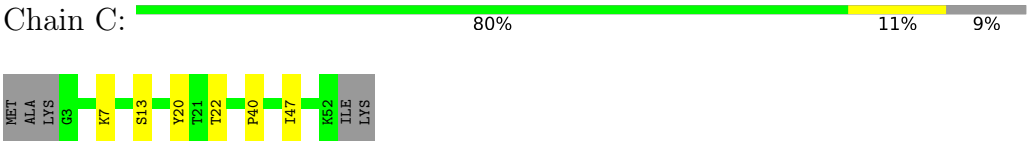
• Molecule 1: 50S ribosomal protein L31



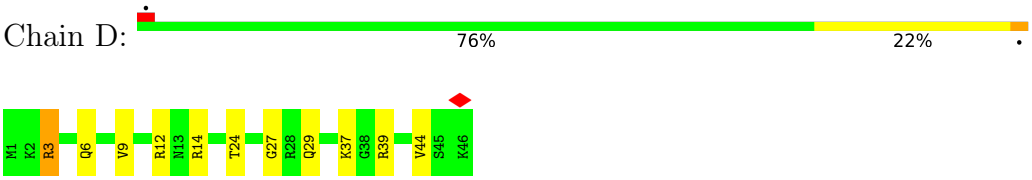

• Molecule 2: 50S ribosomal protein L32



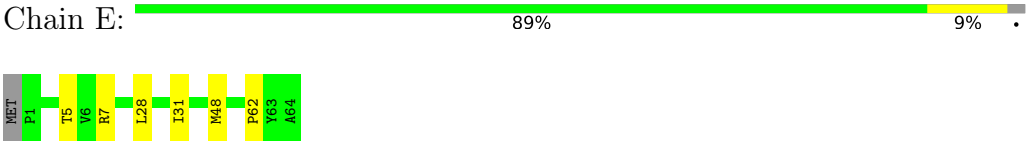

• Molecule 3: 50S ribosomal protein L33




• Molecule 4: 50S ribosomal protein L34




• Molecule 5: 50S ribosomal protein L35

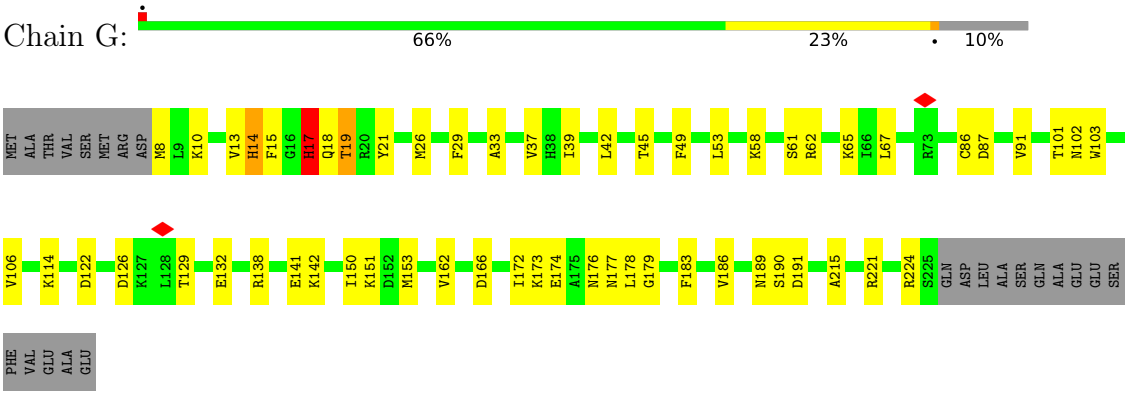



• Molecule 6: 50S ribosomal protein L36

Chain F:

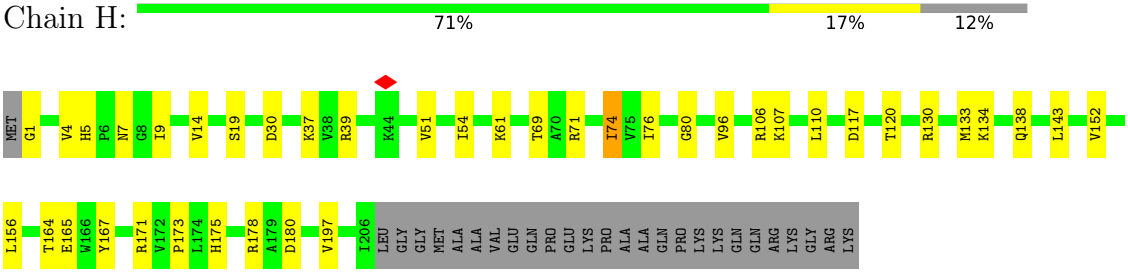

• Molecule 7: 30S ribosomal protein S2

Chain G:



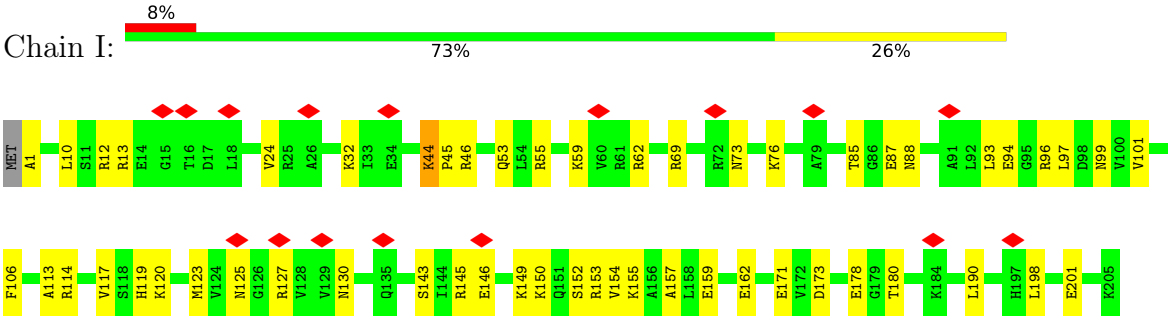

• Molecule 8: 30S ribosomal protein S3

Chain H:



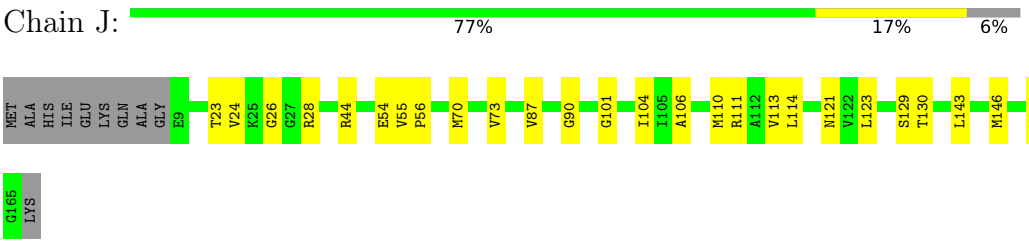

• Molecule 9: 30S ribosomal protein S4

Chain I:



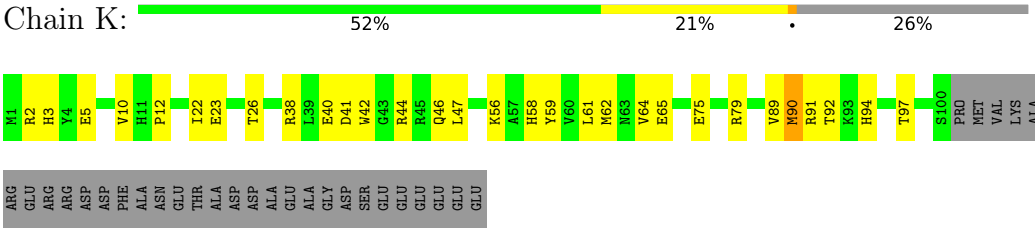

• Molecule 10: 30S ribosomal protein S5

Chain J:



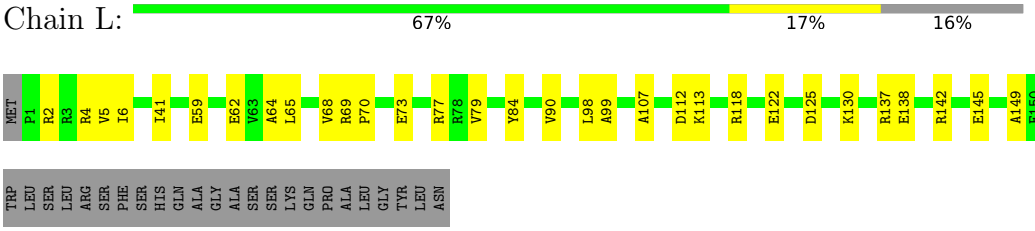
• Molecule 11: 30S ribosomal protein S6, fully modified isoform

Chain K:



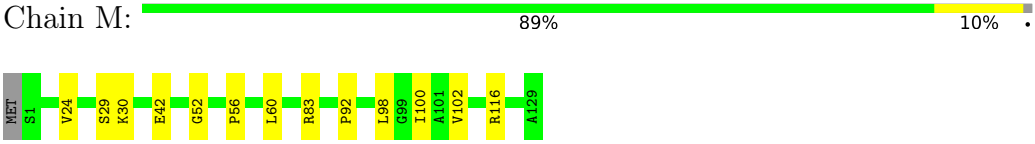

• Molecule 12: 30S ribosomal protein S7

Chain L:



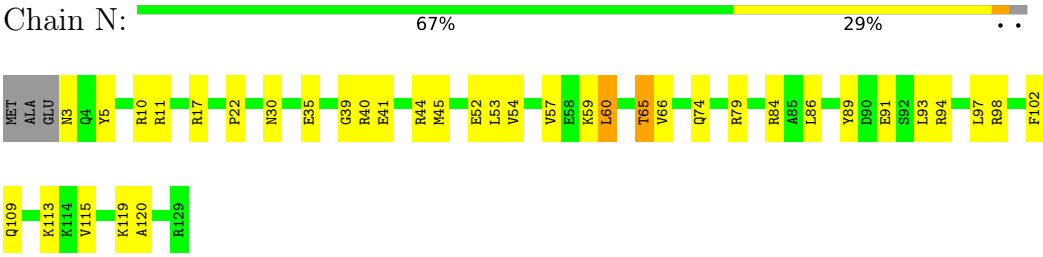

• Molecule 13: 30S ribosomal protein S8

Chain M:



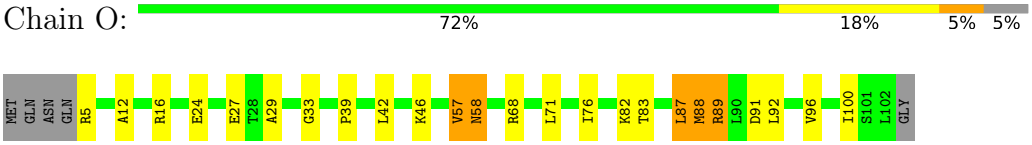

• Molecule 14: 30S ribosomal protein S9

Chain N:



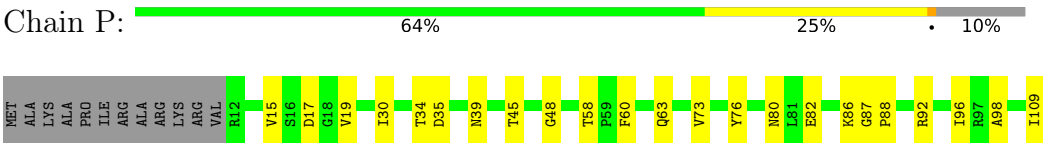

• Molecule 15: 30S ribosomal protein S10

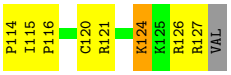
Chain O:




• Molecule 16: 30S ribosomal protein S11

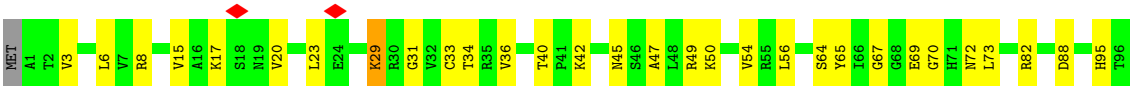
Chain P:

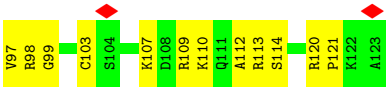





• Molecule 17: 30S ribosomal protein S12

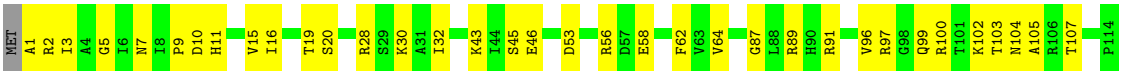
Chain Q:


• Molecule 18: 30S ribosomal protein S13

Chain R:



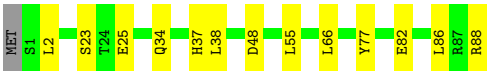
• Molecule 19: 30S ribosomal protein S14

Chain S:



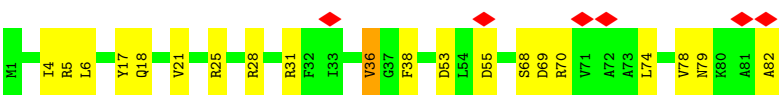
• Molecule 20: 30S ribosomal protein S15

Chain T:

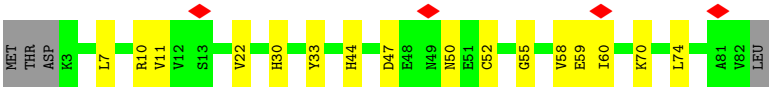

• Molecule 21: 30S ribosomal protein S16

Chain U:

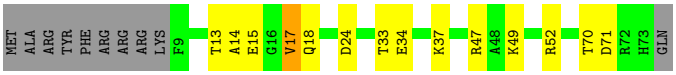

• Molecule 22: 30S ribosomal protein S17

Chain V:



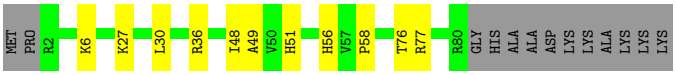

• Molecule 23: 30S ribosomal protein S18

Chain W:

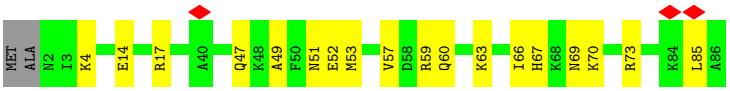

• Molecule 24: 30S ribosomal protein S19

Chain X:

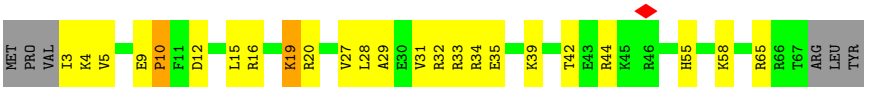

• Molecule 25: 30S ribosomal protein S20

Chain Y:

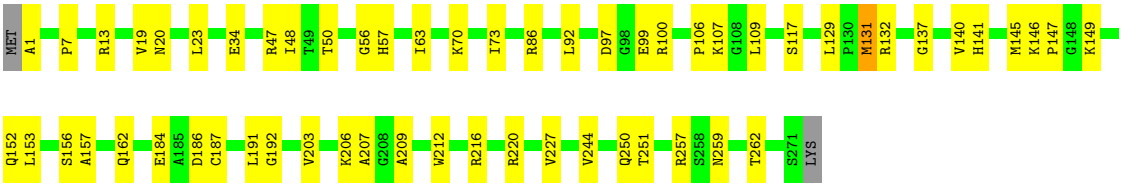

• Molecule 26: 30S ribosomal protein S21

Chain Z:

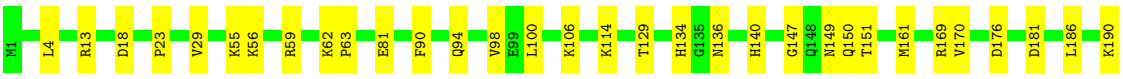

• Molecule 27: 50S ribosomal protein L2

Chain b:

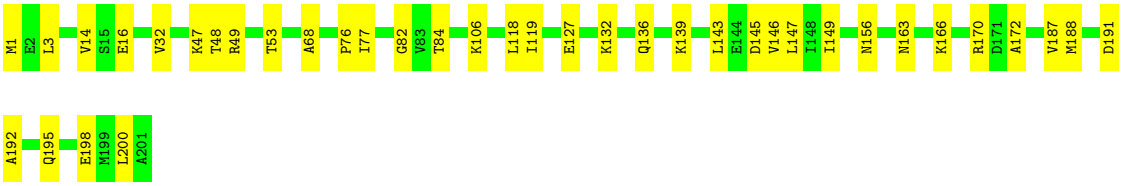

• Molecule 28: 50S ribosomal protein L3

Chain c:

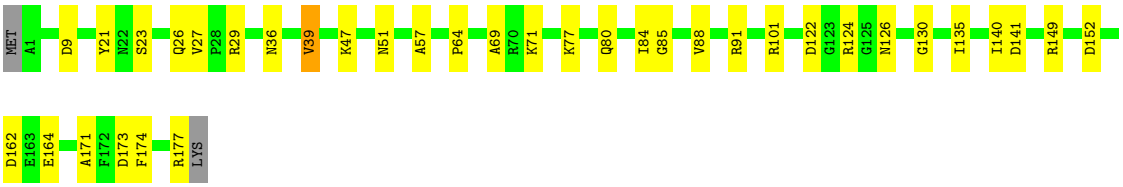

• Molecule 29: 50S ribosomal protein L4

Chain d:

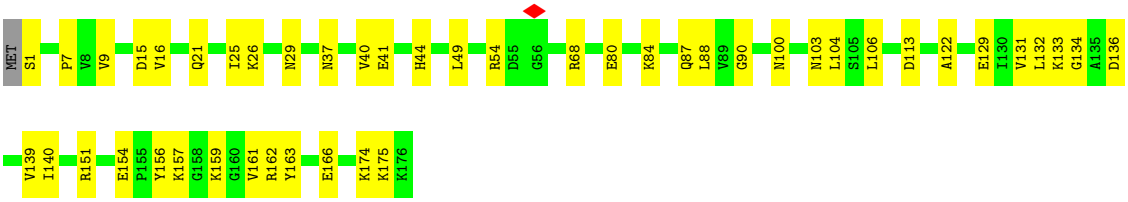

• Molecule 30: 50S ribosomal protein L5

Chain e:

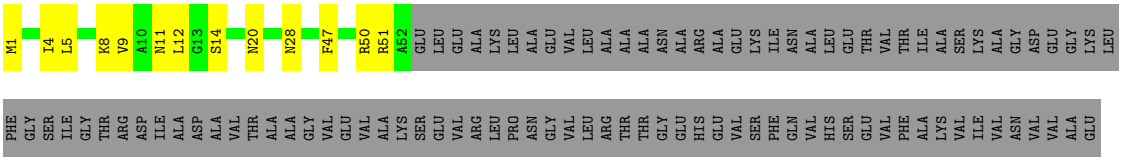

• Molecule 31: 50S ribosomal protein L6

Chain f:

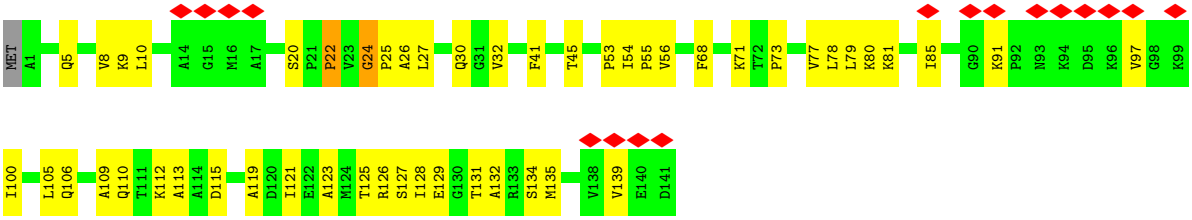

• Molecule 32: 50S ribosomal protein L9

Chain g:

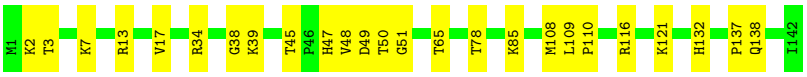

• Molecule 33: 50S ribosomal protein L11

Chain i:



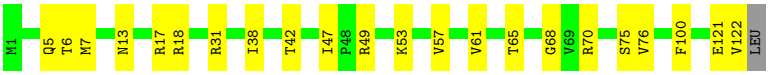

• Molecule 34: 50S ribosomal protein L13

Chain j:


• Molecule 35: 50S ribosomal protein L14

Chain k:

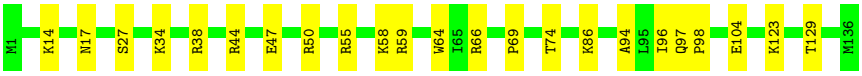

• Molecule 36: 50S ribosomal protein L15

Chain l:



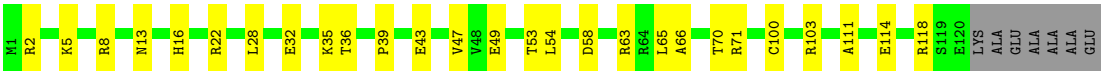
• Molecule 37: 50S ribosomal protein L16

Chain m:

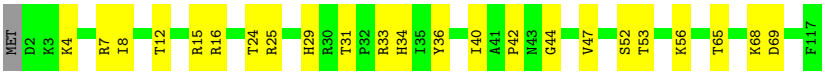

• Molecule 38: 50S ribosomal protein L17

Chain n:

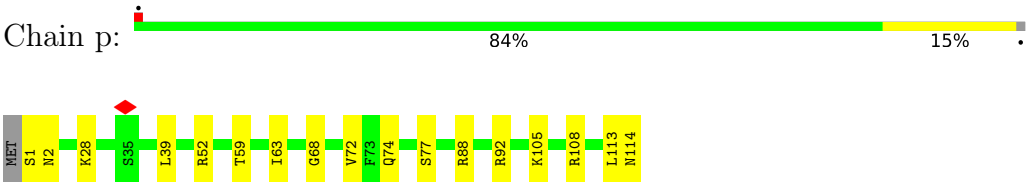

• Molecule 39: 50S ribosomal protein L18

Chain o:

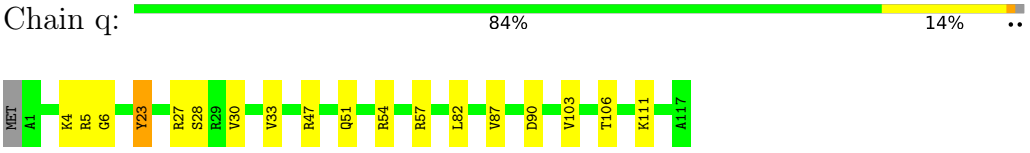
• Molecule 40: 50S ribosomal protein L19

Chain p:



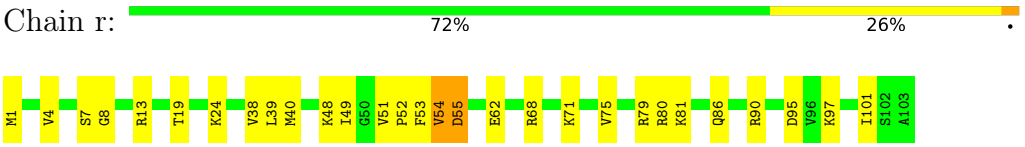

• Molecule 41: 50S ribosomal protein L20

Chain q:



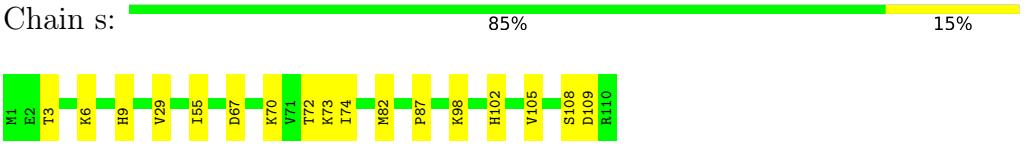

• Molecule 42: 50S ribosomal protein L21

Chain r:



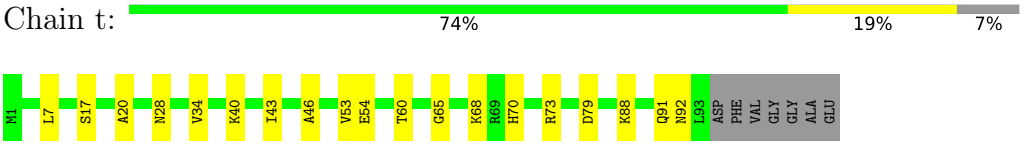

• Molecule 43: 50S ribosomal protein L22

Chain s:



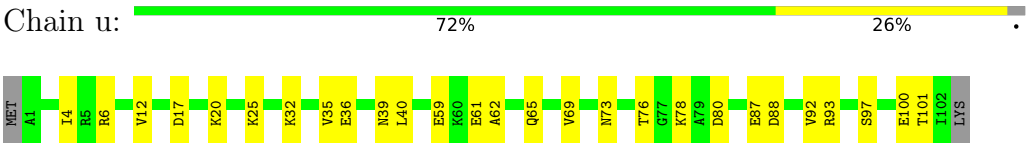

• Molecule 44: 50S ribosomal protein L23

Chain t:



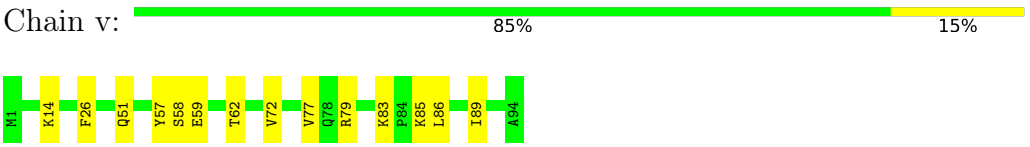

• Molecule 45: 50S ribosomal protein L24

Chain u:



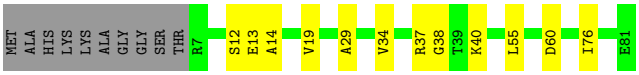

• Molecule 46: 50S ribosomal protein L25

Chain v:



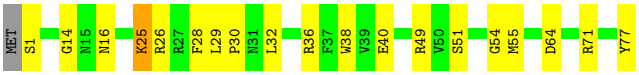
• Molecule 47: 50S ribosomal protein L27

Chain w:

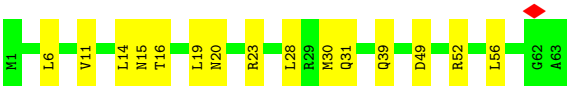

• Molecule 48: 50S ribosomal protein L28

Chain x:

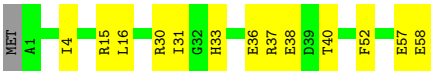

• Molecule 49: 50S ribosomal protein L29

Chain y:

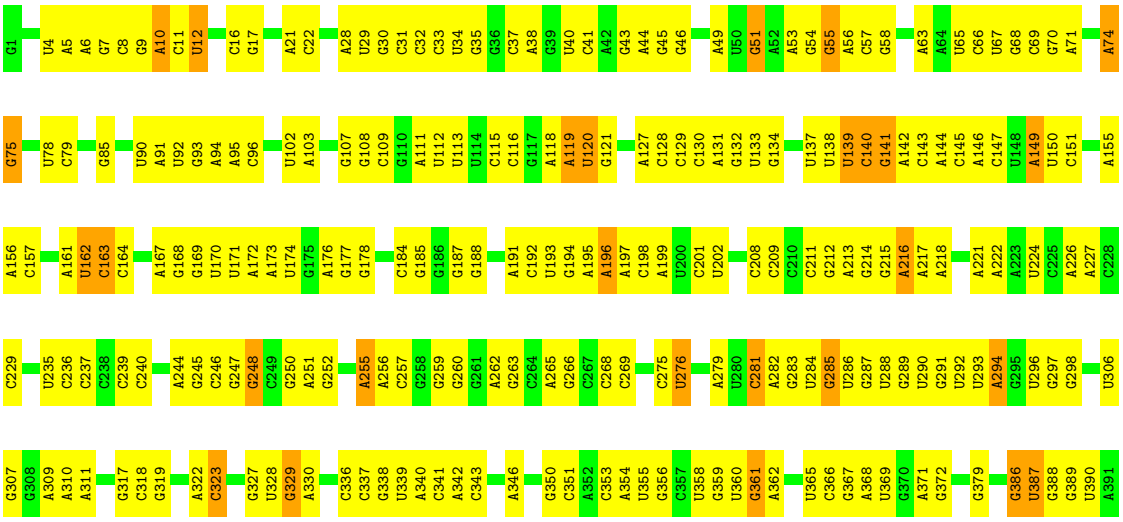

• Molecule 50: 50S ribosomal protein L30

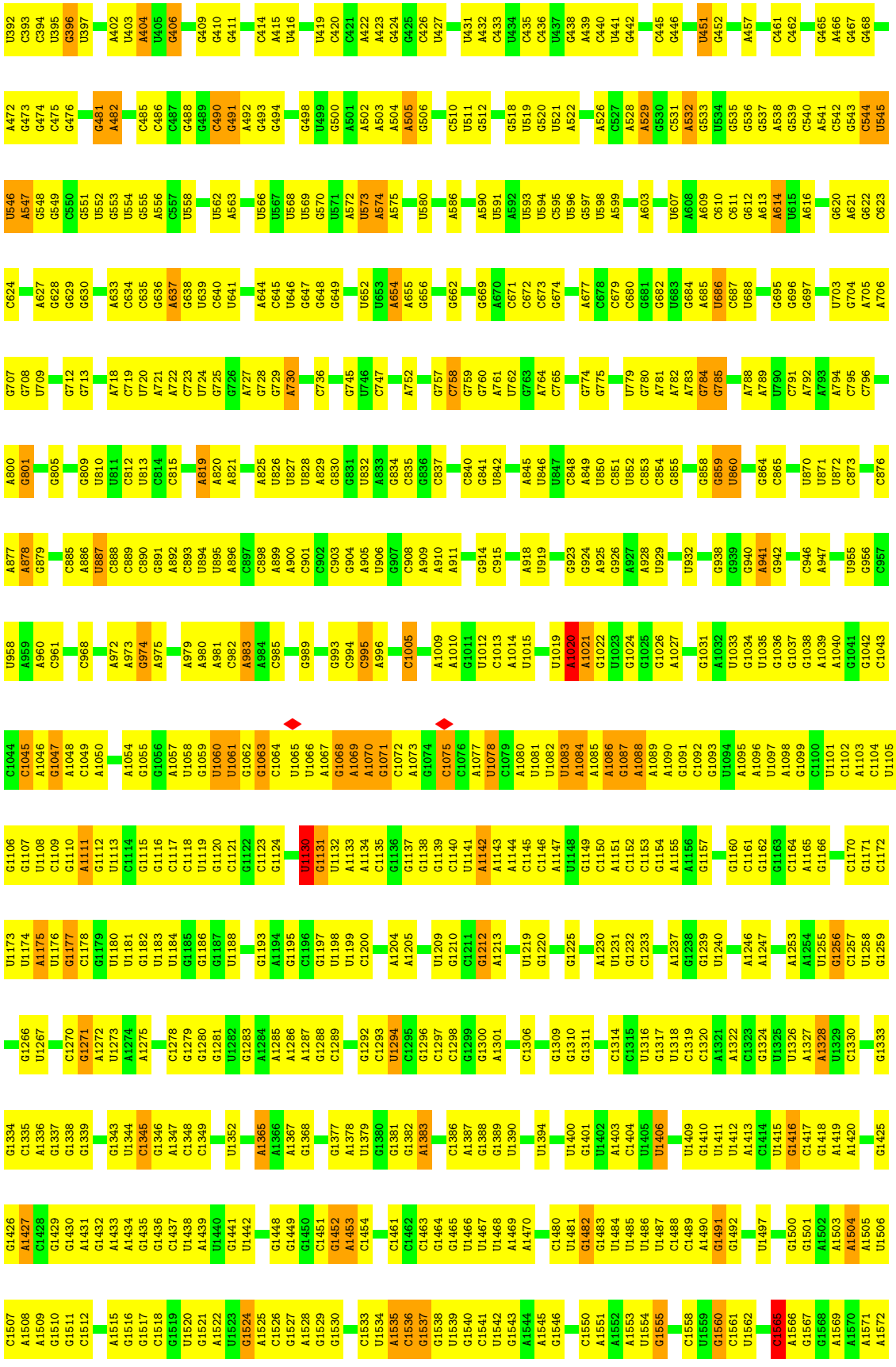
Chain z:

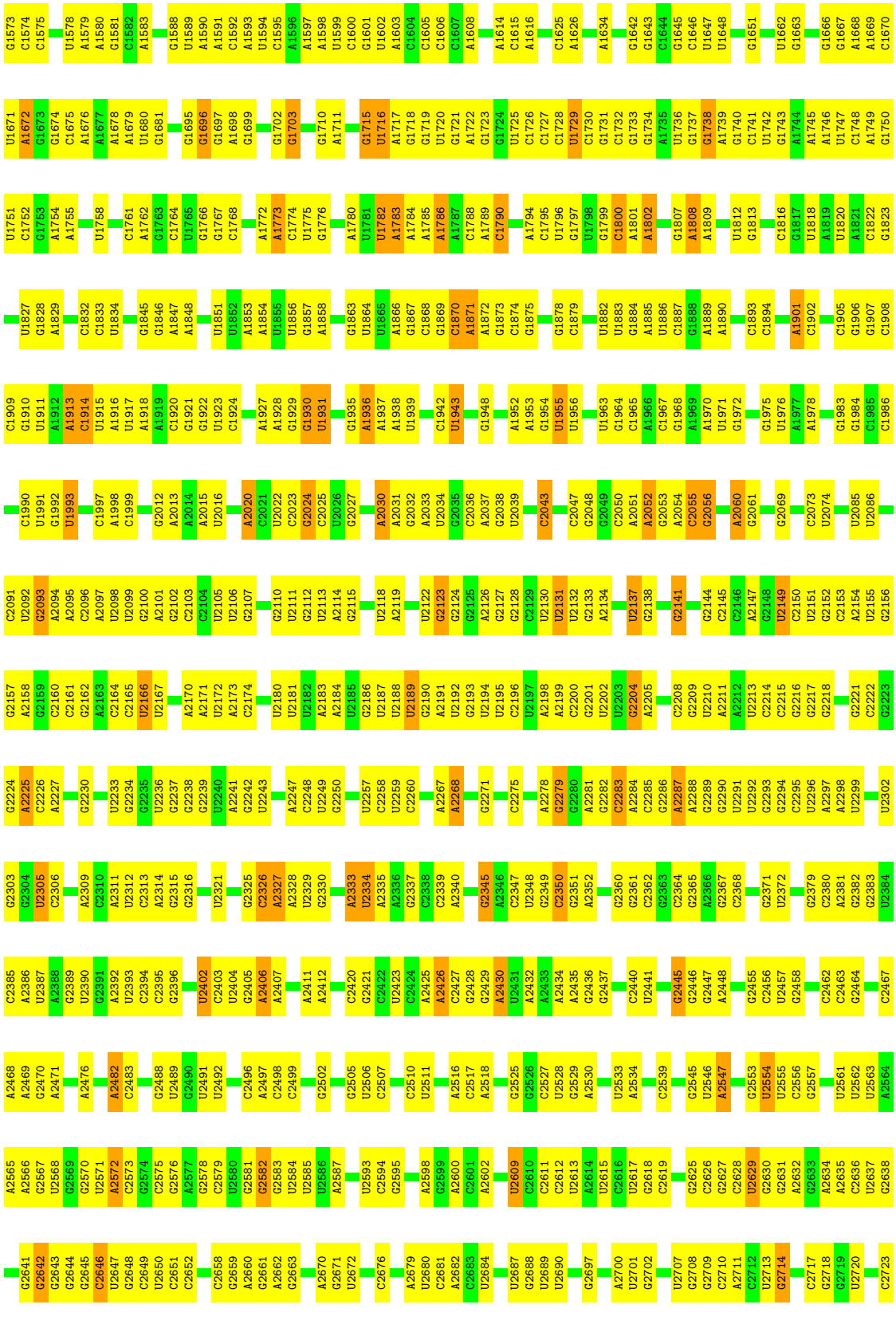



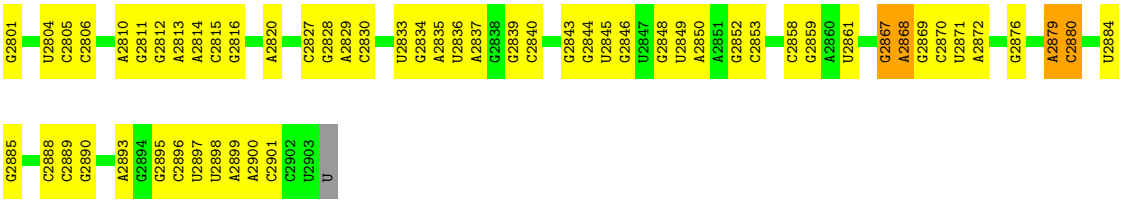

• Molecule 51: 23S rRNA

Chain 1:

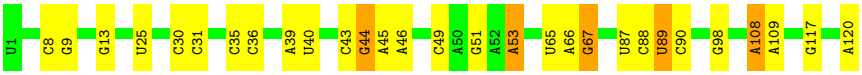






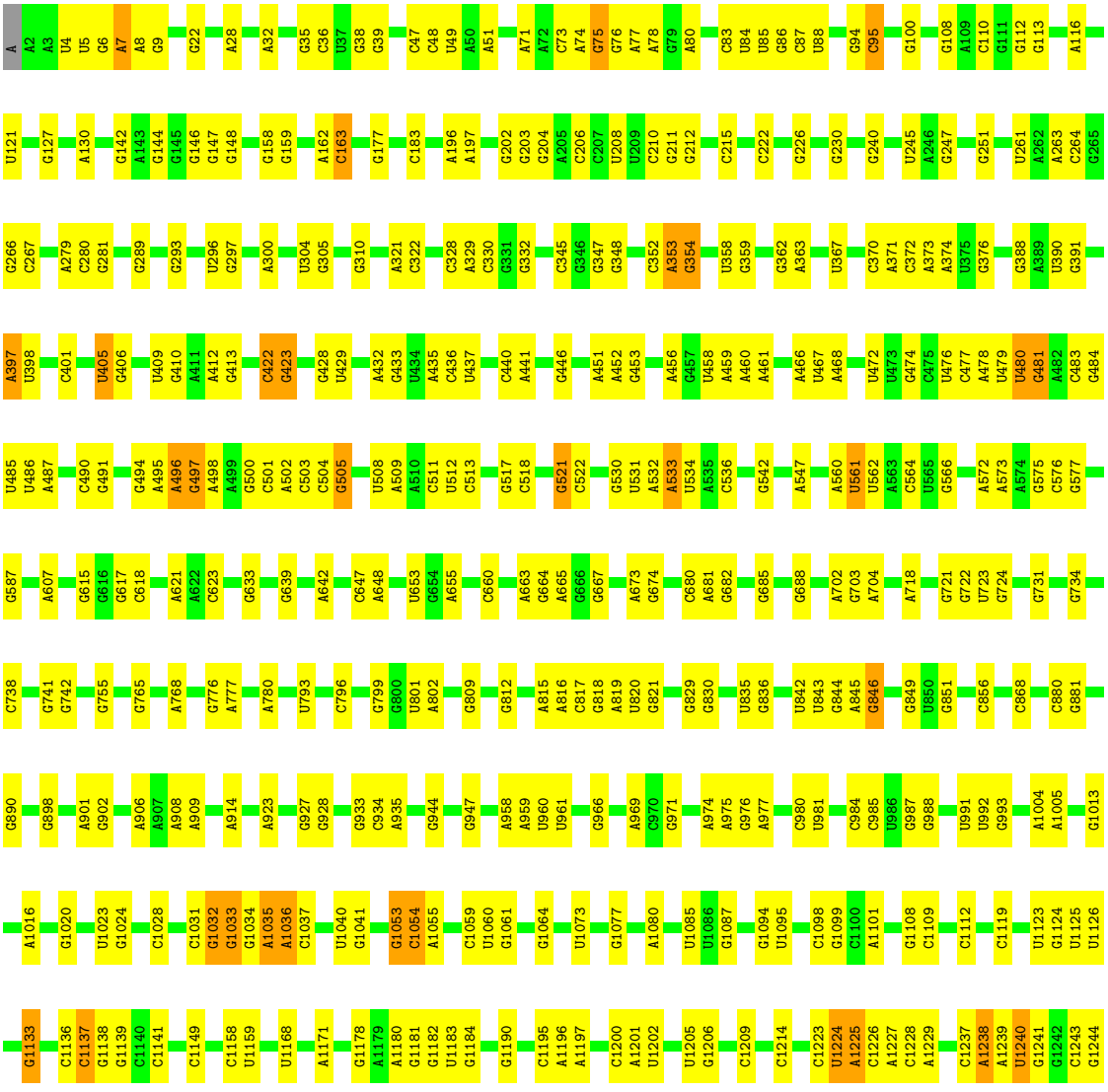

• Molecule 52: 5S rRNA

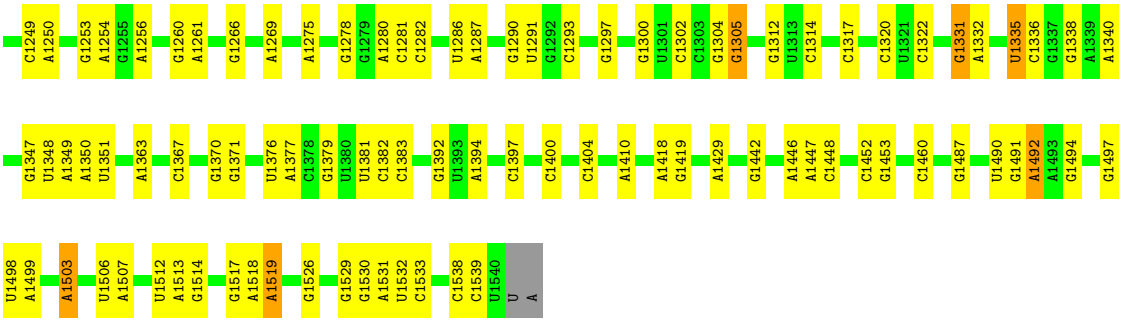
Chain 2:


• Molecule 53: 16S rRNA

Chain 3:

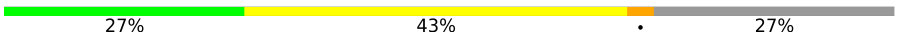


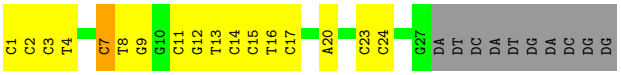
• Molecule 54: mRNA

Chain 4:


• Molecule 55: templete DNA strand

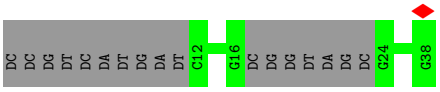
Chain 8:



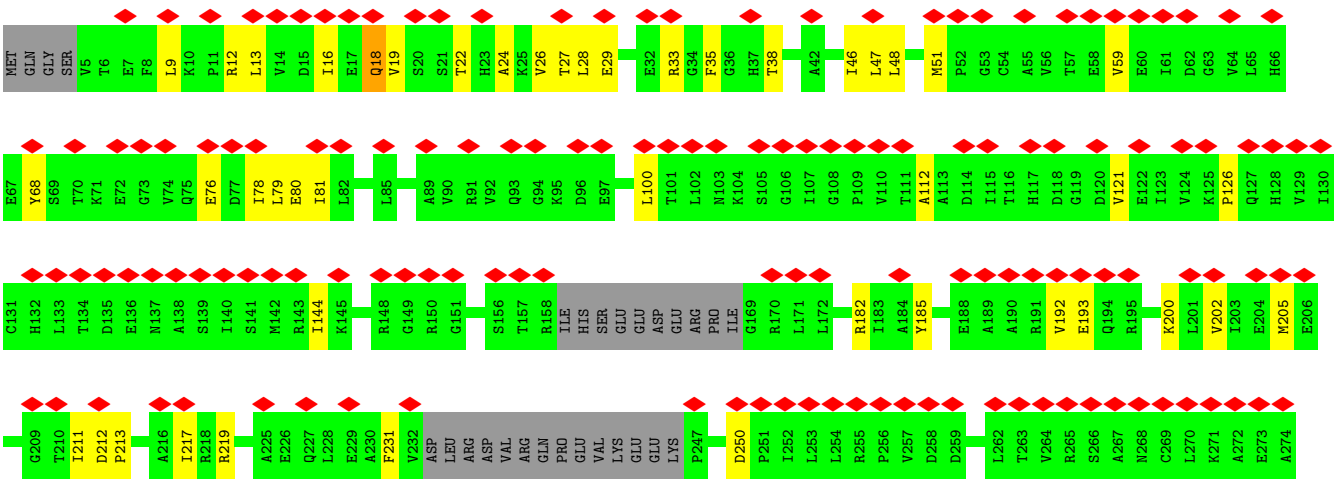
• Molecule 56: non-templete DNA strand

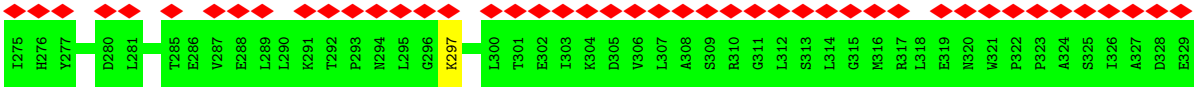
Chain 9:

• Molecule 57: DNA-directed RNA polymerase subunit alpha

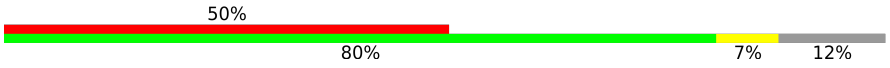
Chain A1:

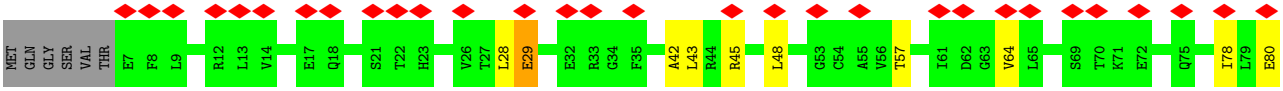



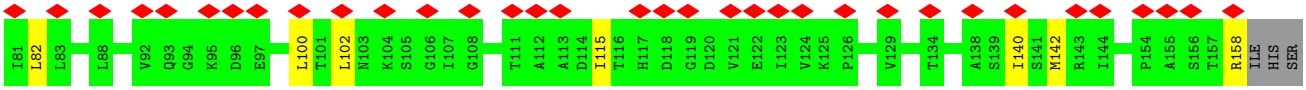


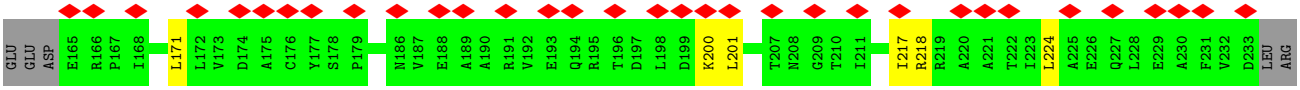

• Molecule 57: DNA-directed RNA polymerase subunit alpha

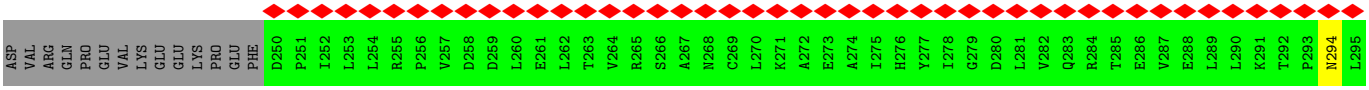
Chain A2:

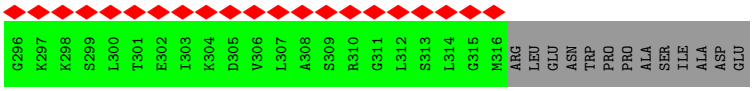


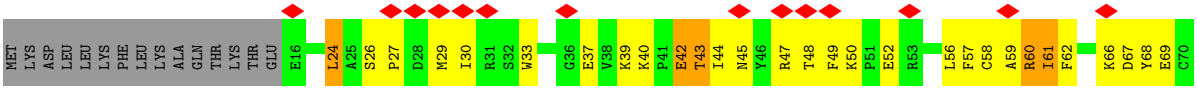



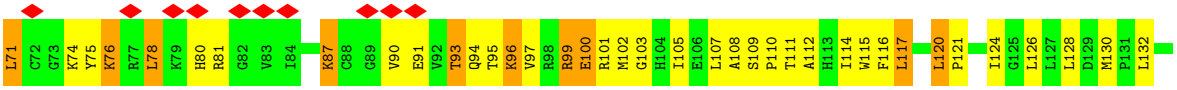



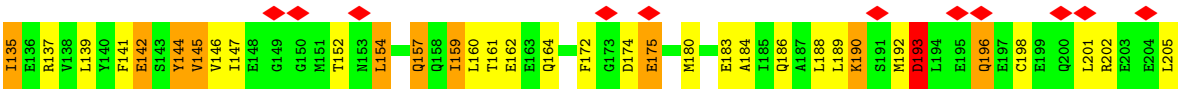




• Molecule 58: DNA-directed RNA polymerase subunit beta'

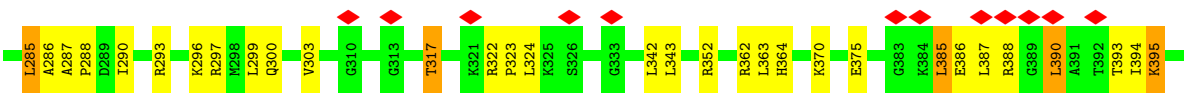
Chain B1:

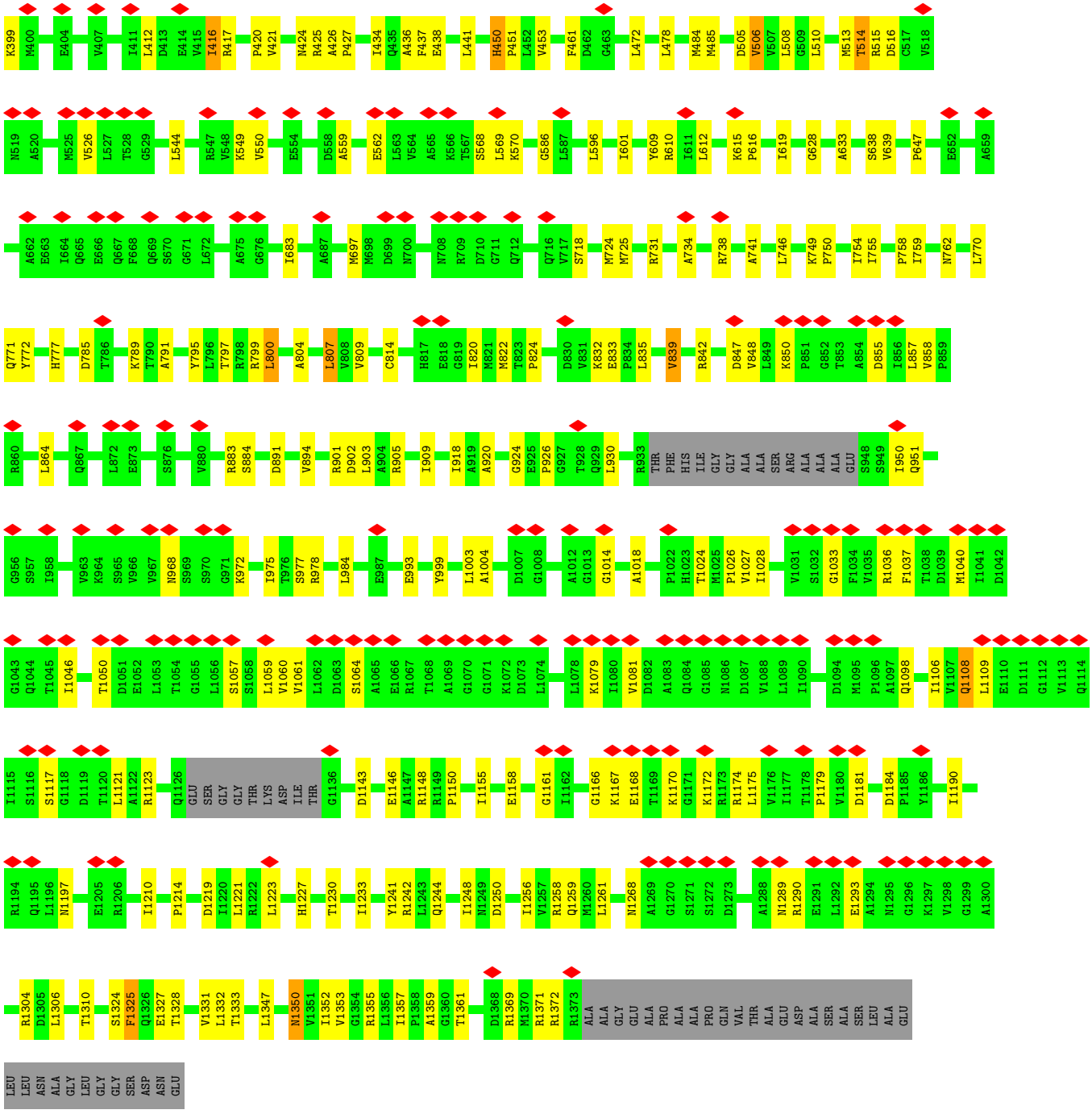



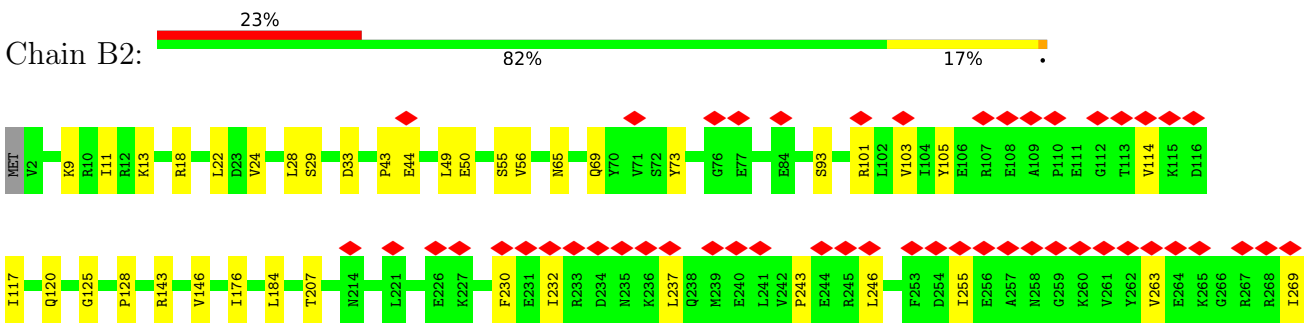


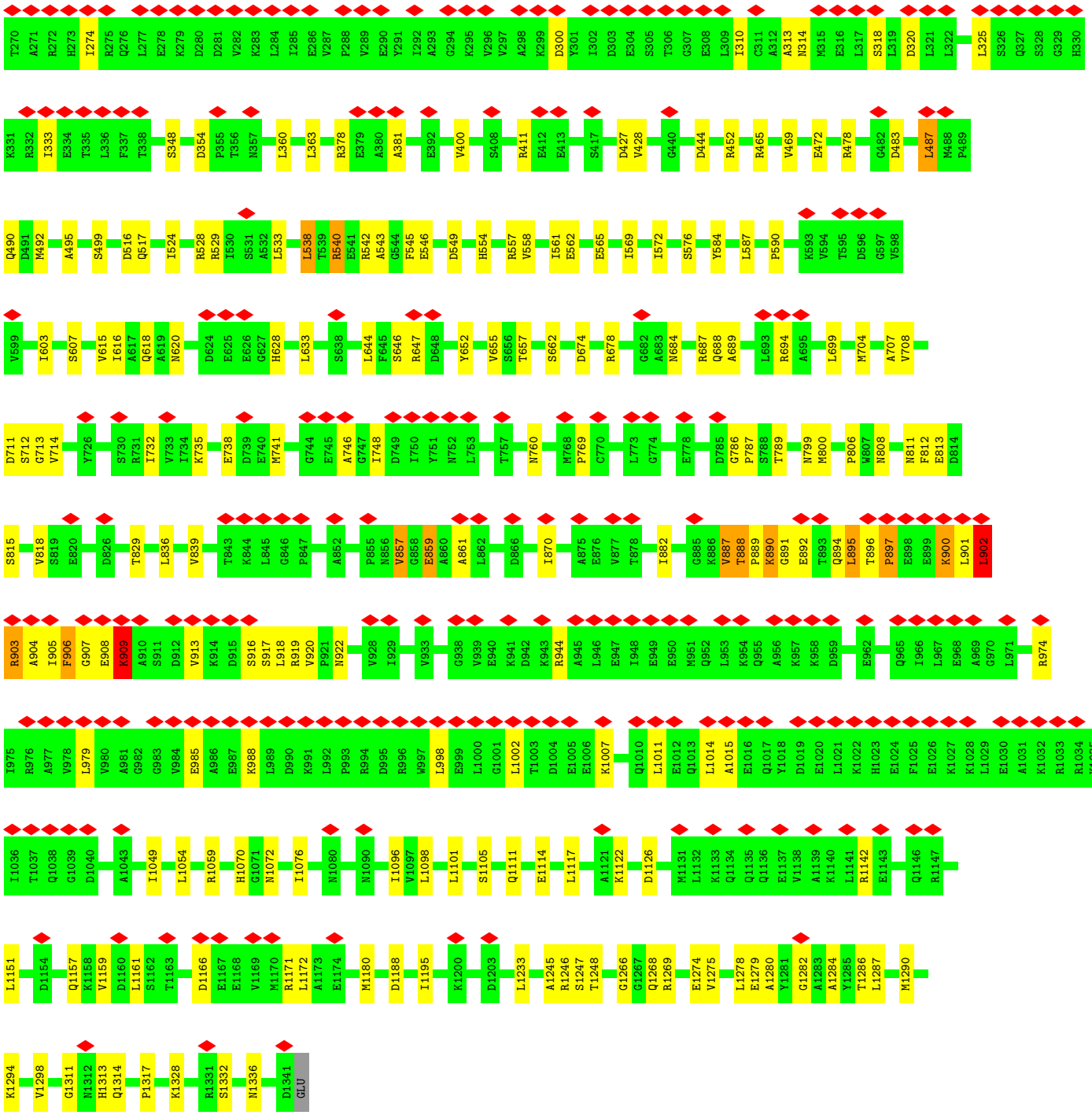




• Molecule 59: DNA-directed RNA polymerase subunit beta

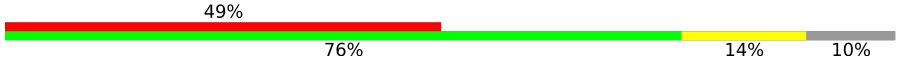
Chain B2:

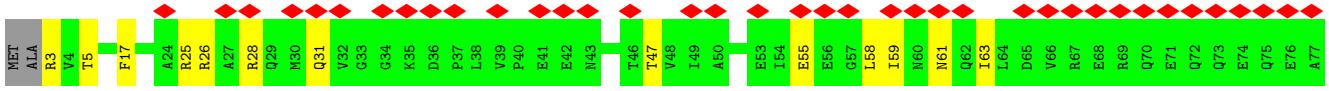


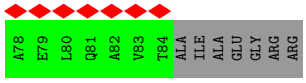


• Molecule 60: DNA-directed RNA polymerase subunit omega

Chain W0:

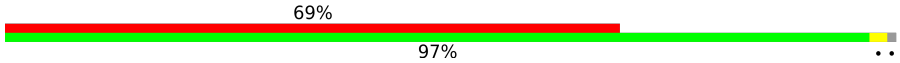


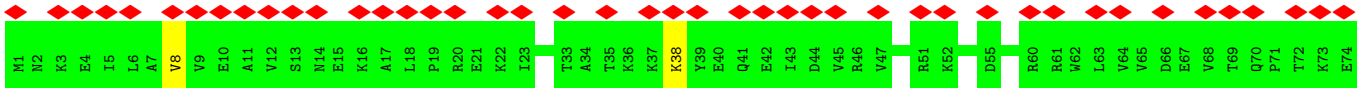



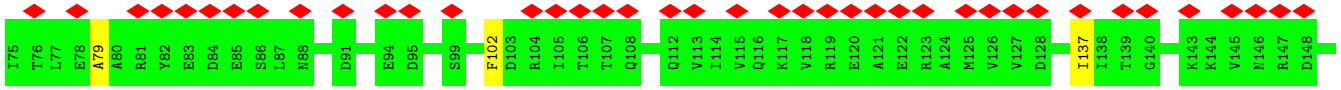


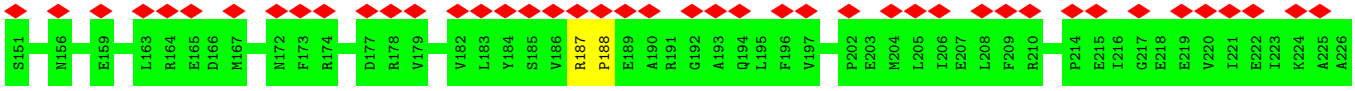

• Molecule 61: Transcription termination/antitermination protein NusA

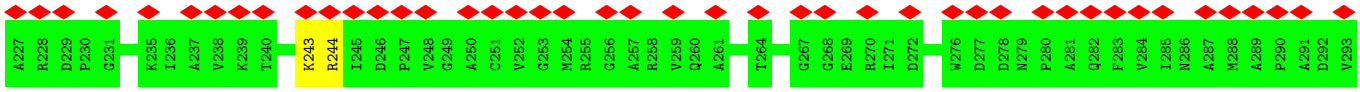
Chain NA:

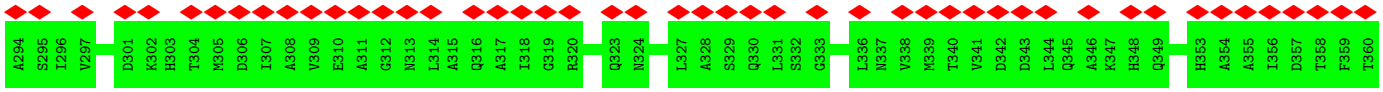


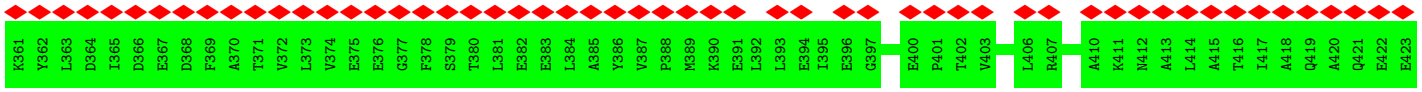



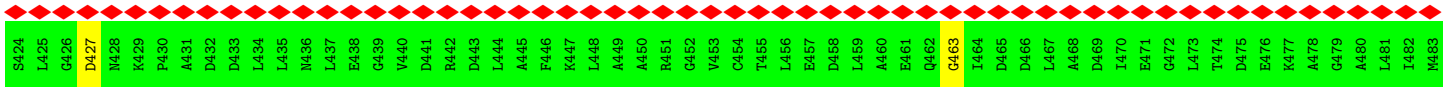



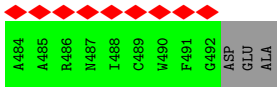



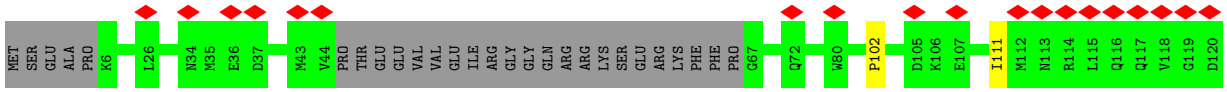



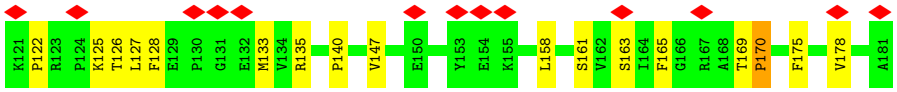




• Molecule 62: Transcription termination/antitermination protein NusG

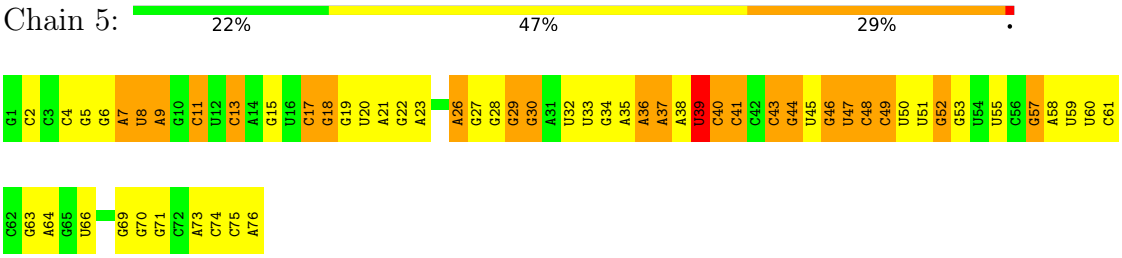
Chain NG:

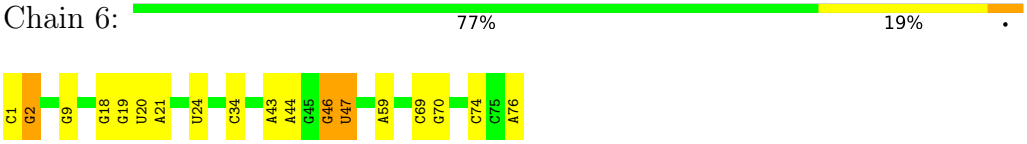

• Molecule 63: tRNA(Phe)

Chain 5:



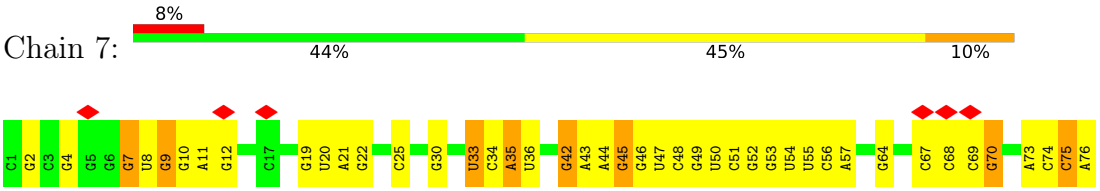

• Molecule 64: tRNA(fMet)

Chain 6:




• Molecule 64: tRNA(fMet)

Chain 7:




• Molecule 65: Viomycin

Chain h:

# 4 Experimental information (i)

| Property | Value | Source |
|---|---|---|
| EM reconstruction method | SINGLE PARTICLE | Depositor |
| Imposed symmetry | POINT, Not provided | |
| Number of particles used | 24010 | Depositor |
| Resolution determination method | FSC 0.143 CUT-OFF | Depositor |
| CTF correction method | NONE | Depositor |
| Microscope | FEI TALOS ARCTICA | Depositor |
| Voltage (kV) | 200 | Depositor |
| Electron dose ($e^-/Å^2$) | 47 | Depositor |
| Minimum defocus (nm) | 500 | Depositor |
| Maximum defocus (nm) | 1500 | Depositor |
| Magnification | Not provided | |
| Image detector | FEI FALCON III (4k x 4k) | Depositor |
| Maximum map value | 0.175 | Depositor |
| Minimum map value | -0.080 | Depositor |
| Average map value | 0.000 | Depositor |
| Map value standard deviation | 0.005 | Depositor |
| Recommended contour level | 0.011 | Depositor |
| Map size (Å) | 753.60004, 753.60004, 753.60004 | wwPDB |
| Map dimensions | 480, 480, 480 | wwPDB |
| Map angles (°) | 90.0, 90.0, 90.0 | wwPDB |
| Pixel spacing (Å) | 1.57, 1.57, 1.57 | Depositor |

# 5 Model quality (i)

## 5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: 5OH, MG, DPP, UAL, KBE

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

| Mol | Chain | Bond lengths | | Bond angles | |
|---|---|---|---|---|---|
| | | RMSZ | #$\|Z\|>5$ | RMSZ | #$\|Z\|>5$ |
| 1 | A | 0.27 | 0/531 | 0.54 | 0/709 |
| 2 | B | 0.40 | 0/450 | 0.60 | 0/599 |
| 3 | C | 0.28 | 0/416 | 0.52 | 0/554 |
| 4 | D | 0.47 | 0/380 | 0.76 | 2/498 (0.4%) |
| 5 | E | 0.53 | 0/513 | 0.60 | 0/676 |
| 6 | F | 0.57 | 0/303 | 0.65 | 0/397 |
| 7 | G | 0.37 | 0/1735 | 0.64 | 0/2338 |
| 8 | H | 0.34 | 0/1651 | 0.55 | 0/2225 |
| 9 | I | 0.35 | 0/1665 | 0.71 | 0/2227 |
| 10 | J | 0.38 | 0/1169 | 0.68 | 2/1573 (0.1%) |
| 11 | K | 0.46 | 0/835 | 0.77 | 0/1128 |
| 12 | L | 0.30 | 0/1195 | 0.67 | 3/1602 (0.2%) |
| 13 | M | 0.35 | 0/989 | 0.52 | 0/1326 |
| 14 | N | 0.41 | 0/1034 | 0.77 | 0/1375 |
| 15 | O | 0.50 | 0/796 | 0.78 | 2/1077 (0.2%) |
| 16 | P | 0.45 | 0/885 | 0.64 | 1/1195 (0.1%) |
| 17 | Q | 0.50 | 0/969 | 0.86 | 2/1300 (0.2%) |
| 18 | R | 0.33 | 0/892 | 0.73 | 2/1193 (0.2%) |
| 19 | S | 0.32 | 0/817 | 0.61 | 0/1088 |
| 20 | T | 0.49 | 0/722 | 0.64 | 0/964 |
| 21 | U | 0.30 | 0/659 | 0.71 | 2/884 (0.2%) |
| 22 | V | 0.44 | 0/657 | 0.71 | 0/881 |
| 23 | W | 0.54 | 0/544 | 0.74 | 1/731 (0.1%) |
| 24 | X | 0.28 | 0/652 | 0.55 | 0/877 |
| 25 | Y | 0.28 | 0/671 | 0.52 | 0/888 |
| 26 | Z | 0.66 | 0/550 | 1.01 | 2/728 (0.3%) |
| 27 | b | 0.49 | 0/2121 | 0.65 | 0/2852 |
| 28 | c | 0.42 | 0/1586 | 0.59 | 2/2134 (0.1%) |
| 29 | d | 0.43 | 0/1571 | 0.62 | 0/2113 |
| 30 | e | 0.38 | 0/1434 | 0.60 | 2/1926 (0.1%) |
| 31 | f | 0.29 | 0/1343 | 0.55 | 0/1816 |
| 32 | g | 0.32 | 0/405 | 0.74 | 0/544 |

| Mol | Chain | Bond lengths | | Bond angles | |
|---|---|---|---|---|---|
| | | RMSZ | #\|Z\| >5 | RMSZ | #\|Z\| >5 |
| 33 | i | 0.31 | 0/1046 | 0.77 | 3/1410 (0.2%) |
| 34 | j | 0.41 | 0/1152 | 0.55 | 1/1551 (0.1%) |
| 35 | k | 0.45 | 0/947 | 0.66 | 0/1268 |
| 36 | l | 0.40 | 0/1054 | 0.63 | 0/1403 |
| 37 | m | 0.56 | 0/1093 | 0.74 | 0/1460 |
| 38 | n | 0.46 | 0/973 | 0.72 | 1/1301 (0.1%) |
| 39 | o | 0.32 | 0/902 | 0.51 | 0/1209 |
| 40 | p | 0.42 | 0/929 | 0.61 | 0/1242 |
| 41 | q | 0.52 | 0/960 | 0.62 | 1/1278 (0.1%) |
| 42 | r | 0.43 | 0/829 | 0.69 | 0/1107 |
| 43 | s | 0.44 | 0/864 | 0.58 | 0/1156 |
| 44 | t | 0.33 | 0/744 | 0.52 | 0/994 |
| 45 | u | 0.45 | 0/787 | 0.75 | 0/1051 |
| 46 | v | 0.34 | 0/766 | 0.51 | 0/1025 |
| 47 | w | 0.40 | 0/582 | 0.52 | 0/769 |
| 48 | x | 0.43 | 0/635 | 0.63 | 1/848 (0.1%) |
| 49 | y | 0.29 | 0/510 | 0.64 | 0/677 |
| 50 | z | 0.41 | 0/453 | 0.53 | 0/605 |
| 51 | 1 | 0.51 | 0/69796 | 0.62 | 22/108888 (0.0%) |
| 52 | 2 | 0.43 | 0/2872 | 0.46 | 0/4479 |
| 53 | 3 | 0.42 | 0/36963 | 0.43 | 0/57662 |
| 54 | 4 | 0.52 | 0/808 | 0.65 | 0/1251 |
| 55 | 8 | 0.56 | 0/599 | 0.70 | 1/919 (0.1%) |
| 56 | 9 | 0.49 | 0/468 | 0.56 | 0/719 |
| 57 | A1 | 0.55 | 0/2106 | 0.81 | 0/2868 |
| 57 | A2 | 0.49 | 0/2048 | 0.75 | 0/2786 |
| 58 | B1 | 0.57 | 4/10510 (0.0%) | 0.75 | 8/14196 (0.1%) |
| 59 | B2 | 0.46 | 0/10714 | 0.67 | 1/14459 (0.0%) |
| 60 | W0 | 0.30 | 0/652 | 0.61 | 0/879 |
| 61 | NA | 0.76 | 0/2431 | 1.22 | 1/3385 (0.0%) |
| 62 | NG | 1.10 | 0/756 | 1.06 | 0/1048 |
| 63 | 5 | 0.57 | 0/1812 | 0.86 | 3/2823 (0.1%) |
| 64 | 6 | 0.40 | 0/1832 | 0.48 | 0/2855 |
| 64 | 7 | 0.39 | 0/1832 | 0.57 | 1/2855 (0.0%) |
| 65 | h | 3.16 | 2/11 (18.2%) | 0.75 | 0/13 |
| All | All | 0.48 | 6/191576 (0.0%) | 0.62 | 67/282857 (0.0%) |

All (6) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 65 | h | 3 | SER | CA-C | -6.71 | 1.38 | 1.52 |
| 65 | h | 4 | SER | CA-C | -6.16 | 1.40 | 1.52 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 58 | B1 | 1350 | ASN | CG-ND2 | -5.36 | 1.22 | 1.33 |
| 58 | B1 | 424 | ASN | CG-ND2 | -5.17 | 1.22 | 1.33 |
| 58 | B1 | 1108 | GLN | CD-OE1 | 5.11 | 1.33 | 1.23 |
| 58 | B1 | 1268 | ASN | CG-OD1 | 5.04 | 1.33 | 1.23 |

All (67) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 16 | P | 73 | VAL | N-CA-C | -9.03 | 104.53 | 113.20 |
| 41 | q | 33 | VAL | N-CA-C | -8.80 | 104.72 | 112.12 |
| 12 | L | 64 | ALA | N-CA-C | -7.70 | 105.05 | 114.75 |
| 51 | 1 | 1130 | U | C2'-C3'-O3' | 7.58 | 120.88 | 109.50 |
| 64 | 7 | 33 | U | C2'-C3'-O3' | 7.28 | 120.42 | 109.50 |
| 51 | 1 | 2326 | C | C2'-C3'-O3' | 7.22 | 120.33 | 109.50 |
| 58 | B1 | 450 | HIS | CB-CG-CD2 | -6.59 | 122.63 | 131.20 |
| 51 | 1 | 761 | A | C4'-C3'-O3' | -6.52 | 103.22 | 113.00 |
| 58 | B1 | 777 | HIS | CB-CG-CD2 | -6.38 | 122.91 | 131.20 |
| 58 | B1 | 61 | ILE | CA-C-N | -6.37 | 114.00 | 121.64 |
| 58 | B1 | 61 | ILE | C-N-CA | -6.37 | 114.00 | 121.64 |
| 28 | c | 147 | GLY | CA-C-N | -6.03 | 115.27 | 122.44 |
| 28 | c | 147 | GLY | C-N-CA | -6.03 | 115.27 | 122.44 |
| 63 | 5 | 39 | U | C3'-C2'-O2' | 5.86 | 119.49 | 110.70 |
| 58 | B1 | 450 | HIS | CB-CG-ND1 | 5.71 | 131.26 | 122.70 |
| 51 | 1 | 2060 | A | C2'-C3'-O3' | 5.68 | 118.03 | 109.50 |
| 26 | Z | 35 | GLU | CA-C-N | 5.64 | 132.32 | 121.54 |
| 26 | Z | 35 | GLU | C-N-CA | 5.64 | 132.32 | 121.54 |
| 51 | 1 | 1790 | C | N1-C1'-C2' | 5.63 | 120.44 | 112.00 |
| 15 | O | 57 | VAL | CA-C-N | 5.59 | 132.22 | 121.54 |
| 15 | O | 57 | VAL | C-N-CA | 5.59 | 132.22 | 121.54 |
| 38 | n | 47 | VAL | N-CA-C | -5.55 | 107.46 | 112.12 |
| 10 | J | 155 | LYS | N-CA-C | -5.50 | 107.82 | 114.75 |
| 51 | 1 | 1451 | C | N1-C1'-C2' | 5.46 | 120.19 | 112.00 |
| 51 | 1 | 1905 | C | C4'-C3'-O3' | -5.45 | 104.83 | 113.00 |
| 58 | B1 | 777 | HIS | CB-CG-ND1 | 5.45 | 130.88 | 122.70 |
| 51 | 1 | 1696 | G | N9-C1'-C2' | 5.44 | 120.15 | 112.00 |
| 51 | 1 | 960 | A | N9-C1'-C2' | 5.41 | 120.11 | 112.00 |
| 4 | D | 3 | ARG | CA-C-N | 5.40 | 127.78 | 120.38 |
| 4 | D | 3 | ARG | C-N-CA | 5.40 | 127.78 | 120.38 |
| 51 | 1 | 1020 | A | C2'-C3'-O3' | 5.39 | 117.59 | 109.50 |
| 55 | 8 | 7 | DC | C2'-C3'-O3' | -5.38 | 103.43 | 111.50 |
| 51 | 1 | 1782 | U | N1-C1'-C2' | 5.33 | 119.99 | 112.00 |
| 33 | i | 24 | GLY | N-CA-C | 5.30 | 123.15 | 112.34 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 51 | 1 | 2055 | C | N1-C1'-C2' | 5.28 | 119.92 | 112.00 |
| 51 | 1 | 2428 | G | N9-C1'-C2' | 5.28 | 119.91 | 112.00 |
| 30 | e | 141 | ASP | CA-C-N | 5.27 | 131.60 | 121.54 |
| 30 | e | 141 | ASP | C-N-CA | 5.27 | 131.60 | 121.54 |
| 12 | L | 5 | VAL | CA-C-N | 5.26 | 127.75 | 120.49 |
| 12 | L | 5 | VAL | C-N-CA | 5.26 | 127.75 | 120.49 |
| 51 | 1 | 980 | A | N9-C1'-C2' | 5.24 | 119.86 | 112.00 |
| 63 | 5 | 39 | U | C4'-C3'-O3' | 5.23 | 120.85 | 113.00 |
| 34 | j | 110 | PRO | N-CA-C | 5.23 | 120.73 | 113.98 |
| 51 | 1 | 2576 | G | N9-C1'-C2' | 5.21 | 119.82 | 112.00 |
| 58 | B1 | 27 | PRO | N-CA-C | -5.21 | 106.25 | 113.81 |
| 63 | 5 | 57 | G | C4'-C3'-O3' | 5.20 | 117.21 | 109.40 |
| 21 | U | 78 | VAL | CA-C-N | 5.17 | 129.62 | 121.56 |
| 21 | U | 78 | VAL | C-N-CA | 5.17 | 129.62 | 121.56 |
| 51 | 1 | 1565 | C | N1-C1'-C2' | 5.15 | 119.72 | 112.00 |
| 51 | 1 | 2430 | A | N9-C1'-C2' | 5.14 | 119.70 | 112.00 |
| 51 | 1 | 1328 | A | N9-C1'-C2' | 5.12 | 119.69 | 112.00 |
| 23 | W | 14 | ALA | N-CA-C | -5.12 | 106.12 | 112.93 |
| 10 | J | 87 | VAL | N-CA-C | 5.12 | 116.00 | 109.30 |
| 61 | NA | 427 | ASP | N-CA-C | -5.10 | 107.72 | 114.31 |
| 18 | R | 3 | ILE | CA-C-N | 5.09 | 131.26 | 121.54 |
| 18 | R | 3 | ILE | C-N-CA | 5.09 | 131.26 | 121.54 |
| 51 | 1 | 2777 | G | N9-C1'-C2' | 5.09 | 119.63 | 112.00 |
| 17 | Q | 42 | LYS | CA-C-N | 5.08 | 129.60 | 121.62 |
| 17 | Q | 42 | LYS | C-N-CA | 5.08 | 129.60 | 121.62 |
| 33 | i | 71 | LYS | CA-C-N | 5.08 | 134.19 | 121.80 |
| 33 | i | 71 | LYS | C-N-CA | 5.08 | 134.19 | 121.80 |
| 58 | B1 | 61 | ILE | CA-C-O | -5.07 | 115.67 | 120.95 |
| 51 | 1 | 1087 | G | N9-C1'-C2' | 5.05 | 119.58 | 112.00 |
| 48 | x | 25 | LYS | N-CA-C | 5.03 | 121.52 | 110.80 |
| 51 | 1 | 972 | A | N9-C1'-C2' | 5.01 | 119.52 | 112.00 |
| 51 | 1 | 1672 | A | N9-C1'-C2' | 5.00 | 119.51 | 112.00 |
| 59 | B2 | 902 | LEU | N-CA-C | -5.00 | 105.83 | 111.28 |

There are no chirality outliers.

There are no planarity outliers.

## 5.2 Too-close contacts (i)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen

atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|---|---|---|---|---|---|---|
| 1 | A | 522 | 0 | 524 | 7 | 0 |
| 2 | B | 444 | 0 | 461 | 9 | 0 |
| 3 | C | 409 | 0 | 440 | 4 | 0 |
| 4 | D | 377 | 0 | 418 | 9 | 0 |
| 5 | E | 504 | 0 | 574 | 3 | 0 |
| 6 | F | 302 | 0 | 343 | 7 | 0 |
| 7 | G | 1704 | 0 | 1732 | 36 | 0 |
| 8 | H | 1624 | 0 | 1699 | 26 | 0 |
| 9 | I | 1643 | 0 | 1710 | 34 | 0 |
| 10 | J | 1156 | 0 | 1199 | 18 | 0 |
| 11 | K | 817 | 0 | 808 | 16 | 0 |
| 12 | L | 1181 | 0 | 1240 | 19 | 0 |
| 13 | M | 979 | 0 | 1034 | 8 | 0 |
| 14 | N | 1022 | 0 | 1070 | 23 | 0 |
| 15 | O | 786 | 0 | 828 | 15 | 0 |
| 16 | P | 869 | 0 | 878 | 21 | 0 |
| 17 | Q | 955 | 0 | 1019 | 30 | 0 |
| 18 | R | 883 | 0 | 944 | 20 | 0 |
| 19 | S | 805 | 0 | 847 | 10 | 0 |
| 20 | T | 714 | 0 | 737 | 6 | 0 |
| 21 | U | 649 | 0 | 666 | 15 | 0 |
| 22 | V | 648 | 0 | 691 | 8 | 0 |
| 23 | W | 535 | 0 | 552 | 8 | 0 |
| 24 | X | 637 | 0 | 665 | 7 | 0 |
| 25 | Y | 665 | 0 | 714 | 11 | 0 |
| 26 | Z | 544 | 0 | 579 | 12 | 0 |
| 27 | b | 2082 | 0 | 2157 | 46 | 0 |
| 28 | c | 1565 | 0 | 1616 | 28 | 0 |
| 29 | d | 1552 | 0 | 1619 | 27 | 0 |
| 30 | e | 1410 | 0 | 1447 | 23 | 0 |
| 31 | f | 1323 | 0 | 1374 | 31 | 0 |
| 32 | g | 400 | 0 | 423 | 7 | 0 |
| 33 | i | 1032 | 0 | 1088 | 41 | 0 |
| 34 | j | 1129 | 0 | 1162 | 22 | 0 |
| 35 | k | 938 | 0 | 1012 | 17 | 0 |
| 36 | l | 1045 | 0 | 1117 | 17 | 0 |
| 37 | m | 1074 | 0 | 1157 | 13 | 0 |
| 38 | n | 960 | 0 | 1000 | 19 | 0 |
| 39 | o | 892 | 0 | 923 | 16 | 0 |
| 40 | p | 917 | 0 | 965 | 17 | 0 |
| 41 | q | 947 | 0 | 1022 | 9 | 0 |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|---|---|---|---|---|---|---|
| 42 | r | 816 | 0 | 839 | 19 | 0 |
| 43 | s | 857 | 0 | 922 | 11 | 0 |
| 44 | t | 738 | 0 | 807 | 10 | 0 |
| 45 | u | 779 | 0 | 834 | 13 | 0 |
| 46 | v | 753 | 0 | 780 | 9 | 0 |
| 47 | w | 575 | 0 | 592 | 8 | 0 |
| 48 | x | 625 | 0 | 655 | 12 | 0 |
| 49 | y | 509 | 0 | 543 | 12 | 0 |
| 50 | z | 449 | 0 | 491 | 9 | 0 |
| 51 | 1 | 62317 | 0 | 31346 | 1462 | 0 |
| 52 | 2 | 2568 | 0 | 1303 | 15 | 0 |
| 53 | 3 | 33012 | 0 | 16618 | 188 | 0 |
| 54 | 4 | 729 | 0 | 364 | 5 | 0 |
| 55 | 8 | 539 | 0 | 305 | 29 | 0 |
| 56 | 9 | 417 | 0 | 224 | 0 | 0 |
| 57 | A1 | 2088 | 0 | 1895 | 22 | 0 |
| 57 | A2 | 2029 | 0 | 1864 | 17 | 0 |
| 58 | B1 | 10353 | 0 | 10548 | 317 | 0 |
| 59 | B2 | 10546 | 0 | 10550 | 167 | 0 |
| 60 | W0 | 650 | 0 | 658 | 11 | 0 |
| 61 | NA | 2432 | 0 | 1171 | 10 | 0 |
| 62 | NG | 758 | 0 | 334 | 14 | 0 |
| 63 | 5 | 1622 | 0 | 821 | 26 | 0 |
| 64 | 6 | 1640 | 0 | 837 | 7 | 0 |
| 64 | 7 | 1640 | 0 | 837 | 21 | 0 |
| 65 | h | 48 | 0 | 40 | 9 | 0 |
| 66 | B1 | 1 | 0 | 0 | 0 | 0 |
| All | All | 178130 | 0 | 126632 | 2811 | 0 |

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 9.

All (2811) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 40:p:52:ARG:HH21 | 51:1:2720:U:H5” | 0.95 | 1.09 |
| 51:1:275:C:H2’ | 51:1:276:U:H4’ | 1.37 | 1.07 |
| 51:1:1666:G:H2’ | 51:1:1667:G:H5’ | 1.41 | 1.03 |
| 51:1:2713:U:H3’ | 51:1:2714:G:H5’ | 1.41 | 1.03 |
| 51:1:1672:A:C2 | 51:1:2582:G:H5’ | 1.95 | 1.02 |
| 51:1:1807:G:H2’ | 51:1:1808:A:H5’ | 1.44 | 1.00 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 58:B1:750:PRO:HB3 | 59:B2:549:ASP:OD2 | 1.60 | 0.99 |
| 51:1:1082:U:H3' | 51:1:1083:U:H5" | 1.41 | 0.99 |
| 58:B1:111:THR:HG23 | 58:B1:300:GLN:CD | 1.86 | 0.99 |
| 40:p:52:ARG:NH2 | 51:1:2720:U:H5" | 1.79 | 0.98 |
| 58:B1:352:ARG:HD2 | 59:B2:1268:GLN:NE2 | 1.79 | 0.97 |
| 51:1:1847:A:HO2' | 51:1:1848:A:H8 | 1.06 | 0.97 |
| 58:B1:68:TYR:O | 58:B1:75:TYR:CE2 | 2.20 | 0.94 |
| 51:1:2713:U:H3' | 51:1:2714:G:C5' | 1.98 | 0.94 |
| 51:1:644:A:H2' | 51:1:645:C:H5" | 1.50 | 0.94 |
| 51:1:2156:G:H2' | 51:1:2157:G:H5' | 1.47 | 0.93 |
| 54:4:56:G:H21 | 58:B1:427:PRO:HD3 | 1.34 | 0.93 |
| 51:1:655:A:H4' | 51:1:656:G:H5' | 1.50 | 0.93 |
| 30:e:84:ILE:HD13 | 51:1:2312:U:H5' | 1.51 | 0.93 |
| 30:e:130:GLY:HA3 | 51:1:2305:U:H5" | 1.51 | 0.91 |
| 51:1:1102:C:H2' | 51:1:1103:A:H8 | 1.35 | 0.91 |
| 51:1:1702:G:H2' | 51:1:1703:G:H5" | 1.51 | 0.91 |
| 58:B1:202:ARG:HG2 | 58:B1:202:ARG:HH11 | 1.35 | 0.90 |
| 58:B1:68:TYR:C | 58:B1:75:TYR:HE2 | 1.80 | 0.90 |
| 51:1:890:C:H2' | 51:1:891:G:H5' | 1.53 | 0.90 |
| 51:1:1668:A:H4' | 51:1:1669:A:H5' | 1.54 | 0.90 |
| 51:1:1019:U:H3 | 51:1:1142:A:H62 | 1.17 | 0.89 |
| 14:N:3:ASN:N | 14:N:5:TYR:HH | 1.70 | 0.88 |
| 51:1:2097:A:H2' | 51:1:2098:U:C6 | 2.08 | 0.88 |
| 63:5:9:A:H2' | 63:5:11:C:H41 | 1.38 | 0.88 |
| 51:1:1060:U:H4' | 51:1:1061:U:H5" | 1.55 | 0.88 |
| 51:1:11:C:H2' | 51:1:12:U:H5" | 1.54 | 0.87 |
| 31:f:174:LYS:HG3 | 51:1:2529:G:H4' | 1.56 | 0.87 |
| 2:B:8:THR:HB | 51:1:2020:A:H5' | 1.56 | 0.86 |
| 58:B1:317:THR:HA | 58:B1:323:PRO:HA | 1.55 | 0.86 |
| 51:1:1387:A:H5' | 51:1:1469:A:H1' | 1.58 | 0.86 |
| 51:1:2333:A:H5' | 51:1:2334:U:H2' | 1.57 | 0.86 |
| 51:1:1869:G:H3' | 51:1:1870:C:H5' | 1.58 | 0.85 |
| 58:B1:633:ALA:HB2 | 59:B2:808:ASN:H | 1.41 | 0.85 |
| 17:Q:40:THR:HG21 | 65:h:6:5OH:OS | 1.77 | 0.85 |
| 40:p:52:ARG:HH21 | 51:1:2720:U:C5' | 1.86 | 0.85 |
| 51:1:2792:A:H2' | 51:1:2793:C:H5" | 1.59 | 0.85 |
| 58:B1:68:TYR:HB3 | 58:B1:75:TYR:OH | 1.76 | 0.85 |
| 51:1:1175:A:H3' | 51:1:1176:U:H5' | 1.59 | 0.84 |
| 17:Q:69:GLU:HG3 | 53:3:521:G:H4' | 1.59 | 0.84 |
| 51:1:475:C:H4' | 51:1:510:C:H5' | 1.59 | 0.84 |
| 51:1:1666:G:C2' | 51:1:1667:G:H5' | 2.07 | 0.83 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 58:B1:770:LEU:HD13 | 59:B2:618:GLN:HG3 | 1.61 | 0.83 |
| 51:1:2584:U:H2' | 51:1:2585:U:H5' | 1.58 | 0.82 |
| 51:1:849:A:H2' | 51:1:850:U:C6 | 2.14 | 0.82 |
| 51:1:1141:U:H4' | 51:1:1142:A:O4' | 1.80 | 0.82 |
| 33:i:119:ALA:HB2 | 51:1:1082:U:H5' | 1.60 | 0.82 |
| 51:1:757:G:H2' | 51:1:758:C:H5' | 1.61 | 0.81 |
| 58:B1:141:PHE:CE2 | 58:B1:296:LYS:HB2 | 2.16 | 0.81 |
| 51:1:279:A:H61 | 51:1:361:G:H1' | 1.46 | 0.81 |
| 51:1:2360:G:H2' | 51:1:2361:G:H5' | 1.62 | 0.81 |
| 51:1:2224:G:H4' | 51:1:2226:C:C2 | 2.16 | 0.81 |
| 51:1:2112:G:H2' | 51:1:2113:U:H5' | 1.63 | 0.81 |
| 3:C:40:PRO:HG3 | 51:1:2348:U:H4' | 1.63 | 0.81 |
| 51:1:545:U:C2 | 51:1:546:U:H1' | 2.16 | 0.80 |
| 51:1:2799:A:H2' | 51:1:2800:A:H5' | 1.63 | 0.80 |
| 38:n:36:THR:HG22 | 51:1:1278:C:OP1 | 1.80 | 0.80 |
| 58:B1:68:TYR:O | 58:B1:75:TYR:HE2 | 1.58 | 0.80 |
| 64:7:46:G:H2' | 64:7:47:U:H5' | 1.64 | 0.80 |
| 51:1:1087:G:N2 | 51:1:1103:A:H1' | 1.97 | 0.80 |
| 55:8:1:DC:H5" | 58:B1:210:SER:OG | 1.80 | 0.80 |
| 58:B1:141:PHE:HE2 | 58:B1:296:LYS:HB2 | 1.45 | 0.80 |
| 58:B1:144:TYR:HE1 | 58:B1:162:GLU:OE2 | 1.64 | 0.80 |
| 51:1:1197:G:O2' | 51:1:1198:U:H5' | 1.81 | 0.80 |
| 51:1:1071:G:O2' | 51:1:1089:A:H2' | 1.82 | 0.79 |
| 58:B1:37:GLU:O | 58:B1:61:ILE:HD11 | 1.81 | 0.79 |
| 7:G:18:GLN:HG3 | 7:G:189:ASN:HB3 | 1.65 | 0.79 |
| 51:1:784:G:H5' | 51:1:785:G:OP1 | 1.81 | 0.79 |
| 51:1:1775:U:H2' | 51:1:1776:G:H5' | 1.64 | 0.79 |
| 51:1:1064:C:H41 | 51:1:1069:A:H5" | 1.47 | 0.79 |
| 51:1:2130:U:H2' | 51:1:2131:U:H5" | 1.65 | 0.78 |
| 51:1:1536:C:H4' | 51:1:1537:G:C2 | 2.18 | 0.78 |
| 58:B1:111:THR:HG23 | 58:B1:300:GLN:OE1 | 1.81 | 0.78 |
| 58:B1:186:GLN:HG3 | 58:B1:238:ILE:HG13 | 1.65 | 0.78 |
| 51:1:2286:G:H4' | 51:1:2287:A:O4' | 1.82 | 0.78 |
| 33:i:55:PRO:HG3 | 51:1:1060:U:OP2 | 1.83 | 0.78 |
| 28:c:114:LYS:HB2 | 51:1:2680:U:OP1 | 1.84 | 0.77 |
| 51:1:275:C:H2' | 51:1:276:U:C4' | 2.14 | 0.77 |
| 51:1:2792:A:C3' | 51:1:2793:C:H5" | 2.14 | 0.77 |
| 51:1:1275:A:N6 | 51:1:1296:G:H4' | 2.00 | 0.77 |
| 51:1:1297:C:OP1 | 51:1:2710:C:H4' | 1.82 | 0.77 |
| 51:1:1702:G:C2' | 51:1:1703:G:H5" | 2.13 | 0.77 |
| 35:k:6:THR:HG22 | 51:1:1666:G:O2' | 1.83 | 0.77 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 51:1:2215:C:H2' | 51:1:2216:G:C8 | 2.18 | 0.77 |
| 51:1:1736:U:H2' | 51:1:1737:G:O4' | 1.85 | 0.77 |
| 51:1:1310:G:C2' | 51:1:1311:G:H5' | 2.14 | 0.77 |
| 51:1:368:A:H2' | 51:1:369:U:H5' | 1.66 | 0.77 |
| 51:1:2156:G:C2' | 51:1:2157:G:H5' | 2.14 | 0.76 |
| 51:1:310:A:O2' | 51:1:311:A:H2' | 1.85 | 0.76 |
| 51:1:1063:G:H1 | 51:1:1075:C:N4 | 1.84 | 0.76 |
| 55:8:13:DT:H72 | 58:B1:791:ALA:HB2 | 1.66 | 0.76 |
| 55:8:15:DC:H1' | 58:B1:426:ALA:HB1 | 1.67 | 0.76 |
| 58:B1:202:ARG:HG2 | 58:B1:202:ARG:NH1 | 1.99 | 0.76 |
| 51:1:1394:U:H4' | 51:1:1603:A:H4' | 1.66 | 0.76 |
| 51:1:548:G:H2' | 51:1:549:G:O4' | 1.84 | 0.76 |
| 51:1:275:C:H3' | 51:1:276:U:H5" | 1.66 | 0.75 |
| 58:B1:68:TYR:C | 58:B1:75:TYR:CE2 | 2.65 | 0.75 |
| 51:1:2792:A:C2' | 51:1:2793:C:H5" | 2.16 | 0.75 |
| 51:1:958:U:H2' | 52:2:89:U:O2 | 1.87 | 0.75 |
| 51:1:1020:A:H5' | 51:1:1021:A:C8 | 2.22 | 0.74 |
| 51:1:1773:A:H2' | 51:1:1774:C:H5' | 1.68 | 0.74 |
| 51:1:1425:G:H2' | 51:1:1426:G:C8 | 2.23 | 0.74 |
| 51:1:1555:G:H5' | 51:1:1555:G:H8 | 1.51 | 0.74 |
| 51:1:2611:C:O2 | 51:1:2611:C:H2' | 1.86 | 0.74 |
| 51:1:1083:U:H2' | 51:1:1085:A:OP2 | 1.87 | 0.74 |
| 51:1:1061:U:H3' | 51:1:1062:G:C5' | 2.18 | 0.74 |
| 51:1:2432:A:H1' | 64:7:75:C:O4' | 1.86 | 0.74 |
| 55:8:3:DC:H2' | 55:8:4:DT:H72 | 1.69 | 0.74 |
| 51:1:2097:A:H2' | 51:1:2098:U:H6 | 1.50 | 0.74 |
| 53:3:456:A:H61 | 53:3:476:U:H3 | 1.36 | 0.74 |
| 37:m:14:LYS:NZ | 51:1:956:G:N7 | 2.35 | 0.74 |
| 51:1:543:G:H2' | 51:1:544:C:H5" | 1.68 | 0.73 |
| 51:1:1310:G:H2' | 51:1:1311:G:H5' | 1.69 | 0.73 |
| 58:B1:107:LEU:HD11 | 58:B1:242:LEU:HB2 | 1.70 | 0.73 |
| 51:1:545:U:H2' | 51:1:546:U:O4' | 1.88 | 0.73 |
| 51:1:322:A:H5' | 51:1:340:A:C1' | 2.19 | 0.73 |
| 51:1:1670:C:H2' | 51:1:1671:U:H5' | 1.70 | 0.73 |
| 51:1:481:G:H1' | 51:1:506:G:N2 | 2.04 | 0.73 |
| 58:B1:110:PRO:HG2 | 58:B1:183:GLU:HG3 | 1.68 | 0.73 |
| 58:B1:210:SER:HB3 | 58:B1:213:LYS:HB2 | 1.71 | 0.73 |
| 51:1:404:A:H1' | 51:1:406:G:C4 | 2.23 | 0.73 |
| 51:1:1433:A:H2' | 51:1:1434:A:O4' | 1.89 | 0.73 |
| 51:1:2834:G:H2' | 51:1:2879:A:H61 | 1.54 | 0.73 |
| 58:B1:105:ILE:HD12 | 58:B1:242:LEU:HD22 | 1.71 | 0.73 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 58:B1:282:LEU:HA | 58:B1:286:ALA:HA | 1.70 | 0.73 |
| 31:f:15:ASP:HB3 | 31:f:26:LYS:H | 1.54 | 0.72 |
| 58:B1:142:GLU:HG3 | 58:B1:142:GLU:O | 1.89 | 0.72 |
| 51:1:1942:C:H3' | 51:1:1943:U:H2' | 1.70 | 0.72 |
| 55:8:3:DC:C2' | 55:8:4:DT:H72 | 2.19 | 0.72 |
| 58:B1:1143:ASP:OD1 | 58:B1:1148:ARG:NH1 | 2.21 | 0.72 |
| 64:7:50:U:H2' | 64:7:51:C:C4 | 2.24 | 0.72 |
| 51:1:2036:C:H2' | 51:1:2037:A:C8 | 2.23 | 0.72 |
| 58:B1:220:ARG:HG2 | 58:B1:220:ARG:HH11 | 1.54 | 0.72 |
| 51:1:864:G:O2' | 51:1:865:C:H5' | 1.89 | 0.72 |
| 51:1:2713:U:C3' | 51:1:2714:G:C5' | 2.67 | 0.72 |
| 51:1:1795:C:H2' | 51:1:1796:U:O4' | 1.90 | 0.72 |
| 51:1:2671:G:H2' | 51:1:2672:U:C6 | 2.25 | 0.72 |
| 58:B1:211:GLU:HG2 | 58:B1:215:LYS:HE3 | 1.70 | 0.72 |
| 53:3:452:A:H61 | 53:3:480:U:H3 | 1.37 | 0.71 |
| 51:1:1872:A:H2' | 51:1:1873:G:O4' | 1.89 | 0.71 |
| 51:1:1858:A:H1' | 51:1:1885:A:C2 | 2.26 | 0.71 |
| 17:Q:33:CYS:HA | 17:Q:54:VAL:HG12 | 1.70 | 0.71 |
| 51:1:890:C:C2' | 51:1:891:G:H5' | 2.21 | 0.71 |
| 51:1:1441:G:H2' | 51:1:1442:U:C6 | 2.25 | 0.71 |
| 58:B1:93:THR:HB | 58:B1:97:VAL:HG21 | 1.73 | 0.71 |
| 58:B1:352:ARG:HD2 | 59:B2:1268:GLN:HE22 | 1.55 | 0.71 |
| 51:1:394:C:H2' | 51:1:395:U:O4' | 1.90 | 0.71 |
| 51:1:1386:C:H2' | 51:1:1387:A:H8 | 1.56 | 0.71 |
| 53:3:1491:G:C6 | 65:h:2:DPP:HB3 | 2.25 | 0.71 |
| 58:B1:157:GLN:OE1 | 58:B1:157:GLN:HA | 1.89 | 0.71 |
| 36:l:59:ARG:HD2 | 51:1:250:G:H4' | 1.71 | 0.71 |
| 51:1:2151:U:H2' | 51:1:2152:G:H8 | 1.56 | 0.71 |
| 53:3:663:A:H61 | 53:3:742:G:H1 | 1.39 | 0.71 |
| 58:B1:128:LEU:HD11 | 58:B1:189:LEU:HG | 1.73 | 0.71 |
| 51:1:633:A:H2' | 51:1:634:C:H5' | 1.72 | 0.70 |
| 51:1:2297:A:N1 | 51:1:2321:U:H5 | 1.89 | 0.70 |
| 51:1:723:C:H2' | 51:1:724:U:C6 | 2.27 | 0.70 |
| 51:1:1983:G:O2' | 51:1:1984:G:H5' | 1.91 | 0.70 |
| 51:1:1019:U:H3 | 51:1:1142:A:N6 | 1.89 | 0.70 |
| 51:1:368:A:C2' | 51:1:369:U:H5' | 2.20 | 0.70 |
| 65:h:6:5OH:N | 65:h:6:5OH:HS | 2.07 | 0.70 |
| 51:1:2267:A:H5" | 51:1:2268:A:H5" | 1.74 | 0.70 |
| 51:1:1292:G:H2' | 51:1:1293:C:C6 | 2.27 | 0.70 |
| 34:j:7:LYS:HG2 | 51:1:538:A:H4' | 1.73 | 0.70 |
| 51:1:2151:U:H2' | 51:1:2152:G:C8 | 2.27 | 0.70 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 27:b:47:ARG:NH2 | 51:1:774:G:H5” | 2.07 | 0.70 |
| 51:1:612:G:H2’ | 51:1:614:A:C8 | 2.26 | 0.70 |
| 51:1:1102:C:H2’ | 51:1:1103:A:C8 | 2.22 | 0.69 |
| 42:r:79:ARG:NH1 | 51:1:572:A:OP2 | 2.25 | 0.69 |
| 51:1:1670:C:C2’ | 51:1:1671:U:H5’ | 2.21 | 0.69 |
| 59:B2:65:ASN:HB3 | 59:B2:105:TYR:HB2 | 1.74 | 0.69 |
| 51:1:319:G:H1 | 51:1:323:C:H5 | 1.41 | 0.69 |
| 51:1:940:G:H2’ | 51:1:941:A:H5” | 1.73 | 0.69 |
| 51:1:1555:G:H5’ | 51:1:1555:G:C8 | 2.27 | 0.69 |
| 51:1:1889:A:H2’ | 51:1:1890:A:H8 | 1.58 | 0.69 |
| 51:1:322:A:H5’ | 51:1:340:A:H1’ | 1.73 | 0.69 |
| 51:1:419:U:H2’ | 51:1:420:C:C6 | 2.27 | 0.69 |
| 51:1:1337:G:H2’ | 51:1:1338:G:H8 | 1.57 | 0.69 |
| 51:1:2092:U:H4’ | 51:1:2093:G:H5” | 1.75 | 0.69 |
| 51:1:2114:A:H2 | 51:1:2167:U:H1’ | 1.58 | 0.69 |
| 36:l:30:THR:HG22 | 51:1:810:U:O4 | 1.93 | 0.69 |
| 51:1:282:A:H2’ | 51:1:283:G:H8 | 1.57 | 0.69 |
| 51:1:392:U:H2’ | 51:1:393:C:H6 | 1.58 | 0.69 |
| 65:h:4:SER:O | 65:h:5:UAL:N1 | 2.26 | 0.69 |
| 8:H:117:ASP:HA | 8:H:120:THR:HG22 | 1.75 | 0.69 |
| 51:1:849:A:H2’ | 51:1:850:U:H6 | 1.58 | 0.69 |
| 57:A1:297:LYS:CB | 61:NA:79:ALA:HB1 | 2.22 | 0.69 |
| 51:1:644:A:H2’ | 51:1:645:C:C5’ | 2.21 | 0.69 |
| 51:1:2626:C:O2’ | 51:1:2627:G:H5’ | 1.91 | 0.69 |
| 58:B1:243:PRO:HG2 | 59:B2:1332:SER:O | 1.93 | 0.69 |
| 58:B1:832:LYS:C | 58:B1:1242:ARG:HH12 | 2.01 | 0.69 |
| 50:z:38:GLU:OE2 | 51:1:928:A:H5’ | 1.94 | 0.68 |
| 51:1:905:A:C2’ | 51:1:906:U:H5’ | 2.23 | 0.68 |
| 51:1:1137:G:O2’ | 51:1:1138:G:H5’ | 1.92 | 0.68 |
| 51:1:2869:G:H2’ | 51:1:2870:C:C6 | 2.28 | 0.68 |
| 58:B1:39:LYS:O | 58:B1:273:ILE:CG2 | 2.41 | 0.68 |
| 51:1:528:A:C8 | 51:1:528:A:H3’ | 2.27 | 0.68 |
| 51:1:2510:C:N4 | 51:1:2511:U:O4 | 2.27 | 0.68 |
| 55:8:3:DC:C6 | 55:8:4:DT:H72 | 2.29 | 0.68 |
| 58:B1:141:PHE:CD2 | 58:B1:293:ARG:O | 2.47 | 0.68 |
| 51:1:1999:C:H5” | 51:1:2723:C:O2’ | 1.94 | 0.68 |
| 51:1:2403:C:O2’ | 51:1:2404:U:H5’ | 1.92 | 0.68 |
| 51:1:2747:G:O6 | 51:1:2755:C:H5” | 1.93 | 0.68 |
| 51:1:419:U:H2’ | 51:1:420:C:H6 | 1.58 | 0.68 |
| 51:1:2758:A:H2’ | 51:1:2759:G:H5’ | 1.75 | 0.68 |
| 52:2:65:U:H3’ | 52:2:108:A:H61 | 1.58 | 0.68 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 48:x:16:ASN:ND2 | 48:x:26:ARG:HB3 | 2.09 | 0.68 |
| 51:1:402:A:H2' | 51:1:403:U:H5' | 1.74 | 0.68 |
| 51:1:1063:G:H1 | 51:1:1075:C:H41 | 1.42 | 0.68 |
| 51:1:1082:U:H3' | 51:1:1083:U:C5' | 2.22 | 0.68 |
| 51:1:1702:G:C3' | 51:1:1703:G:H5" | 2.24 | 0.68 |
| 51:1:894:U:H2' | 51:1:895:U:O4' | 1.93 | 0.68 |
| 51:1:1061:U:H3' | 51:1:1062:G:H5' | 1.76 | 0.67 |
| 51:1:1078:U:H2' | 51:1:1088:A:OP1 | 1.94 | 0.67 |
| 58:B1:984:LEU:HB3 | 58:B1:993:GLU:HB2 | 1.77 | 0.67 |
| 51:1:226:A:H2' | 51:1:227:A:O4' | 1.93 | 0.67 |
| 55:8:23:DC:H2" | 55:8:24:DC:C5 | 2.30 | 0.67 |
| 58:B1:161:THR:HG22 | 58:B1:164:GLN:HB2 | 1.75 | 0.67 |
| 9:I:73:ASN:HA | 9:I:76:LYS:HB2 | 1.77 | 0.67 |
| 58:B1:117:LEU:HD12 | 58:B1:117:LEU:O | 1.94 | 0.67 |
| 51:1:1484:U:H2' | 51:1:1485:U:C6 | 2.30 | 0.67 |
| 51:1:1889:A:H2' | 51:1:1890:A:C8 | 2.29 | 0.67 |
| 53:3:437:U:H3 | 53:3:495:A:H62 | 1.42 | 0.67 |
| 51:1:246:C:H2' | 51:1:247:G:H5' | 1.76 | 0.67 |
| 51:1:1432:G:O2' | 51:1:1433:A:H5' | 1.94 | 0.67 |
| 51:1:2157:G:H2' | 51:1:2158:A:H2 | 1.59 | 0.67 |
| 51:1:1717:A:H2' | 51:1:1718:G:H5' | 1.77 | 0.67 |
| 51:1:2278:A:C3' | 51:1:2279:G:H5" | 2.25 | 0.67 |
| 63:5:47:U:H4' | 63:5:48:C:H5' | 1.75 | 0.67 |
| 51:1:2898:U:H2' | 51:1:2899:A:C8 | 2.29 | 0.67 |
| 36:l:39:LYS:NZ | 51:1:942:G:OP2 | 2.28 | 0.67 |
| 51:1:1270:C:H5" | 51:1:1271:G:H5' | 1.77 | 0.67 |
| 51:1:1438:U:O2' | 51:1:1439:A:H5' | 1.94 | 0.67 |
| 4:D:37:LYS:HD3 | 4:D:39:ARG:HD3 | 1.77 | 0.67 |
| 51:1:703:U:C2' | 51:1:704:G:H5' | 2.25 | 0.67 |
| 51:1:905:A:H2' | 51:1:906:U:H5' | 1.77 | 0.67 |
| 51:1:2555:U:H2' | 51:1:2556:C:H5' | 1.78 | 0.67 |
| 58:B1:108:ALA:CB | 58:B1:279:LEU:HD22 | 2.25 | 0.67 |
| 51:1:466:A:H2' | 51:1:467:G:H5' | 1.76 | 0.66 |
| 51:1:2516:A:O2' | 51:1:2517:C:H5' | 1.95 | 0.66 |
| 51:1:2595:G:N2 | 51:1:2598:A:OP2 | 2.23 | 0.66 |
| 58:B1:978:ARG:HG2 | 58:B1:1197:ASN:HD21 | 1.61 | 0.66 |
| 51:1:707:G:O2' | 51:1:708:G:H5' | 1.94 | 0.66 |
| 51:1:1176:U:H2' | 51:1:1177:G:C8 | 2.29 | 0.66 |
| 51:1:2233:U:H2' | 51:1:2234:G:C8 | 2.30 | 0.66 |
| 58:B1:1037:PHE:HB3 | 58:B1:1040:MET:HB2 | 1.77 | 0.66 |
| 51:1:673:C:H2' | 51:1:674:G:H5' | 1.77 | 0.66 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 58:B1:1355:ARG:NH1 | 58:B1:1369:ARG:HH12 | 1.92 | 0.66 |
| 45:u:25:LYS:HD3 | 45:u:36:GLU:HB3 | 1.75 | 0.66 |
| 51:1:1020:A:H1' | 51:1:1021:A:OP2 | 1.95 | 0.66 |
| 51:1:1733:G:O2' | 51:1:1734:G:H5' | 1.95 | 0.66 |
| 51:1:2013:A:H5" | 51:1:2013:A:H8 | 1.59 | 0.66 |
| 51:1:2733:A:O2' | 51:1:2734:A:H5' | 1.96 | 0.66 |
| 51:1:2221:G:O2' | 51:1:2222:C:H5' | 1.95 | 0.66 |
| 51:1:2233:U:H2' | 51:1:2234:G:H8 | 1.59 | 0.66 |
| 51:1:2278:A:H3' | 51:1:2279:G:H5" | 1.78 | 0.66 |
| 51:1:112:U:H2' | 51:1:113:U:H5' | 1.76 | 0.66 |
| 17:Q:109:ARG:HH21 | 17:Q:112:ALA:HB3 | 1.60 | 0.66 |
| 28:c:4:LEU:HD23 | 28:c:29:VAL:HG11 | 1.77 | 0.66 |
| 51:1:414:C:H2' | 51:1:415:A:C8 | 2.30 | 0.66 |
| 51:1:521:U:H2' | 51:1:522:A:C8 | 2.31 | 0.66 |
| 51:1:1064:C:N4 | 51:1:1069:A:H5" | 2.09 | 0.66 |
| 51:1:2625:G:H2' | 51:1:2626:C:C6 | 2.30 | 0.66 |
| 17:Q:47:ALA:HB3 | 17:Q:49:ARG:HE | 1.60 | 0.66 |
| 51:1:1098:A:H2' | 51:1:1099:G:H5' | 1.77 | 0.66 |
| 51:1:2844:G:H2' | 51:1:2845:U:C6 | 2.31 | 0.66 |
| 58:B1:285:LEU:HB2 | 62:NG:111:ILE:HA | 1.78 | 0.66 |
| 33:i:27:LEU:HD22 | 33:i:32:VAL:HG21 | 1.78 | 0.66 |
| 51:1:2193:G:H2' | 51:1:2194:U:C6 | 2.31 | 0.66 |
| 58:B1:193:ASP:HB3 | 58:B1:196:GLN:HB2 | 1.78 | 0.66 |
| 51:1:65:U:H2' | 51:1:66:C:H6 | 1.59 | 0.66 |
| 51:1:528:A:H3' | 51:1:528:A:H8 | 1.60 | 0.66 |
| 51:1:635:C:H2' | 51:1:636:G:C8 | 2.31 | 0.66 |
| 51:1:644:A:C2' | 51:1:645:C:H5" | 2.22 | 0.66 |
| 51:1:870:U:C2' | 51:1:871:U:H5' | 2.26 | 0.66 |
| 51:1:1746:A:H2' | 51:1:1747:U:C6 | 2.31 | 0.66 |
| 51:1:1788:C:O2' | 51:1:1789:A:H5' | 1.96 | 0.66 |
| 38:n:63:ARG:NE | 51:1:1454:C:H5' | 2.10 | 0.65 |
| 51:1:2760:C:O2' | 51:1:2761:A:H5' | 1.96 | 0.65 |
| 58:B1:395:LYS:HZ2 | 58:B1:399:LYS:CD | 2.10 | 0.65 |
| 27:b:227:VAL:HG11 | 51:1:784:G:C2 | 2.31 | 0.65 |
| 51:1:1572:A:O2' | 51:1:1573:G:H5' | 1.97 | 0.65 |
| 7:G:67:LEU:HD12 | 7:G:153:MET:HE1 | 1.77 | 0.65 |
| 51:1:359:G:O2' | 51:1:360:U:H5' | 1.97 | 0.65 |
| 51:1:488:G:N2 | 51:1:491:G:H5" | 2.11 | 0.65 |
| 51:1:536:G:H2' | 51:1:537:G:H5' | 1.79 | 0.65 |
| 51:1:1098:A:C2' | 51:1:1099:G:H5' | 2.27 | 0.65 |
| 51:1:1270:C:H5" | 51:1:1271:G:C5' | 2.25 | 0.65 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 51:1:2052:A:O2' | 51:1:2053:G:H5' | 1.96 | 0.65 |
| 51:1:2170:A:H2' | 51:1:2171:A:O4' | 1.97 | 0.65 |
| 19:S:38:GLU:HA | 19:S:41:TRP:HB3 | 1.79 | 0.65 |
| 51:1:613:A:H5" | 51:1:614:A:C8 | 2.32 | 0.65 |
| 51:1:1796:U:H2' | 51:1:1797:G:H8 | 1.61 | 0.65 |
| 51:1:2290:G:H2' | 51:1:2291:U:C6 | 2.32 | 0.65 |
| 51:1:543:G:H2' | 51:1:544:C:C5' | 2.26 | 0.65 |
| 51:1:1666:G:H2' | 51:1:1667:G:C5' | 2.24 | 0.65 |
| 51:1:1853:A:H2' | 51:1:1854:A:C8 | 2.32 | 0.65 |
| 58:B1:108:ALA:HB3 | 58:B1:279:LEU:HD22 | 1.77 | 0.65 |
| 58:B1:141:PHE:HD2 | 58:B1:293:ARG:O | 1.79 | 0.65 |
| 43:s:6:LYS:HB2 | 51:1:494:G:H4' | 1.78 | 0.65 |
| 53:3:85:U:H5" | 53:3:86:G:H5' | 1.78 | 0.65 |
| 55:8:3:DC:C2' | 55:8:4:DT:C7 | 2.75 | 0.65 |
| 55:8:13:DT:OP2 | 58:B1:791:ALA:HB1 | 1.95 | 0.65 |
| 28:c:149:ASN:HB3 | 51:1:2572:A:OP2 | 1.97 | 0.64 |
| 51:1:2792:A:H3' | 51:1:2793:C:H5" | 1.80 | 0.64 |
| 59:B2:906:PHE:CE2 | 61:NA:102:PHE:CB | 2.81 | 0.64 |
| 51:1:201:C:O2' | 51:1:202:U:H5' | 1.97 | 0.64 |
| 51:1:905:A:O2' | 51:1:906:U:H5' | 1.97 | 0.64 |
| 51:1:1766:G:O2' | 51:1:1767:G:H5' | 1.98 | 0.64 |
| 51:1:2834:G:O2' | 51:1:2835:A:H5' | 1.97 | 0.64 |
| 58:B1:111:THR:CG2 | 58:B1:300:GLN:CD | 2.67 | 0.64 |
| 59:B2:314:ASN:HD21 | 59:B2:348:SER:HA | 1.62 | 0.64 |
| 4:D:24:THR:HG23 | 4:D:27:GLY:H | 1.61 | 0.64 |
| 16:P:19:VAL:HG22 | 16:P:82:GLU:HB2 | 1.79 | 0.64 |
| 51:1:870:U:H2' | 51:1:871:U:H5' | 1.79 | 0.64 |
| 51:1:2114:A:N7 | 51:1:2115:G:H1' | 2.12 | 0.64 |
| 58:B1:162:GLU:HA | 58:B1:162:GLU:OE1 | 1.97 | 0.64 |
| 58:B1:245:LEU:HG | 58:B1:246:PRO:HD2 | 1.80 | 0.64 |
| 51:1:256:A:O2' | 51:1:257:C:H5' | 1.98 | 0.64 |
| 51:1:306:U:H2' | 51:1:307:G:O4' | 1.98 | 0.64 |
| 51:1:414:C:H2' | 51:1:415:A:H8 | 1.63 | 0.64 |
| 51:1:622:G:O2' | 51:1:623:C:H5' | 1.98 | 0.64 |
| 51:1:2112:G:C2' | 51:1:2113:U:H5' | 2.27 | 0.64 |
| 12:L:59:GLU:HA | 12:L:62:GLU:HB3 | 1.80 | 0.64 |
| 31:f:154:GLU:HG3 | 31:f:156:TYR:H | 1.61 | 0.64 |
| 51:1:940:G:C3' | 51:1:941:A:H5" | 2.28 | 0.64 |
| 51:1:1857:G:H22 | 51:1:1884:G:H2' | 1.62 | 0.64 |
| 11:K:38:ARG:HE | 11:K:97:THR:HA | 1.62 | 0.64 |
| 27:b:106:PRO:HD2 | 27:b:109:LEU:HD22 | 1.79 | 0.64 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 51:1:65:U:H2' | 51:1:66:C:C6 | 2.33 | 0.64 |
| 58:B1:68:TYR:HB3 | 58:B1:75:TYR:CE2 | 2.32 | 0.64 |
| 51:1:703:U:H2' | 51:1:704:G:H5' | 1.77 | 0.64 |
| 58:B1:201:LEU:HB2 | 58:B1:221:ILE:HD13 | 1.80 | 0.64 |
| 58:B1:1357:ILE:HD11 | 59:B2:1287:LEU:HD13 | 1.80 | 0.64 |
| 51:1:1161:C:H2' | 51:1:1162:G:H8 | 1.61 | 0.63 |
| 26:Z:32:ARG:HG2 | 26:Z:33:ARG:HG3 | 1.80 | 0.63 |
| 51:1:2404:U:O2' | 51:1:2405:G:H5' | 1.97 | 0.63 |
| 51:1:2811:G:O2' | 51:1:2812:G:H5' | 1.97 | 0.63 |
| 62:NG:128:PHE:CB | 62:NG:158:LEU:CB | 2.75 | 0.63 |
| 26:Z:65:ARG:NH2 | 53:3:1087:G:N3 | 2.47 | 0.63 |
| 51:1:2073:C:O2' | 51:1:2074:U:H5' | 1.98 | 0.63 |
| 58:B1:975:ILE:HG22 | 58:B1:977:SER:H | 1.62 | 0.63 |
| 51:1:2469:A:H2' | 51:1:2470:G:O4' | 1.98 | 0.63 |
| 51:1:2799:A:C2' | 51:1:2800:A:H5' | 2.27 | 0.63 |
| 53:3:1490:U:H2' | 53:3:1491:G:C8 | 2.33 | 0.63 |
| 16:P:87:GLY:H | 16:P:113:THR:HG22 | 1.62 | 0.63 |
| 51:1:161:A:N7 | 51:1:162:U:H5 | 1.96 | 0.63 |
| 51:1:1280:G:O2' | 51:1:1281:G:H5' | 1.99 | 0.63 |
| 9:I:152:SER:H | 9:I:155:LYS:HD3 | 1.63 | 0.63 |
| 51:1:212:G:O2' | 51:1:213:A:H5' | 1.99 | 0.63 |
| 51:1:815:C:C2 | 51:1:1193:G:N2 | 2.66 | 0.63 |
| 51:1:1164:C:O2' | 51:1:1165:A:H5' | 1.99 | 0.63 |
| 51:1:317:G:H2' | 51:1:318:C:H6 | 1.64 | 0.63 |
| 51:1:2636:C:H2' | 51:1:2637:U:H6 | 1.64 | 0.63 |
| 59:B2:120:GLN:NE2 | 59:B2:490:GLN:OE1 | 2.32 | 0.63 |
| 51:1:1909:C:H2' | 51:1:1910:G:H8 | 1.64 | 0.63 |
| 51:1:1921:G:O2' | 51:1:1922:G:H5' | 1.98 | 0.63 |
| 53:3:373:A:H61 | 53:3:391:G:H1' | 1.64 | 0.63 |
| 58:B1:128:LEU:HA | 58:B1:192:MET:HE1 | 1.81 | 0.63 |
| 7:G:173:LYS:O | 7:G:177:ASN:ND2 | 2.32 | 0.62 |
| 34:j:45:THR:HB | 34:j:48:VAL:HG22 | 1.81 | 0.62 |
| 51:1:872:U:O2' | 51:1:873:C:H5' | 1.99 | 0.62 |
| 51:1:1038:G:H2' | 51:1:1039:A:C8 | 2.32 | 0.62 |
| 51:1:1149:G:H2' | 51:1:1150:C:C6 | 2.34 | 0.62 |
| 51:1:1524:G:H2' | 51:1:1525:A:H8 | 1.63 | 0.62 |
| 51:1:2898:U:H2' | 51:1:2899:A:H8 | 1.64 | 0.62 |
| 58:B1:1355:ARG:NH1 | 58:B1:1369:ARG:NH1 | 2.47 | 0.62 |
| 51:1:1181:U:H2' | 51:1:1182:G:C8 | 2.33 | 0.62 |
| 58:B1:285:LEU:HD13 | 58:B1:285:LEU:H | 1.63 | 0.62 |
| 51:1:37:C:O2' | 51:1:38:A:H5' | 1.99 | 0.62 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 51:1:445:C:H2' | 51:1:446:G:O4' | 1.98 | 0.62 |
| 51:1:554:U:H2' | 51:1:555:G:O4' | 1.99 | 0.62 |
| 51:1:1935:G:H1' | 51:1:1964:G:N2 | 2.15 | 0.62 |
| 51:1:2298:A:H2' | 51:1:2299:U:O4' | 1.99 | 0.62 |
| 51:1:2314:A:H2' | 51:1:2315:G:C8 | 2.33 | 0.62 |
| 51:1:1448:G:H2' | 51:1:1449:G:H8 | 1.64 | 0.62 |
| 51:1:2092:U:H5 | 51:1:2199:A:H2 | 1.48 | 0.62 |
| 55:8:3:DC:H2' | 55:8:4:DT:C7 | 2.30 | 0.62 |
| 1:A:1:MET:HG2 | 52:2:43:C:H5" | 1.82 | 0.62 |
| 16:P:45:THR:HG23 | 16:P:48:GLY:H | 1.65 | 0.62 |
| 16:P:58:THR:HG22 | 16:P:60:PHE:H | 1.65 | 0.62 |
| 44:t:53:VAL:HG12 | 44:t:92:ASN:HD22 | 1.65 | 0.62 |
| 51:1:1086:A:H5' | 51:1:1103:A:H2 | 1.65 | 0.62 |
| 51:1:2734:A:H2' | 51:1:2735:G:H5' | 1.82 | 0.62 |
| 58:B1:111:THR:CG2 | 58:B1:300:GLN:NE2 | 2.63 | 0.62 |
| 7:G:179:GLY:HA3 | 61:NA:243:LYS:CB | 2.29 | 0.62 |
| 51:1:889:C:H2' | 51:1:890:C:O4' | 1.99 | 0.62 |
| 58:B1:918:ILE:HG22 | 59:B2:1280:ALA:HB1 | 1.79 | 0.62 |
| 51:1:941:A:H2' | 51:1:942:G:O4' | 2.00 | 0.62 |
| 64:7:46:G:C2' | 64:7:47:U:H5' | 2.29 | 0.62 |
| 51:1:590:A:O2' | 51:1:591:U:H5' | 2.00 | 0.62 |
| 51:1:1680:U:H2' | 51:1:1681:G:O4' | 2.00 | 0.62 |
| 58:B1:461:PHE:HD2 | 59:B2:813:GLU:HB2 | 1.61 | 0.62 |
| 22:V:30:HIS:HD2 | 22:V:33:TYR:H | 1.48 | 0.61 |
| 28:c:181:ASP:HB3 | 28:c:186:LEU:HB2 | 1.82 | 0.61 |
| 34:j:3:THR:N | 51:1:995:C:N3 | 2.48 | 0.61 |
| 45:u:87:GLU:HG2 | 45:u:92:VAL:HG21 | 1.82 | 0.61 |
| 51:1:161:A:H3' | 51:1:162:U:H5" | 1.81 | 0.61 |
| 51:1:236:C:H2' | 51:1:237:C:H6 | 1.64 | 0.61 |
| 51:1:2097:A:H2' | 51:1:2098:U:O4' | 2.00 | 0.61 |
| 51:1:2637:U:H2' | 51:1:2638:G:H5' | 1.82 | 0.61 |
| 58:B1:144:TYR:CE1 | 58:B1:162:GLU:OE2 | 2.51 | 0.61 |
| 58:B1:223:LEU:HG | 58:B1:223:LEU:O | 2.00 | 0.61 |
| 59:B2:1282:GLY:HA3 | 60:W0:17:PHE:HE1 | 1.63 | 0.61 |
| 51:1:2345:G:N3 | 51:1:2381:A:H2' | 2.15 | 0.61 |
| 51:1:2404:U:H2' | 51:1:2405:G:O4' | 2.00 | 0.61 |
| 30:e:9:ASP:OD1 | 30:e:9:ASP:N | 2.33 | 0.61 |
| 57:A1:38:THR:HB | 57:A2:45:ARG:HD3 | 1.82 | 0.61 |
| 31:f:174:LYS:HG3 | 51:1:2529:G:C4' | 2.29 | 0.61 |
| 34:j:132:HIS:CD2 | 51:1:7:G:H5' | 2.35 | 0.61 |
| 51:1:11:C:C2' | 51:1:12:U:H5" | 2.29 | 0.61 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 51:1:1503:A:H3' | 51:1:1504:A:H5" | 1.81 | 0.61 |
| 58:B1:68:TYR:HB3 | 58:B1:75:TYR:CZ | 2.35 | 0.61 |
| 51:1:322:A:H5' | 51:1:340:A:O4' | 2.00 | 0.61 |
| 51:1:1040:A:H2 | 51:1:1115:G:H22 | 1.48 | 0.61 |
| 58:B1:1161:GLY:HA3 | 58:B1:1179:PRO:HA | 1.82 | 0.61 |
| 59:B2:528:ARG:NH2 | 59:B2:576:SER:O | 2.30 | 0.61 |
| 7:G:15:PHE:HB2 | 7:G:39:ILE:HG23 | 1.82 | 0.61 |
| 51:1:1954:G:H1' | 51:1:1956:U:O4 | 2.01 | 0.61 |
| 59:B2:55:SER:OG | 59:B2:465:ARG:NH1 | 2.33 | 0.61 |
| 4:D:3:ARG:O | 4:D:6:GLN:NE2 | 2.33 | 0.61 |
| 32:g:50:ARG:HH22 | 32:g:51:ARG:HH21 | 1.49 | 0.61 |
| 51:1:547:A:H3' | 51:1:547:A:N3 | 2.16 | 0.61 |
| 51:1:940:G:C2' | 51:1:941:A:H5" | 2.30 | 0.61 |
| 55:8:1:DC:H2" | 55:8:2:DC:C5 | 2.35 | 0.61 |
| 51:1:1553:A:HO2' | 51:1:1554:U:H5 | 1.48 | 0.61 |
| 58:B1:395:LYS:HZ2 | 58:B1:399:LYS:HD3 | 1.65 | 0.61 |
| 63:5:39:U:H2' | 63:5:40:C:C6 | 2.36 | 0.61 |
| 33:i:135:MET:HE2 | 51:1:1062:G:H21 | 1.65 | 0.61 |
| 34:j:39:LYS:HE3 | 51:1:1009:A:OP1 | 2.01 | 0.61 |
| 51:1:1948:G:H21 | 53:3:1418:A:H2 | 1.49 | 0.61 |
| 51:1:2188:U:H2' | 51:1:2189:U:O4' | 2.01 | 0.61 |
| 51:1:2852:G:O2' | 51:1:2853:C:H5' | 2.01 | 0.61 |
| 51:1:172:A:H2' | 51:1:173:A:H8 | 1.66 | 0.61 |
| 53:3:1032:G:H21 | 53:3:1033:G:H4' | 1.64 | 0.61 |
| 58:B1:395:LYS:NZ | 58:B1:399:LYS:HD3 | 2.15 | 0.61 |
| 51:1:558:U:H6 | 51:1:558:U:O5' | 1.84 | 0.60 |
| 51:1:1775:U:C2' | 51:1:1776:G:H5' | 2.30 | 0.60 |
| 55:8:13:DT:C7 | 58:B1:791:ALA:HB2 | 2.29 | 0.60 |
| 58:B1:100:GLU:HA | 59:B2:1328:LYS:HE2 | 1.82 | 0.60 |
| 7:G:86:CYS:SG | 7:G:87:ASP:N | 2.74 | 0.60 |
| 29:d:149:ILE:HG23 | 29:d:188:MET:HB3 | 1.83 | 0.60 |
| 37:m:17:ASN:O | 37:m:38:ARG:NH1 | 2.34 | 0.60 |
| 51:1:435:C:H2' | 51:1:436:C:H5' | 1.82 | 0.60 |
| 51:1:1508:A:H2' | 51:1:1509:A:O4' | 2.01 | 0.60 |
| 51:1:1775:U:H2' | 51:1:1776:G:C5' | 2.29 | 0.60 |
| 51:1:2812:G:H2' | 51:1:2813:A:C8 | 2.36 | 0.60 |
| 47:w:38:GLY:HA2 | 51:1:2330:G:H21 | 1.66 | 0.60 |
| 51:1:198:C:H42 | 51:1:248:G:H1 | 1.49 | 0.60 |
| 51:1:1717:A:C2' | 51:1:1718:G:H5' | 2.31 | 0.60 |
| 51:1:2386:A:O2' | 51:1:2387:U:H5' | 2.01 | 0.60 |
| 17:Q:40:THR:OG1 | 65:h:6:5OH:HR | 2.02 | 0.60 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 27:b:153:LEU:HD23 | 51:1:1799:G:C2 | 2.37 | 0.60 |
| 51:1:1287:A:C5 | 51:1:1288:G:C6 | 2.89 | 0.60 |
| 51:1:2327:A:H2' | 51:1:2328:A:C8 | 2.35 | 0.60 |
| 53:3:1351:U:H3 | 53:3:1371:G:H1 | 1.49 | 0.60 |
| 51:1:2093:G:O2' | 51:1:2094:A:H5' | 2.01 | 0.60 |
| 51:1:2804:U:H2' | 51:1:2805:C:C6 | 2.36 | 0.60 |
| 53:3:1133:G:H1 | 53:3:1141:C:H42 | 1.48 | 0.60 |
| 57:A1:211:ILE:HG12 | 57:A1:219:ARG:HH12 | 1.65 | 0.60 |
| 58:B1:342:LEU:HD23 | 58:B1:1352:ILE:HG23 | 1.83 | 0.60 |
| 58:B1:770:LEU:HD13 | 59:B2:618:GLN:CG | 2.30 | 0.60 |
| 14:N:40:ARG:NH2 | 14:N:41:GLU:OE2 | 2.34 | 0.60 |
| 37:m:86:LYS:NZ | 51:1:955:U:OP1 | 2.33 | 0.60 |
| 39:o:4:LYS:HD3 | 39:o:7:ARG:HH21 | 1.65 | 0.60 |
| 51:1:1857:G:N2 | 51:1:1884:G:H2' | 2.17 | 0.60 |
| 58:B1:750:PRO:CB | 59:B2:549:ASP:OD2 | 2.45 | 0.60 |
| 51:1:1183:U:H2' | 51:1:1184:U:C6 | 2.37 | 0.60 |
| 51:1:1198:U:H2' | 51:1:1199:U:C6 | 2.37 | 0.60 |
| 51:1:1437:C:H2' | 51:1:1438:U:C6 | 2.36 | 0.60 |
| 51:1:2187:U:O2' | 51:1:2188:U:H5' | 2.02 | 0.60 |
| 58:B1:951:GLN:NE2 | 58:B1:1014:GLY:O | 2.35 | 0.60 |
| 51:1:1071:G:H1' | 51:1:1089:A:C8 | 2.37 | 0.60 |
| 51:1:1538:G:H2' | 51:1:1539:U:C6 | 2.37 | 0.60 |
| 51:1:2137:U:H2' | 51:1:2138:G:H8 | 1.67 | 0.60 |
| 53:3:1040:U:H2' | 53:3:1041:G:H8 | 1.67 | 0.60 |
| 57:A1:112:ALA:HB3 | 57:A1:126:PRO:HA | 1.83 | 0.60 |
| 58:B1:154:LEU:HD21 | 58:B1:160:LEU:HD21 | 1.83 | 0.60 |
| 18:R:102:LYS:HG2 | 18:R:103:THR:HG23 | 1.83 | 0.60 |
| 51:1:723:C:H2' | 51:1:724:U:H6 | 1.64 | 0.60 |
| 51:1:851:C:H2' | 51:1:852:U:C6 | 2.36 | 0.60 |
| 51:1:2749:A:OP2 | 51:1:2751:G:H5" | 2.02 | 0.60 |
| 58:B1:926:PRO:HG2 | 58:B1:1248:ILE:HD11 | 1.84 | 0.60 |
| 29:d:68:ALA:HA | 51:1:1255:U:C5 | 2.37 | 0.59 |
| 51:1:854:C:O2' | 51:1:855:G:H5' | 2.02 | 0.59 |
| 51:1:2091:C:H5 | 51:1:2092:U:HO2' | 1.49 | 0.59 |
| 58:B1:633:ALA:HA | 59:B2:806:PRO:O | 2.01 | 0.59 |
| 6:F:14:CYS:SG | 6:F:33:HIS:ND1 | 2.75 | 0.59 |
| 45:u:40:LEU:HD12 | 45:u:59:GLU:HG2 | 1.84 | 0.59 |
| 51:1:893:C:H2' | 51:1:894:U:C6 | 2.36 | 0.59 |
| 51:1:1171:G:H2' | 51:1:1172:C:O4' | 2.02 | 0.59 |
| 51:1:2717:C:C4 | 51:1:2718:G:N7 | 2.70 | 0.59 |
| 55:8:7:DC:H2" | 55:8:8:DT:H71 | 1.84 | 0.59 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 59:B2:1072:ASN:ND2 | 59:B2:1111:GLN:OE1 | 2.35 | 0.59 |
| 21:U:70:ARG:HH22 | 53:3:451:A:H5' | 1.66 | 0.59 |
| 51:1:1773:A:C2' | 51:1:1774:C:H5' | 2.31 | 0.59 |
| 9:I:69:ARG:NH1 | 53:3:401:C:OP2 | 2.36 | 0.59 |
| 29:d:77:ILE:HG23 | 51:1:1256:G:H21 | 1.68 | 0.59 |
| 51:1:283:G:H2' | 51:1:284:U:H5' | 1.83 | 0.59 |
| 51:1:841:G:O2' | 51:1:842:U:H5' | 2.02 | 0.59 |
| 51:1:1026:G:H2' | 51:1:1027:A:H8 | 1.67 | 0.59 |
| 58:B1:99:ARG:NH1 | 58:B1:99:ARG:HG3 | 2.17 | 0.59 |
| 58:B1:725:MET:SD | 59:B2:1101:LEU:HD23 | 2.42 | 0.59 |
| 51:1:1670:C:H2' | 51:1:1671:U:C5' | 2.31 | 0.59 |
| 51:1:2165:C:H2' | 51:1:2166:U:C6 | 2.38 | 0.59 |
| 14:N:17:ARG:HB2 | 14:N:65:THR:HG23 | 1.83 | 0.59 |
| 29:d:77:ILE:CG2 | 51:1:1256:G:H21 | 2.15 | 0.59 |
| 51:1:215:G:H4' | 51:1:216:A:H4' | 1.84 | 0.59 |
| 58:B1:275:ARG:NH1 | 58:B1:278:ARG:NH1 | 2.51 | 0.59 |
| 30:e:51:ASN:OD1 | 30:e:149:ARG:NH1 | 2.34 | 0.59 |
| 42:r:4:VAL:HG22 | 42:r:40:MET:HG2 | 1.85 | 0.59 |
| 51:1:49:A:H5" | 51:1:51:G:O4' | 2.02 | 0.59 |
| 51:1:794:A:H2' | 51:1:795:C:O4' | 2.02 | 0.59 |
| 51:1:1725:U:H2' | 51:1:1726:C:C6 | 2.38 | 0.59 |
| 51:1:2643:G:H2' | 51:1:2644:G:H5' | 1.84 | 0.59 |
| 59:B2:1142:ARG:NH1 | 59:B2:1161:LEU:O | 2.36 | 0.59 |
| 22:V:11:VAL:HA | 22:V:22:VAL:HA | 1.83 | 0.59 |
| 58:B1:514:THR:HG21 | 58:B1:596:LEU:HD12 | 1.84 | 0.59 |
| 59:B2:69:GLN:HE21 | 59:B2:101:ARG:HD2 | 1.67 | 0.59 |
| 59:B2:887:VAL:HA | 59:B2:917:SER:HA | 1.85 | 0.59 |
| 47:w:40:LYS:HE3 | 51:1:2330:G:O2' | 2.03 | 0.59 |
| 51:1:246:C:C2' | 51:1:247:G:H5' | 2.33 | 0.59 |
| 51:1:1077:A:C8 | 51:1:1078:U:H1' | 2.37 | 0.59 |
| 51:1:1524:G:H2' | 51:1:1525:A:C8 | 2.38 | 0.59 |
| 51:1:2743:U:H3' | 51:1:2744:G:H5" | 1.84 | 0.59 |
| 55:8:11:DC:H2' | 55:8:12:DG:C8 | 2.37 | 0.59 |
| 51:1:1469:A:H2' | 51:1:1470:A:C8 | 2.38 | 0.59 |
| 51:1:2360:G:C2' | 51:1:2361:G:H5' | 2.31 | 0.59 |
| 51:1:2533:U:H2' | 51:1:2534:A:H5' | 1.85 | 0.59 |
| 53:3:422:C:O2' | 53:3:423:G:N2 | 2.36 | 0.59 |
| 37:m:66:ARG:NH1 | 37:m:104:GLU:OE2 | 2.36 | 0.58 |
| 51:1:1098:A:H2' | 51:1:1099:G:C5' | 2.33 | 0.58 |
| 51:1:2215:C:H2' | 51:1:2216:G:H8 | 1.65 | 0.58 |
| 51:1:2789:C:H2' | 51:1:2893:A:N7 | 2.18 | 0.58 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 58:B1:161:THR:HG23 | 58:B1:164:GLN:H | 1.68 | 0.58 |
| 58:B1:615:LYS:HG2 | 60:W0:5:THR:HG21 | 1.85 | 0.58 |
| 24:X:30:LEU:HB2 | 24:X:48:ILE:HG22 | 1.85 | 0.58 |
| 51:1:1042:G:H2' | 51:1:1043:C:C6 | 2.37 | 0.58 |
| 51:1:1337:G:H2' | 51:1:1338:G:C8 | 2.37 | 0.58 |
| 51:1:1511:G:H2' | 51:1:1512:C:C6 | 2.38 | 0.58 |
| 51:1:1845:G:O2' | 51:1:1846:G:H5' | 2.02 | 0.58 |
| 53:3:148:G:H1' | 53:3:1447:A:H1' | 1.84 | 0.58 |
| 23:W:49:LYS:HA | 23:W:52:ARG:HH21 | 1.68 | 0.58 |
| 27:b:34:GLU:HG3 | 27:b:63:ILE:HD11 | 1.84 | 0.58 |
| 51:1:2812:G:H2' | 51:1:2813:A:H8 | 1.68 | 0.58 |
| 51:1:528:A:C8 | 51:1:528:A:C3' | 2.86 | 0.58 |
| 51:1:1463:C:H2' | 51:1:1464:G:H8 | 1.68 | 0.58 |
| 51:1:1893:C:H2' | 51:1:1894:C:H5' | 1.86 | 0.58 |
| 51:1:2183:A:H2' | 51:1:2184:A:C4 | 2.38 | 0.58 |
| 58:B1:97:VAL:HG11 | 58:B1:101:ARG:NH2 | 2.18 | 0.58 |
| 58:B1:201:LEU:HD11 | 58:B1:220:ARG:HH11 | 1.67 | 0.58 |
| 33:i:25:PRO:HG2 | 51:1:1068:G:H21 | 1.68 | 0.58 |
| 51:1:834:G:H2' | 51:1:835:C:O4' | 2.04 | 0.58 |
| 55:8:9:DG:H4' | 58:B1:120:LEU:HG | 1.84 | 0.58 |
| 58:B1:1361:THR:HB | 59:B2:1284:ALA:HB3 | 1.86 | 0.58 |
| 27:b:141:HIS:ND1 | 27:b:192:GLY:O | 2.35 | 0.58 |
| 28:c:55:LYS:NZ | 28:c:59:ARG:O | 2.36 | 0.58 |
| 51:1:1565:C:O2' | 51:1:1566:A:H8 | 1.87 | 0.58 |
| 51:1:2834:G:H2' | 51:1:2879:A:N6 | 2.17 | 0.58 |
| 53:3:1125:U:H2' | 53:3:1126:U:H2' | 1.86 | 0.58 |
| 15:O:46:LYS:HG2 | 15:O:68:ARG:HG2 | 1.84 | 0.58 |
| 27:b:157:ALA:O | 51:1:1820:U:C2 | 2.56 | 0.58 |
| 29:d:1:MET:HG2 | 29:d:16:GLU:HG2 | 1.86 | 0.58 |
| 33:i:22:PRO:HA | 51:1:1067:A:O2' | 2.04 | 0.58 |
| 51:1:1333:G:O2' | 51:1:1334:G:H5' | 2.03 | 0.58 |
| 51:1:1561:C:H2' | 51:1:1562:U:C6 | 2.39 | 0.58 |
| 51:1:1579:A:H2' | 51:1:1580:A:C8 | 2.38 | 0.58 |
| 51:1:2153:C:H2' | 51:1:2154:A:H5' | 1.85 | 0.58 |
| 1:A:26:SER:OG | 1:A:27:THR:N | 2.37 | 0.58 |
| 28:c:129:THR:OG1 | 28:c:140:HIS:O | 2.22 | 0.58 |
| 51:1:673:C:C2' | 51:1:674:G:H5' | 2.34 | 0.58 |
| 58:B1:370:LYS:HG2 | 58:B1:441:LEU:HD23 | 1.84 | 0.58 |
| 58:B1:1167:LYS:HZ2 | 58:B1:1170:LYS:HB2 | 1.69 | 0.58 |
| 14:N:79:ARG:HH21 | 14:N:102:PHE:HA | 1.67 | 0.58 |
| 30:e:47:LYS:O | 30:e:51:ASN:ND2 | 2.37 | 0.58 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 50:z:4:ILE:HD11 | 50:z:58:GLU:HG2 | 1.86 | 0.58 |
| 51:1:621:A:H2' | 51:1:622:G:H5' | 1.86 | 0.58 |
| 51:1:640:C:O2' | 51:1:641:U:H5' | 2.04 | 0.58 |
| 51:1:2636:C:H2' | 51:1:2637:U:C6 | 2.39 | 0.58 |
| 53:3:409:U:H3 | 53:3:433:G:H1 | 1.51 | 0.58 |
| 58:B1:99:ARG:CG | 58:B1:99:ARG:HH11 | 2.17 | 0.58 |
| 58:B1:438:GLU:HG3 | 58:B1:485:MET:HE1 | 1.84 | 0.58 |
| 51:1:32:C:H2' | 51:1:33:C:C6 | 2.39 | 0.57 |
| 51:1:2897:U:H2' | 51:1:2898:U:C6 | 2.39 | 0.57 |
| 53:3:159:G:N2 | 53:3:162:A:OP2 | 2.34 | 0.57 |
| 27:b:220:ARG:NH1 | 51:1:1789:A:OP2 | 2.38 | 0.57 |
| 38:n:22:ARG:HG3 | 38:n:70:THR:HA | 1.86 | 0.57 |
| 38:n:63:ARG:CZ | 51:1:1454:C:H5' | 2.34 | 0.57 |
| 51:1:327:G:O2' | 51:1:328:U:H5' | 2.04 | 0.57 |
| 51:1:2899:A:O2' | 51:1:2900:A:H5' | 2.04 | 0.57 |
| 58:B1:160:LEU:HD22 | 58:B1:164:GLN:HB3 | 1.86 | 0.57 |
| 58:B1:412:LEU:HD22 | 58:B1:441:LEU:HD21 | 1.84 | 0.57 |
| 51:1:146:A:H2' | 51:1:147:C:C6 | 2.39 | 0.57 |
| 51:1:235:U:H2' | 51:1:236:C:C6 | 2.39 | 0.57 |
| 51:1:323:C:H3' | 51:1:323:C:OP2 | 2.05 | 0.57 |
| 51:1:2092:U:H4' | 51:1:2093:G:C5' | 2.34 | 0.57 |
| 51:1:2570:G:H2' | 51:1:2571:U:H5' | 1.85 | 0.57 |
| 51:1:2762:C:H2' | 51:1:2763:G:H5' | 1.86 | 0.57 |
| 9:I:10:LEU:HD23 | 9:I:62:ARG:HB3 | 1.86 | 0.57 |
| 9:I:201:GLU:O | 53:3:8:A:N6 | 2.36 | 0.57 |
| 41:q:30:VAL:HG13 | 51:1:580:U:O3' | 2.04 | 0.57 |
| 51:1:1173:U:C5 | 51:1:1174:U:H1' | 2.40 | 0.57 |
| 51:1:1400:U:O2' | 51:1:1401:G:H5' | 2.04 | 0.57 |
| 51:1:2845:U:H2' | 51:1:2846:G:H8 | 1.69 | 0.57 |
| 14:N:35:GLU:HA | 14:N:39:GLY:HA3 | 1.85 | 0.57 |
| 39:o:56:LYS:NZ | 52:2:117:G:OP1 | 2.36 | 0.57 |
| 51:1:1275:A:C6 | 51:1:1296:G:H4' | 2.40 | 0.57 |
| 27:b:259:ASN:ND2 | 27:b:262:THR:OG1 | 2.38 | 0.57 |
| 28:c:63:PRO:HG3 | 51:1:2787:C:H1' | 1.85 | 0.57 |
| 39:o:25:ARG:NH1 | 52:2:8:C:O3' | 2.37 | 0.57 |
| 40:p:1:SER:OG | 40:p:2:ASN:N | 2.37 | 0.57 |
| 51:1:877:A:N1 | 51:1:899:A:H2' | 2.20 | 0.57 |
| 59:B2:839:VAL:HG12 | 59:B2:1049:ILE:HG12 | 1.87 | 0.57 |
| 7:G:114:LYS:HE3 | 7:G:151:LYS:HB2 | 1.86 | 0.57 |
| 19:S:5:MET:HE1 | 53:3:981:U:H5" | 1.86 | 0.57 |
| 51:1:2186:G:O2' | 51:1:2187:U:H5' | 2.04 | 0.57 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 58:B1:42:GLU:HB3 | 58:B1:52:GLU:HG3 | 1.86 | 0.57 |
| 59:B2:707:ALA:O | 59:B2:711:ASP:HB2 | 2.03 | 0.57 |
| 10:J:54:GLU:HG2 | 10:J:56:PRO:HD2 | 1.86 | 0.57 |
| 25:Y:59:ARG:NH1 | 53:3:177:G:OP1 | 2.37 | 0.57 |
| 31:f:44:HIS:HA | 31:f:49:LEU:HG | 1.87 | 0.57 |
| 34:j:116:ARG:NH2 | 51:1:529:A:OP2 | 2.32 | 0.57 |
| 51:1:163:C:H2' | 51:1:164:C:O4' | 2.05 | 0.57 |
| 51:1:503:A:H4' | 51:1:505:A:H5" | 1.87 | 0.57 |
| 51:1:593:U:H2' | 51:1:594:U:C6 | 2.40 | 0.57 |
| 51:1:1108:U:H2' | 51:1:1109:C:C2 | 2.40 | 0.57 |
| 51:1:1526:C:H2' | 51:1:1527:G:O4' | 2.04 | 0.57 |
| 57:A2:82:LEU:HD11 | 57:A2:171:LEU:HD23 | 1.86 | 0.57 |
| 58:B1:247:PRO:HA | 58:B1:250:ARG:HG3 | 1.87 | 0.57 |
| 58:B1:741:ALA:O | 58:B1:762:ASN:ND2 | 2.38 | 0.57 |
| 58:B1:1046:ILE:HD12 | 58:B1:1059:LEU:HB3 | 1.86 | 0.57 |
| 16:P:92:ARG:NH2 | 16:P:111:ASP:OD1 | 2.38 | 0.57 |
| 38:n:54:LEU:HD23 | 38:n:66:ALA:HB2 | 1.86 | 0.57 |
| 51:1:635:C:H2' | 51:1:636:G:H8 | 1.70 | 0.57 |
| 59:B2:1142:ARG:NH2 | 59:B2:1166:ASP:OD1 | 2.38 | 0.57 |
| 31:f:151:ARG:HB3 | 31:f:161:VAL:HG23 | 1.86 | 0.57 |
| 51:1:287:G:H2' | 51:1:288:U:C6 | 2.40 | 0.57 |
| 51:1:1520:U:O2' | 51:1:1521:G:H5' | 2.05 | 0.57 |
| 51:1:1590:A:O2' | 51:1:1591:A:H5' | 2.05 | 0.57 |
| 58:B1:198:CYS:HA | 58:B1:221:ILE:HD11 | 1.86 | 0.57 |
| 59:B2:13:LYS:HB2 | 59:B2:1180:MET:HE2 | 1.86 | 0.57 |
| 10:J:44:ARG:NH2 | 10:J:70:MET:SD | 2.78 | 0.56 |
| 31:f:40:VAL:O | 31:f:54:ARG:NH2 | 2.38 | 0.56 |
| 49:y:39:GLN:HG2 | 51:1:96:C:OP1 | 2.05 | 0.56 |
| 51:1:727:A:H2' | 51:1:728:G:C8 | 2.40 | 0.56 |
| 57:A2:28:LEU:HB2 | 57:A2:201:LEU:HB3 | 1.86 | 0.56 |
| 58:B1:102:MET:HG2 | 58:B1:246:PRO:HG3 | 1.87 | 0.56 |
| 58:B1:241:VAL:O | 58:B1:241:VAL:HG12 | 2.04 | 0.56 |
| 31:f:174:LYS:HE2 | 51:1:2529:G:H4' | 1.86 | 0.56 |
| 51:1:1528:A:H2' | 51:1:1529:G:H5' | 1.87 | 0.56 |
| 51:1:2457:U:O2' | 51:1:2458:G:H5' | 2.04 | 0.56 |
| 58:B1:130:MET:HE2 | 58:B1:135:ILE:HG12 | 1.87 | 0.56 |
| 59:B2:1122:LYS:NZ | 59:B2:1126:ASP:OD1 | 2.38 | 0.56 |
| 7:G:58:LYS:O | 7:G:62:ARG:NH1 | 2.38 | 0.56 |
| 16:P:111:ASP:HB2 | 26:Z:16:ARG:HH22 | 1.68 | 0.56 |
| 39:o:52:SER:OG | 39:o:53:THR:N | 2.38 | 0.56 |
| 39:o:69:ASP:N | 39:o:69:ASP:OD1 | 2.36 | 0.56 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 51:1:288:U:H2' | 51:1:289:G:H8 | 1.71 | 0.56 |
| 51:1:655:A:H4' | 51:1:656:G:C5' | 2.30 | 0.56 |
| 51:1:885:C:N4 | 51:1:886:A:H62 | 2.03 | 0.56 |
| 2:B:43:THR:HG1 | 2:B:46:GLY:H | 1.52 | 0.56 |
| 19:S:26:LEU:HA | 19:S:30:ILE:HD12 | 1.87 | 0.56 |
| 21:U:55:ASP:OD1 | 21:U:55:ASP:N | 2.38 | 0.56 |
| 51:1:69:C:H2' | 51:1:70:G:H8 | 1.70 | 0.56 |
| 51:1:1485:U:H2' | 51:1:1486:U:C6 | 2.41 | 0.56 |
| 51:1:1917:U:O2' | 51:1:1918:A:H5' | 2.06 | 0.56 |
| 51:1:2584:U:C2' | 51:1:2585:U:H5' | 2.34 | 0.56 |
| 53:3:202:G:H21 | 53:3:466:A:H61 | 1.53 | 0.56 |
| 58:B1:1166:GLY:HA3 | 58:B1:1174:ARG:HB2 | 1.88 | 0.56 |
| 59:B2:818:VAL:HG22 | 59:B2:1096:ILE:HG12 | 1.87 | 0.56 |
| 63:5:38:A:C8 | 63:5:39:U:H1' | 2.40 | 0.56 |
| 45:u:36:GLU:HA | 45:u:61:GLU:HG2 | 1.86 | 0.56 |
| 51:1:359:G:C2' | 51:1:360:U:H5' | 2.36 | 0.56 |
| 51:1:2395:C:H42 | 51:1:2421:G:H1 | 1.54 | 0.56 |
| 58:B1:510:LEU:HD22 | 58:B1:601:ILE:HD12 | 1.86 | 0.56 |
| 4:D:9:VAL:HG22 | 51:1:1309:G:OP1 | 2.06 | 0.56 |
| 46:v:57:TYR:OH | 46:v:79:ARG:NH2 | 2.38 | 0.56 |
| 51:1:74:A:H4' | 51:1:75:G:O5' | 2.05 | 0.56 |
| 51:1:78:U:H2' | 51:1:79:C:C6 | 2.40 | 0.56 |
| 51:1:358:U:H2' | 51:1:359:G:C8 | 2.41 | 0.56 |
| 51:1:1130:U:O2' | 51:1:1131:G:OP1 | 2.20 | 0.56 |
| 51:1:1182:G:H2' | 51:1:1183:U:O4' | 2.06 | 0.56 |
| 51:1:1597:A:H5" | 51:1:1598:A:H5' | 1.86 | 0.56 |
| 51:1:1678:A:H2' | 51:1:1679:A:H5' | 1.86 | 0.56 |
| 53:3:927:G:O2' | 53:3:1503:A:N7 | 2.38 | 0.56 |
| 64:7:52:G:H2' | 64:7:53:G:H8 | 1.69 | 0.56 |
| 19:S:52:ARG:O | 19:S:58:ARG:NH1 | 2.39 | 0.56 |
| 49:y:49:ASP:OD1 | 49:y:52:ARG:NH2 | 2.39 | 0.56 |
| 51:1:366:C:O2' | 51:1:367:G:H5' | 2.04 | 0.56 |
| 51:1:780:G:H21 | 51:1:783:A:H62 | 1.54 | 0.56 |
| 51:1:1097:U:H2' | 51:1:1098:A:O4' | 2.06 | 0.56 |
| 51:1:1319:C:O2' | 51:1:1320:C:H5' | 2.05 | 0.56 |
| 51:1:2626:C:H2' | 51:1:2627:G:O4' | 2.06 | 0.56 |
| 12:L:113:LYS:O | 53:3:1239:A:O2' | 2.22 | 0.56 |
| 17:Q:8:ARG:NH2 | 53:3:880:C:OP1 | 2.36 | 0.56 |
| 28:c:134:HIS:CE1 | 51:1:1675:C:C4 | 2.94 | 0.56 |
| 38:n:2:ARG:HA | 38:n:5:LYS:HD3 | 1.88 | 0.56 |
| 51:1:296:U:H2' | 51:1:297:G:C8 | 2.41 | 0.56 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 51:1:1120:G:O2' | 51:1:1121:C:H5' | 2.05 | 0.56 |
| 51:1:1485:U:H2' | 51:1:1486:U:H6 | 1.70 | 0.56 |
| 51:1:2533:U:C2' | 51:1:2534:A:H5' | 2.36 | 0.56 |
| 51:1:2662:A:H2' | 51:1:2663:G:O4' | 2.05 | 0.56 |
| 53:3:503:C:H2' | 53:3:504:C:C6 | 2.41 | 0.56 |
| 57:A2:29:GLU:HG3 | 57:A2:200:LYS:HG3 | 1.88 | 0.56 |
| 8:H:39:ARG:NH1 | 8:H:54:ILE:O | 2.39 | 0.56 |
| 18:R:100:ARG:NH1 | 18:R:103:THR:OG1 | 2.38 | 0.56 |
| 26:Z:44:ARG:NH1 | 53:3:722:G:OP2 | 2.39 | 0.56 |
| 51:1:184:C:H2' | 51:1:185:G:C8 | 2.41 | 0.56 |
| 51:1:543:G:H2' | 51:1:544:C:O4' | 2.05 | 0.56 |
| 51:1:155:A:H2' | 51:1:156:A:C8 | 2.41 | 0.56 |
| 51:1:633:A:C2' | 51:1:634:C:H5' | 2.35 | 0.56 |
| 53:3:1036:A:H2' | 53:3:1037:C:H5' | 1.88 | 0.56 |
| 11:K:12:PRO:HB2 | 11:K:44:ARG:HH21 | 1.70 | 0.55 |
| 12:L:4:ARG:HB3 | 12:L:6:ILE:HG23 | 1.88 | 0.55 |
| 27:b:250:GLN:NE2 | 27:b:251:THR:O | 2.38 | 0.55 |
| 49:y:28:LEU:HA | 49:y:31:GLN:HB2 | 1.88 | 0.55 |
| 51:1:133:U:O2' | 51:1:134:G:H5' | 2.06 | 0.55 |
| 51:1:720:U:H2' | 51:1:721:A:C8 | 2.41 | 0.55 |
| 51:1:2236:U:H2' | 51:1:2237:G:H5' | 1.88 | 0.55 |
| 53:3:49:U:H3 | 53:3:362:G:H1' | 1.71 | 0.55 |
| 53:3:830:G:H1 | 53:3:856:C:H42 | 1.53 | 0.55 |
| 58:B1:39:LYS:O | 58:B1:273:ILE:HG21 | 2.06 | 0.55 |
| 58:B1:144:TYR:HE1 | 58:B1:162:GLU:CD | 2.14 | 0.55 |
| 16:P:63:GLN:HG3 | 16:P:98:ALA:HB2 | 1.88 | 0.55 |
| 27:b:216:ARG:NH2 | 51:1:781:A:OP1 | 2.38 | 0.55 |
| 28:c:18:ASP:N | 28:c:18:ASP:OD1 | 2.36 | 0.55 |
| 33:i:5:GLN:O | 33:i:30:GLN:NE2 | 2.40 | 0.55 |
| 35:k:76:VAL:H | 40:p:72:VAL:HG22 | 1.71 | 0.55 |
| 51:1:184:C:H2' | 51:1:185:G:H8 | 1.70 | 0.55 |
| 58:B1:1175:LEU:HD22 | 58:B1:1190:ILE:HD11 | 1.88 | 0.55 |
| 7:G:45:THR:O | 7:G:49:PHE:N | 2.35 | 0.55 |
| 8:H:76:ILE:HD11 | 54:4:20:U:H4' | 1.87 | 0.55 |
| 35:k:65:THR:HG23 | 35:k:68:GLY:H | 1.69 | 0.55 |
| 51:1:112:U:C2' | 51:1:113:U:H5' | 2.37 | 0.55 |
| 51:1:461:C:H2' | 51:1:462:C:C6 | 2.41 | 0.55 |
| 51:1:613:A:H2' | 51:1:613:A:N3 | 2.21 | 0.55 |
| 51:1:1410:G:H2' | 51:1:1411:U:C6 | 2.41 | 0.55 |
| 51:1:1670:C:O5' | 51:1:1670:C:H6 | 1.90 | 0.55 |
| 63:5:40:C:H2' | 63:5:41:C:C6 | 2.41 | 0.55 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 7:G:91:VAL:HG22 | 7:G:150:ILE:HD11 | 1.88 | 0.55 |
| 11:K:2:ARG:NH1 | 53:3:738:C:OP1 | 2.39 | 0.55 |
| 30:e:23:SER:HB3 | 30:e:26:GLN:HB2 | 1.88 | 0.55 |
| 51:1:118:A:OP2 | 51:1:119:A:H5" | 2.06 | 0.55 |
| 51:1:1506:U:H2' | 51:1:1507:C:C6 | 2.41 | 0.55 |
| 51:1:1697:G:H4' | 51:1:1978:A:H5" | 1.88 | 0.55 |
| 51:1:2637:U:C2' | 51:1:2638:G:H5' | 2.36 | 0.55 |
| 51:1:2845:U:H2' | 51:1:2846:G:C8 | 2.42 | 0.55 |
| 53:3:158:G:N2 | 53:3:163:C:O2 | 2.36 | 0.55 |
| 53:3:1040:U:H2' | 53:3:1041:G:C8 | 2.42 | 0.55 |
| 25:Y:73:ARG:NH2 | 53:3:261:U:OP2 | 2.36 | 0.55 |
| 51:1:172:A:H2' | 51:1:173:A:C8 | 2.40 | 0.55 |
| 51:1:317:G:H2' | 51:1:318:C:C6 | 2.42 | 0.55 |
| 51:1:825:A:O2' | 51:1:826:U:H5' | 2.06 | 0.55 |
| 51:1:1048:A:H2' | 51:1:1049:C:H5' | 1.88 | 0.55 |
| 51:1:1772:A:H5' | 51:1:1773:A:OP2 | 2.06 | 0.55 |
| 51:1:2488:G:O2' | 51:1:2489:U:H5' | 2.07 | 0.55 |
| 51:1:2510:C:C4 | 51:1:2511:U:C4 | 2.93 | 0.55 |
| 51:1:759:G:H2' | 51:1:760:G:C8 | 2.41 | 0.55 |
| 51:1:877:A:C2' | 51:1:878:A:H5" | 2.37 | 0.55 |
| 51:1:1448:G:H2' | 51:1:1449:G:C8 | 2.42 | 0.55 |
| 51:1:1541:C:O2' | 51:1:1542:U:H5' | 2.06 | 0.55 |
| 51:1:1745:A:O2' | 51:1:1746:A:H5' | 2.07 | 0.55 |
| 51:1:1909:C:H2' | 51:1:1910:G:C8 | 2.41 | 0.55 |
| 58:B1:833:GLU:HB2 | 58:B1:1242:ARG:NH1 | 2.22 | 0.55 |
| 29:d:84:THR:HG21 | 51:1:586:A:H5' | 1.87 | 0.55 |
| 33:i:10:LEU:HA | 51:1:1061:U:C2 | 2.42 | 0.55 |
| 50:z:15:ARG:HE | 50:z:52:PHE:HE2 | 1.53 | 0.55 |
| 51:1:439:A:H2' | 51:1:440:C:C6 | 2.42 | 0.55 |
| 51:1:2743:U:C3' | 51:1:2744:G:H5" | 2.37 | 0.55 |
| 54:4:4:U:H3 | 63:5:36:A:H61 | 1.55 | 0.55 |
| 58:B1:145:VAL:HG23 | 58:B1:159:ILE:HG22 | 1.89 | 0.55 |
| 36:l:89:VAL:HG23 | 36:l:121:THR:HG23 | 1.88 | 0.55 |
| 43:s:98:LYS:HD3 | 51:1:2012:G:OP1 | 2.06 | 0.55 |
| 51:1:543:G:H2' | 51:1:544:C:C4' | 2.37 | 0.55 |
| 51:1:757:G:H2' | 51:1:758:C:C5' | 2.35 | 0.55 |
| 58:B1:638:SER:OG | 58:B1:639:VAL:N | 2.36 | 0.55 |
| 64:7:9:G:C2 | 64:7:45:G:O6 | 2.60 | 0.55 |
| 25:Y:60:GLN:HA | 25:Y:63:LYS:HB3 | 1.89 | 0.55 |
| 51:1:359:G:H2' | 51:1:360:U:O4' | 2.07 | 0.55 |
| 51:1:1086:A:H5' | 51:1:1103:A:C2 | 2.41 | 0.55 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 51:1:1545:A:H2' | 51:1:1546:G:O4' | 2.07 | 0.55 |
| 51:1:2827:C:O2' | 51:1:2828:G:H5' | 2.07 | 0.55 |
| 57:A2:294:ASN:HA | 61:NA:463:GLY:HA2 | 1.87 | 0.55 |
| 58:B1:508:LEU:HD22 | 59:B2:1101:LEU:HD21 | 1.88 | 0.55 |
| 59:B2:633:LEU:HD13 | 59:B2:644:LEU:HD23 | 1.89 | 0.55 |
| 7:G:138:ARG:NH1 | 7:G:141:GLU:OE2 | 2.40 | 0.55 |
| 51:1:2114:A:C2 | 51:1:2167:U:H1' | 2.41 | 0.55 |
| 51:1:2545:G:O2' | 51:1:2546:U:H5' | 2.07 | 0.55 |
| 51:1:2850:A:N1 | 51:1:2869:G:H4' | 2.21 | 0.55 |
| 57:A1:29:GLU:HB3 | 57:A1:200:LYS:HG3 | 1.88 | 0.55 |
| 35:k:70:ARG:HG2 | 35:k:76:VAL:HG12 | 1.88 | 0.54 |
| 51:1:392:U:H2' | 51:1:393:C:C6 | 2.42 | 0.54 |
| 51:1:613:A:H5" | 51:1:614:A:N7 | 2.22 | 0.54 |
| 53:3:505:G:H5" | 53:3:534:U:H2' | 1.89 | 0.54 |
| 58:B1:804:ALA:HA | 58:B1:1259:GLN:HG3 | 1.88 | 0.54 |
| 58:B1:1155:ILE:HG13 | 58:B1:1210:ILE:HB | 1.89 | 0.54 |
| 49:y:15:ASN:O | 49:y:19:LEU:N | 2.41 | 0.54 |
| 51:1:296:U:H2' | 51:1:297:G:H8 | 1.71 | 0.54 |
| 51:1:1511:G:H2' | 51:1:1512:C:H6 | 1.73 | 0.54 |
| 51:1:1601:G:C2' | 51:1:1602:U:H5' | 2.37 | 0.54 |
| 57:A2:100:LEU:HD23 | 57:A2:115:ILE:HG21 | 1.89 | 0.54 |
| 58:B1:58:CYS:SG | 58:B1:59:ALA:N | 2.80 | 0.54 |
| 58:B1:799:ARG:HG2 | 58:B1:1325:PHE:HZ | 1.72 | 0.54 |
| 59:B2:29:SER:O | 59:B2:33:ASP:HB2 | 2.07 | 0.54 |
| 49:y:19:LEU:O | 49:y:23:ARG:N | 2.35 | 0.54 |
| 51:1:128:C:H2' | 51:1:129:C:H6 | 1.70 | 0.54 |
| 51:1:923:G:O2' | 51:1:924:G:H5' | 2.07 | 0.54 |
| 51:1:1091:G:H2' | 51:1:1092:C:C6 | 2.42 | 0.54 |
| 51:1:2195:U:O2' | 51:1:2196:C:H5' | 2.06 | 0.54 |
| 51:1:2345:G:H5' | 51:1:2347:C:H5' | 1.89 | 0.54 |
| 58:B1:37:GLU:O | 58:B1:61:ILE:CD1 | 2.52 | 0.54 |
| 29:d:76:PRO:HA | 29:d:82:GLY:HA3 | 1.90 | 0.54 |
| 36:l:20:GLY:HA2 | 36:l:28:GLY:HA2 | 1.90 | 0.54 |
| 37:m:27:SER:H | 37:m:66:ARG:HH12 | 1.54 | 0.54 |
| 51:1:340:A:H2' | 51:1:341:C:O4' | 2.06 | 0.54 |
| 51:1:1083:U:H2' | 51:1:1084:A:H3' | 1.89 | 0.54 |
| 51:1:2114:A:C8 | 51:1:2115:G:H1' | 2.42 | 0.54 |
| 51:1:2217:G:O2' | 51:1:2218:G:H5' | 2.06 | 0.54 |
| 8:H:71:ARG:HB3 | 8:H:74:ILE:HD13 | 1.89 | 0.54 |
| 10:J:23:THR:HA | 10:J:28:ARG:HA | 1.88 | 0.54 |
| 16:P:86:LYS:HG3 | 16:P:114:PRO:HD3 | 1.89 | 0.54 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 19:S:84:ARG:NH2 | 53:3:1059:C:O3' | 2.40 | 0.54 |
| 51:1:1297:C:H2' | 51:1:1298:C:C6 | 2.43 | 0.54 |
| 51:1:2734:A:C2' | 51:1:2735:G:H5' | 2.38 | 0.54 |
| 52:2:40:U:N3 | 52:2:44:G:OP2 | 2.40 | 0.54 |
| 7:G:19:THR:HA | 7:G:37:VAL:HA | 1.88 | 0.54 |
| 31:f:103:ASN:ND2 | 31:f:113:ASP:OD1 | 2.41 | 0.54 |
| 51:1:472:A:H2' | 51:1:473:G:H5' | 1.90 | 0.54 |
| 51:1:1068:G:N2 | 51:1:1096:A:H1' | 2.23 | 0.54 |
| 51:1:1530:G:H22 | 51:1:1542:U:H1' | 1.73 | 0.54 |
| 57:A1:47:LEU:HD23 | 57:A1:51:MET:HG3 | 1.89 | 0.54 |
| 58:B1:770:LEU:CD1 | 59:B2:618:GLN:HG3 | 2.36 | 0.54 |
| 60:W0:3:ARG:NH1 | 60:W0:55:GLU:OE2 | 2.40 | 0.54 |
| 7:G:53:LEU:HD21 | 7:G:215:ALA:HB1 | 1.88 | 0.54 |
| 12:L:73:GLU:HG2 | 12:L:90:VAL:HG22 | 1.89 | 0.54 |
| 38:n:35:LYS:NZ | 38:n:100:CYS:SG | 2.81 | 0.54 |
| 51:1:53:A:H2' | 51:1:54:G:H5' | 1.89 | 0.54 |
| 51:1:1014:A:H2' | 51:1:1015:U:C6 | 2.43 | 0.54 |
| 51:1:1389:G:O2' | 51:1:1390:U:H5' | 2.07 | 0.54 |
| 51:1:1748:C:H2' | 51:1:1749:A:H8 | 1.73 | 0.54 |
| 51:1:2190:G:O2' | 51:1:2191:A:H5' | 2.08 | 0.54 |
| 53:3:923:A:N6 | 53:3:1392:G:O6 | 2.40 | 0.54 |
| 59:B2:904:ALA:O | 61:NA:8:VAL:CB | 2.56 | 0.54 |
| 64:7:11:A:H2' | 64:7:12:G:H8 | 1.72 | 0.54 |
| 27:b:227:VAL:HG11 | 51:1:784:G:N1 | 2.23 | 0.54 |
| 51:1:8:C:H2' | 51:1:9:G:H8 | 1.73 | 0.54 |
| 51:1:682:G:N2 | 51:1:796:C:O2 | 2.41 | 0.54 |
| 51:1:1601:G:O2' | 51:1:1602:U:H5' | 2.08 | 0.54 |
| 51:1:1856:U:H2' | 51:1:1857:G:O4' | 2.08 | 0.54 |
| 51:1:2297:A:N1 | 51:1:2321:U:C5 | 2.75 | 0.54 |
| 58:B1:111:THR:HG22 | 58:B1:300:GLN:NE2 | 2.23 | 0.54 |
| 59:B2:985:GLU:HB3 | 59:B2:988:LYS:HB2 | 1.89 | 0.54 |
| 36:l:80:SER:HB3 | 36:l:114:GLY:HA3 | 1.89 | 0.54 |
| 42:r:51:VAL:HG22 | 42:r:52:PRO:HD2 | 1.89 | 0.54 |
| 51:1:21:A:O2' | 51:1:22:C:H5' | 2.08 | 0.54 |
| 51:1:143:C:H2' | 51:1:144:A:H8 | 1.73 | 0.54 |
| 51:1:268:C:H2' | 51:1:269:C:H6 | 1.73 | 0.54 |
| 58:B1:759:ILE:HG23 | 58:B1:771:GLN:HB3 | 1.89 | 0.54 |
| 58:B1:800:LEU:HB3 | 58:B1:920:ALA:HB1 | 1.89 | 0.54 |
| 59:B2:684:ASN:OD1 | 59:B2:687:ARG:NH2 | 2.41 | 0.54 |
| 41:q:90:ASP:OD1 | 41:q:90:ASP:N | 2.37 | 0.54 |
| 51:1:141:G:H3' | 51:1:142:A:O4' | 2.07 | 0.54 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 51:1:402:A:C2' | 51:1:403:U:H5' | 2.38 | 0.54 |
| 51:1:784:G:C5' | 51:1:785:G:OP1 | 2.54 | 0.54 |
| 53:3:1023:U:H2' | 53:3:1024:G:C8 | 2.43 | 0.54 |
| 57:A2:43:LEU:HD13 | 57:A2:217:ILE:HD11 | 1.90 | 0.54 |
| 59:B2:103:VAL:HB | 59:B2:114:VAL:HG11 | 1.89 | 0.54 |
| 7:G:126:ASP:OD1 | 7:G:126:ASP:N | 2.42 | 0.53 |
| 17:Q:64:SER:OG | 17:Q:65:TYR:N | 2.41 | 0.53 |
| 21:U:69:ASP:OD1 | 21:U:69:ASP:N | 2.38 | 0.53 |
| 29:d:76:PRO:HD2 | 51:1:673:C:H5" | 1.89 | 0.53 |
| 51:1:44:A:O2' | 51:1:45:G:H5' | 2.08 | 0.53 |
| 51:1:358:U:H2' | 51:1:359:G:H8 | 1.72 | 0.53 |
| 51:1:2092:U:C5 | 51:1:2199:A:H2 | 2.26 | 0.53 |
| 58:B1:30:ILE:HG21 | 58:B1:241:VAL:O | 2.08 | 0.53 |
| 3:C:20:TYR:OH | 51:1:2348:U:H5' | 2.08 | 0.53 |
| 7:G:102:ASN:ND2 | 53:3:1073:U:O2 | 2.39 | 0.53 |
| 44:t:54:GLU:HB3 | 44:t:88:LYS:HE3 | 1.90 | 0.53 |
| 48:x:29:LEU:HD12 | 51:1:2230:G:H5" | 1.91 | 0.53 |
| 51:1:752:A:H62 | 51:1:2609:U:H3 | 1.56 | 0.53 |
| 51:1:1063:G:N1 | 51:1:1075:C:N4 | 2.52 | 0.53 |
| 51:1:1111:A:H2' | 51:1:1112:G:H4' | 1.90 | 0.53 |
| 51:1:1288:G:C6 | 51:1:1327:A:C2 | 2.96 | 0.53 |
| 51:1:1386:C:H2' | 51:1:1387:A:C8 | 2.41 | 0.53 |
| 51:1:1528:A:C2' | 51:1:1529:G:H5' | 2.38 | 0.53 |
| 51:1:2742:G:O2' | 51:1:2743:U:H5' | 2.08 | 0.53 |
| 51:1:2850:A:C2 | 51:1:2869:G:H4' | 2.44 | 0.53 |
| 58:B1:209:ASN:HA | 58:B1:214:ARG:HH21 | 1.73 | 0.53 |
| 58:B1:633:ALA:HB2 | 59:B2:808:ASN:N | 2.19 | 0.53 |
| 59:B2:628:HIS:HB3 | 59:B2:647:ARG:HH21 | 1.74 | 0.53 |
| 59:B2:811:ASN:HA | 59:B2:815:SER:HB2 | 1.90 | 0.53 |
| 64:7:25:C:H42 | 64:7:45:G:H22 | 1.56 | 0.53 |
| 25:Y:66:ILE:HG21 | 25:Y:70:LYS:HB3 | 1.91 | 0.53 |
| 30:e:21:TYR:OH | 30:e:164:GLU:OE1 | 2.26 | 0.53 |
| 34:j:2:LYS:HA | 51:1:995:C:N3 | 2.23 | 0.53 |
| 51:1:973:A:H5' | 51:1:1188:U:H1' | 1.90 | 0.53 |
| 51:1:2631:G:O2' | 51:1:2632:A:H5' | 2.08 | 0.53 |
| 1:A:35:ASP:OD1 | 18:R:2:ARG:NH1 | 2.42 | 0.53 |
| 16:P:15:VAL:HG12 | 16:P:76:TYR:HB3 | 1.90 | 0.53 |
| 25:Y:47:GLN:NE2 | 25:Y:51:ASN:OD1 | 2.40 | 0.53 |
| 37:m:64:TRP:HB2 | 37:m:104:GLU:HB2 | 1.89 | 0.53 |
| 39:o:40:ILE:HD12 | 39:o:44:GLY:HA2 | 1.90 | 0.53 |
| 40:p:105:LYS:O | 40:p:108:ARG:NH2 | 2.42 | 0.53 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 51:1:1005:C:H6 | 51:1:1005:C:O5' | 1.90 | 0.53 |
| 51:1:2092:U:C4' | 51:1:2093:G:H5" | 2.37 | 0.53 |
| 51:1:2644:G:O2' | 51:1:2645:G:H5' | 2.09 | 0.53 |
| 57:A1:205:MET:HE3 | 57:A1:213:PRO:HB3 | 1.91 | 0.53 |
| 58:B1:99:ARG:HG3 | 58:B1:99:ARG:HH11 | 1.73 | 0.53 |
| 58:B1:814:CYS:SG | 58:B1:883:ARG:NH2 | 2.81 | 0.53 |
| 59:B2:360:LEU:HD13 | 59:B2:378:ARG:HH11 | 1.72 | 0.53 |
| 9:I:154:VAL:HA | 9:I:157:ALA:HB3 | 1.91 | 0.53 |
| 12:L:77:ARG:NH2 | 53:3:1381:U:O2 | 2.41 | 0.53 |
| 13:M:92:PRO:O | 13:M:116:ARG:NH2 | 2.42 | 0.53 |
| 42:r:75:VAL:HG23 | 42:r:86:GLN:HG2 | 1.90 | 0.53 |
| 51:1:268:C:H2' | 51:1:269:C:C6 | 2.44 | 0.53 |
| 51:1:279:A:N6 | 51:1:361:G:H1' | 2.21 | 0.53 |
| 51:1:1310:G:O2' | 51:1:1311:G:H5' | 2.06 | 0.53 |
| 51:1:2092:U:C5 | 51:1:2199:A:C2 | 2.97 | 0.53 |
| 34:j:38:GLY:HA3 | 34:j:50:THR:HG23 | 1.90 | 0.53 |
| 39:o:31:THR:HG23 | 39:o:34:HIS:H | 1.73 | 0.53 |
| 51:1:876:C:H2' | 51:1:877:A:O4' | 2.08 | 0.53 |
| 51:1:894:U:O2' | 51:1:895:U:H5' | 2.09 | 0.53 |
| 51:1:1565:C:HO2' | 51:1:1566:A:H8 | 1.53 | 0.53 |
| 51:1:2123:G:H2' | 51:1:2124:G:H8 | 1.73 | 0.53 |
| 51:1:2328:A:H8 | 51:1:2328:A:O5' | 1.90 | 0.53 |
| 51:1:2758:A:H2' | 51:1:2759:G:C5' | 2.39 | 0.53 |
| 53:3:959:A:HO2' | 53:3:984:C:HO2' | 1.53 | 0.53 |
| 58:B1:39:LYS:O | 58:B1:273:ILE:HG23 | 2.08 | 0.53 |
| 51:1:53:A:C2' | 51:1:54:G:H5' | 2.39 | 0.53 |
| 51:1:57:C:H2' | 51:1:58:G:O4' | 2.08 | 0.53 |
| 58:B1:785:ASP:O | 58:B1:789:LYS:HB2 | 2.08 | 0.53 |
| 58:B1:975:ILE:HD11 | 58:B1:1003:LEU:HD11 | 1.91 | 0.53 |
| 59:B2:1117:LEU:HD12 | 59:B2:1195:ILE:HG12 | 1.90 | 0.53 |
| 9:I:55:ARG:O | 9:I:59:LYS:N | 2.41 | 0.53 |
| 33:i:53:PRO:HD2 | 33:i:77:VAL:HG11 | 1.91 | 0.53 |
| 51:1:176:A:O2' | 51:1:177:G:H5' | 2.08 | 0.53 |
| 51:1:820:A:O2' | 51:1:821:A:H5' | 2.08 | 0.53 |
| 51:1:878:A:H2' | 51:1:879:G:O4' | 2.09 | 0.53 |
| 51:1:925:A:O2' | 51:1:926:G:H5' | 2.08 | 0.53 |
| 51:1:1171:G:H2' | 51:1:1172:C:C4' | 2.38 | 0.53 |
| 53:3:458:U:H3 | 53:3:474:G:H1 | 1.56 | 0.53 |
| 58:B1:111:THR:HG23 | 58:B1:300:GLN:NE2 | 2.24 | 0.53 |
| 63:5:38:A:H2' | 63:5:39:U:H4' | 1.91 | 0.53 |
| 14:N:115:VAL:HG23 | 53:3:1367:C:H5" | 1.91 | 0.53 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 23:W:52:ARG:NH2 | 53:3:835:U:OP1 | 2.42 | 0.53 |
| 33:i:27:LEU:HD13 | 33:i:32:VAL:HG11 | 1.90 | 0.53 |
| 35:k:42:THR:HG22 | 35:k:57:VAL:HG12 | 1.91 | 0.53 |
| 51:1:140:C:H2' | 51:1:141:G:H5' | 1.90 | 0.53 |
| 51:1:441:U:O2' | 51:1:442:G:H5' | 2.08 | 0.53 |
| 51:1:1278:C:O2' | 51:1:1279:G:H5' | 2.09 | 0.53 |
| 51:1:1530:G:N2 | 51:1:1542:U:H1' | 2.23 | 0.53 |
| 51:1:2762:C:C2' | 51:1:2763:G:H5' | 2.39 | 0.53 |
| 10:J:104:ILE:O | 10:J:111:ARG:NH1 | 2.41 | 0.53 |
| 50:z:36:GLU:O | 50:z:37:ARG:NH1 | 2.42 | 0.53 |
| 51:1:341:C:O2' | 51:1:342:A:H5' | 2.08 | 0.53 |
| 51:1:729:G:H5" | 51:1:730:A:H5" | 1.91 | 0.53 |
| 51:1:995:C:H6 | 51:1:995:C:H5' | 1.73 | 0.53 |
| 51:1:1175:A:H3' | 51:1:1176:U:C5' | 2.37 | 0.53 |
| 51:1:1558:C:O4' | 51:1:1560:G:C8 | 2.62 | 0.53 |
| 51:1:1599:U:H2' | 51:1:1600:C:C6 | 2.43 | 0.53 |
| 51:1:1782:U:H2' | 51:1:1783:A:H5" | 1.90 | 0.53 |
| 51:1:2425:A:H4' | 51:1:2426:A:H5" | 1.91 | 0.53 |
| 51:1:2625:G:O2' | 51:1:2626:C:H5' | 2.09 | 0.53 |
| 53:3:1244:G:H1 | 53:3:1293:C:H42 | 1.57 | 0.53 |
| 17:Q:49:ARG:NH1 | 17:Q:88:ASP:OD2 | 2.42 | 0.52 |
| 42:r:4:VAL:HG12 | 42:r:13:ARG:HA | 1.91 | 0.52 |
| 51:1:368:A:H2' | 51:1:369:U:C5' | 2.39 | 0.52 |
| 51:1:519:U:H2' | 51:1:520:G:H8 | 1.74 | 0.52 |
| 51:1:2102:G:H2' | 51:1:2103:C:O4' | 2.09 | 0.52 |
| 51:1:2194:U:H2' | 51:1:2195:U:C6 | 2.44 | 0.52 |
| 51:1:2290:G:H2' | 51:1:2291:U:H6 | 1.74 | 0.52 |
| 53:3:1023:U:H2' | 53:3:1024:G:H8 | 1.74 | 0.52 |
| 57:A2:28:LEU:HD22 | 57:A2:201:LEU:HD23 | 1.91 | 0.52 |
| 33:i:25:PRO:HG2 | 51:1:1068:G:N2 | 2.24 | 0.52 |
| 51:1:543:G:C2' | 51:1:544:C:H5" | 2.37 | 0.52 |
| 51:1:1161:C:H2' | 51:1:1162:G:C8 | 2.44 | 0.52 |
| 51:1:1789:A:H2' | 51:1:1790:C:O4' | 2.09 | 0.52 |
| 51:1:1794:A:O2' | 51:1:1795:C:H5' | 2.10 | 0.52 |
| 51:1:1917:U:C2' | 51:1:1918:A:H5' | 2.39 | 0.52 |
| 58:B1:78:LEU:O | 58:B1:78:LEU:HD13 | 2.08 | 0.52 |
| 58:B1:215:LYS:HA | 58:B1:218:THR:HG22 | 1.91 | 0.52 |
| 58:B1:746:LEU:HG | 58:B1:758:PRO:HG3 | 1.90 | 0.52 |
| 59:B2:243:PRO:HB2 | 59:B2:274:ILE:HG23 | 1.90 | 0.52 |
| 7:G:61:SER:OG | 7:G:62:ARG:NH1 | 2.42 | 0.52 |
| 30:e:162:ASP:OD1 | 30:e:162:ASP:N | 2.37 | 0.52 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 42:r:54:VAL:HG13 | 42:r:55:ASP:H | 1.75 | 0.52 |
| 47:w:55:LEU:HD12 | 47:w:76:ILE:HD12 | 1.90 | 0.52 |
| 51:1:481:G:H1' | 51:1:506:G:H21 | 1.71 | 0.52 |
| 51:1:1409:U:H2' | 51:1:1410:G:C8 | 2.44 | 0.52 |
| 51:1:1560:G:H2' | 51:1:1560:G:N3 | 2.24 | 0.52 |
| 51:1:1827:U:H2' | 51:1:1828:G:H5' | 1.90 | 0.52 |
| 51:1:2707:U:H2' | 51:1:2708:G:C8 | 2.44 | 0.52 |
| 53:3:203:G:N2 | 53:3:204:G:O6 | 2.43 | 0.52 |
| 57:A1:100:LEU:HD21 | 57:A1:121:VAL:HG11 | 1.90 | 0.52 |
| 58:B1:832:LYS:HB3 | 58:B1:1242:ARG:NH1 | 2.24 | 0.52 |
| 11:K:23:GLU:HA | 11:K:26:THR:HG22 | 1.90 | 0.52 |
| 28:c:23:PRO:HB3 | 51:1:2682:A:N3 | 2.24 | 0.52 |
| 51:1:40:U:H2' | 51:1:41:C:C6 | 2.43 | 0.52 |
| 51:1:213:A:O2' | 51:1:214:G:H5' | 2.09 | 0.52 |
| 51:1:723:C:O2' | 51:1:724:U:H5' | 2.09 | 0.52 |
| 51:1:1678:A:H2' | 51:1:1679:A:C5' | 2.38 | 0.52 |
| 51:1:2470:G:O2' | 51:1:2471:A:H5' | 2.10 | 0.52 |
| 59:B2:524:ILE:HG21 | 59:B2:708:VAL:HG13 | 1.92 | 0.52 |
| 8:H:30:ASP:N | 8:H:30:ASP:OD1 | 2.41 | 0.52 |
| 8:H:107:LYS:HB3 | 8:H:110:LEU:HD23 | 1.92 | 0.52 |
| 27:b:257:ARG:NH2 | 27:b:262:THR:OG1 | 2.42 | 0.52 |
| 31:f:7:PRO:O | 31:f:68:ARG:NH2 | 2.38 | 0.52 |
| 51:1:2529:G:H5" | 51:1:2530:A:H5" | 1.91 | 0.52 |
| 26:Z:28:LEU:HA | 26:Z:31:VAL:HG12 | 1.90 | 0.52 |
| 51:1:611:C:H2' | 51:1:612:G:O4' | 2.09 | 0.52 |
| 51:1:1503:A:C3' | 51:1:1504:A:H5" | 2.40 | 0.52 |
| 51:1:2617:U:H2' | 51:1:2618:G:H5' | 1.91 | 0.52 |
| 64:7:43:A:H2' | 64:7:44:A:C8 | 2.44 | 0.52 |
| 8:H:133:MET:HE3 | 8:H:167:TYR:HB2 | 1.91 | 0.52 |
| 10:J:152:VAL:HG21 | 13:M:98:LEU:HD13 | 1.91 | 0.52 |
| 51:1:49:A:O5' | 51:1:51:G:H5' | 2.09 | 0.52 |
| 51:1:2204:G:H2' | 51:1:2205:A:C8 | 2.44 | 0.52 |
| 51:1:2670:A:H2' | 51:1:2671:G:H8 | 1.75 | 0.52 |
| 51:1:2731:G:H2' | 51:1:2732:G:C8 | 2.45 | 0.52 |
| 51:1:2776:A:C6 | 51:1:2782:G:H1' | 2.45 | 0.52 |
| 58:B1:99:ARG:HA | 58:B1:248:ASP:HB2 | 1.92 | 0.52 |
| 58:B1:144:TYR:CE1 | 58:B1:162:GLU:CD | 2.88 | 0.52 |
| 1:A:9:TYR:OH | 30:e:101:ARG:NH2 | 2.41 | 0.52 |
| 40:p:28:LYS:HB3 | 40:p:39:LEU:HD21 | 1.91 | 0.52 |
| 51:1:215:G:C4' | 51:1:216:A:H4' | 2.39 | 0.52 |
| 51:1:597:G:H2' | 51:1:598:U:C6 | 2.45 | 0.52 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 51:1:870:U:O2' | 51:1:871:U:H5' | 2.10 | 0.52 |
| 51:1:1507:C:H2' | 51:1:1508:A:C4' | 2.40 | 0.52 |
| 51:1:1878:G:O2' | 51:1:1879:C:H5' | 2.09 | 0.52 |
| 51:1:2216:G:H2' | 51:1:2217:G:H8 | 1.74 | 0.52 |
| 57:A2:140:ILE:HD12 | 57:A2:142:MET:HE3 | 1.91 | 0.52 |
| 58:B1:375:GLU:HG2 | 59:B2:1245:ALA:O | 2.10 | 0.52 |
| 33:i:56:VAL:HB | 33:i:68:PHE:HB2 | 1.92 | 0.52 |
| 51:1:1047:G:N2 | 51:1:1110:G:H2' | 2.25 | 0.52 |
| 51:1:1662:U:H2' | 51:1:1663:G:O4' | 2.09 | 0.52 |
| 51:1:2013:A:H5" | 51:1:2013:A:C8 | 2.44 | 0.52 |
| 51:1:2236:U:C2' | 51:1:2237:G:H5' | 2.39 | 0.52 |
| 51:1:2747:G:O6 | 51:1:2754:U:H2' | 2.09 | 0.52 |
| 59:B2:255:ILE:HB | 59:B2:263:VAL:HB | 1.92 | 0.52 |
| 27:b:92:LEU:HD11 | 27:b:100:ARG:HB3 | 1.91 | 0.52 |
| 31:f:174:LYS:CG | 51:1:2529:G:H4' | 2.34 | 0.52 |
| 46:v:77:VAL:HG23 | 46:v:89:ILE:HG12 | 1.92 | 0.52 |
| 51:1:69:C:H2' | 51:1:70:G:C8 | 2.45 | 0.52 |
| 51:1:386:G:H3' | 51:1:387:U:H5" | 1.92 | 0.52 |
| 51:1:1338:G:H2' | 51:1:1339:G:H8 | 1.74 | 0.52 |
| 58:B1:352:ARG:HD2 | 59:B2:1268:GLN:HE21 | 1.68 | 0.52 |
| 58:B1:850:LYS:HB2 | 58:B1:857:LEU:HB2 | 1.91 | 0.52 |
| 59:B2:125:GLY:HA2 | 59:B2:499:SER:HB2 | 1.92 | 0.52 |
| 59:B2:1070:HIS:NE2 | 59:B2:1114:GLU:OE1 | 2.36 | 0.52 |
| 7:G:14:HIS:HB3 | 7:G:42:LEU:HD21 | 1.91 | 0.51 |
| 9:I:12:ARG:NH1 | 9:I:32:LYS:O | 2.42 | 0.51 |
| 10:J:106:ALA:O | 10:J:111:ARG:NH2 | 2.43 | 0.51 |
| 15:O:24:GLU:HA | 15:O:27:GLU:HB2 | 1.93 | 0.51 |
| 51:1:1722:A:H62 | 51:1:1738:G:H1' | 1.75 | 0.51 |
| 51:1:1930:G:C2' | 51:1:1931:U:OP2 | 2.58 | 0.51 |
| 51:1:2463:C:O2' | 51:1:2464:G:H5' | 2.10 | 0.51 |
| 51:1:2651:C:O2' | 51:1:2652:C:H5' | 2.10 | 0.51 |
| 53:3:1077:G:N2 | 53:3:1080:A:OP2 | 2.40 | 0.51 |
| 57:A1:16:ILE:HG23 | 57:A1:26:VAL:HG22 | 1.91 | 0.51 |
| 58:B1:112:ALA:HA | 58:B1:238:ILE:HA | 1.91 | 0.51 |
| 9:I:150:LYS:O | 9:I:155:LYS:NZ | 2.42 | 0.51 |
| 43:s:109:ASP:OD1 | 43:s:109:ASP:N | 2.42 | 0.51 |
| 51:1:8:C:H2' | 51:1:9:G:C8 | 2.45 | 0.51 |
| 51:1:1534:U:H2' | 51:1:1536:C:O4' | 2.10 | 0.51 |
| 51:1:1574:C:H2' | 51:1:1575:C:H6 | 1.74 | 0.51 |
| 51:1:1722:A:O2' | 51:1:1723:G:H5' | 2.10 | 0.51 |
| 51:1:1910:G:H1 | 51:1:1920:C:H42 | 1.58 | 0.51 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 51:1:1923:U:H2' | 51:1:1924:C:C6 | 2.46 | 0.51 |
| 51:1:2105:U:N3 | 51:1:2184:A:C2 | 2.78 | 0.51 |
| 53:3:816:A:OP1 | 53:3:1526:G:O2' | 2.28 | 0.51 |
| 58:B1:205:LEU:HG | 58:B1:217:LEU:HB3 | 1.91 | 0.51 |
| 59:B2:93:SER:HA | 59:B2:128:PRO:HA | 1.92 | 0.51 |
| 35:k:31:ARG:NH2 | 51:1:2676:C:OP2 | 2.43 | 0.51 |
| 51:1:282:A:H2' | 51:1:283:G:C8 | 2.42 | 0.51 |
| 51:1:736:C:H42 | 51:1:760:G:H1 | 1.59 | 0.51 |
| 4:D:3:ARG:NH1 | 51:1:752:A:OP1 | 2.44 | 0.51 |
| 23:W:71:ASP:N | 23:W:71:ASP:OD1 | 2.44 | 0.51 |
| 51:1:138:U:C5 | 51:1:139:U:H5 | 2.28 | 0.51 |
| 51:1:291:G:O2' | 51:1:292:U:H5' | 2.11 | 0.51 |
| 51:1:1542:U:O2' | 51:1:1543:G:H5' | 2.09 | 0.51 |
| 58:B1:68:TYR:CA | 58:B1:75:TYR:HE2 | 2.22 | 0.51 |
| 10:J:123:LEU:HD12 | 53:3:7:A:H2' | 1.92 | 0.51 |
| 15:O:5:ARG:N | 15:O:76:ILE:O | 2.43 | 0.51 |
| 43:s:67:ASP:OD1 | 43:s:67:ASP:N | 2.39 | 0.51 |
| 51:1:286:U:H2' | 51:1:287:G:H8 | 1.75 | 0.51 |
| 51:1:1403:A:H2' | 51:1:1404:C:C6 | 2.45 | 0.51 |
| 51:1:2555:U:O2 | 51:1:2555:U:O4' | 2.29 | 0.51 |
| 51:1:2611:C:O2 | 51:1:2611:C:C2' | 2.58 | 0.51 |
| 53:3:460:A:H2' | 53:3:461:A:H8 | 1.75 | 0.51 |
| 59:B2:786:GLY:N | 59:B2:789:THR:OG1 | 2.41 | 0.51 |
| 2:B:2:VAL:HG23 | 51:1:2015:A:C6 | 2.46 | 0.51 |
| 21:U:6:LEU:HD22 | 21:U:17:TYR:HB3 | 1.91 | 0.51 |
| 30:e:69:ALA:O | 30:e:80:GLN:NE2 | 2.43 | 0.51 |
| 36:l:42:SER:HB2 | 51:1:672:C:H5 | 1.76 | 0.51 |
| 51:1:439:A:H2' | 51:1:440:C:H6 | 1.75 | 0.51 |
| 51:1:891:G:H2' | 51:1:892:A:C8 | 2.46 | 0.51 |
| 51:1:1112:G:H2' | 51:1:1113:U:O4' | 2.10 | 0.51 |
| 51:1:1668:A:C4' | 51:1:1669:A:H5' | 2.36 | 0.51 |
| 51:1:1678:A:C2' | 51:1:1679:A:H5' | 2.40 | 0.51 |
| 51:1:2570:G:C2' | 51:1:2571:U:H5' | 2.40 | 0.51 |
| 58:B1:390:LEU:N | 58:B1:390:LEU:CD1 | 2.73 | 0.51 |
| 64:6:1:C:H2' | 64:6:2:G:H8 | 1.75 | 0.51 |
| 6:F:19:ARG:HB2 | 6:F:24:ARG:HD2 | 1.92 | 0.51 |
| 22:V:60:ILE:HA | 22:V:74:LEU:HA | 1.93 | 0.51 |
| 51:1:707:G:H2' | 51:1:708:G:O4' | 2.11 | 0.51 |
| 51:1:724:U:O2' | 51:1:725:G:H5' | 2.11 | 0.51 |
| 51:1:2670:A:H2' | 51:1:2671:G:C8 | 2.45 | 0.51 |
| 58:B1:683:ILE:HD12 | 58:B1:754:ILE:HG21 | 1.92 | 0.51 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 58:B1:1179:PRO:HD2 | 58:B1:1184:ASP:HA | 1.93 | 0.51 |
| 59:B2:400:VAL:HG21 | 59:B2:452:ARG:HE | 1.76 | 0.51 |
| 64:7:9:G:O4' | 64:7:46:G:N3 | 2.43 | 0.51 |
| 8:H:175:HIS:ND1 | 53:3:1109:C:OP2 | 2.44 | 0.51 |
| 17:Q:36:VAL:HG21 | 17:Q:73:LEU:HB3 | 1.91 | 0.51 |
| 21:U:25:ARG:O | 53:3:110:C:O2' | 2.28 | 0.51 |
| 30:e:91:ARG:NH2 | 52:2:43:C:O2 | 2.36 | 0.51 |
| 45:u:73:ASN:ND2 | 45:u:80:ASP:OD2 | 2.43 | 0.51 |
| 51:1:251:A:H2' | 51:1:252:G:O4' | 2.10 | 0.51 |
| 51:1:355:U:H2' | 51:1:356:G:C8 | 2.45 | 0.51 |
| 51:1:492:A:H2' | 51:1:493:G:O4' | 2.09 | 0.51 |
| 51:1:1415:U:H1' | 51:1:1588:G:N2 | 2.26 | 0.51 |
| 51:1:2618:G:H2' | 51:1:2619:C:O4' | 2.11 | 0.51 |
| 58:B1:972:LYS:HD2 | 58:B1:1004:ALA:HA | 1.93 | 0.51 |
| 3:C:7:LYS:HD3 | 51:1:2420:C:H5" | 1.93 | 0.51 |
| 8:H:130:ARG:NH2 | 8:H:165:GLU:OE1 | 2.43 | 0.51 |
| 30:e:27:VAL:O | 30:e:29:ARG:NH1 | 2.41 | 0.51 |
| 31:f:136:ASP:HB3 | 31:f:139:VAL:HG12 | 1.92 | 0.51 |
| 51:1:246:C:H2' | 51:1:247:G:C5' | 2.40 | 0.51 |
| 51:1:757:G:C2' | 51:1:758:C:H5' | 2.38 | 0.51 |
| 51:1:2687:U:H2' | 51:1:2688:G:O4' | 2.11 | 0.51 |
| 58:B1:201:LEU:HD12 | 58:B1:224:LEU:HD12 | 1.92 | 0.51 |
| 58:B1:275:ARG:HH12 | 58:B1:278:ARG:NH1 | 2.09 | 0.51 |
| 58:B1:412:LEU:HD23 | 58:B1:416:ILE:HG13 | 1.92 | 0.51 |
| 59:B2:714:VAL:HB | 59:B2:787:PRO:HD2 | 1.92 | 0.51 |
| 4:D:14:ARG:NH1 | 51:1:1377:G:O3' | 2.44 | 0.51 |
| 15:O:39:PRO:HD2 | 53:3:1123:U:H4' | 1.92 | 0.51 |
| 39:o:40:ILE:HG22 | 39:o:47:VAL:HG12 | 1.91 | 0.51 |
| 44:t:65:GLY:N | 44:t:79:ASP:OD1 | 2.43 | 0.51 |
| 48:x:64:ASP:N | 48:x:64:ASP:OD1 | 2.43 | 0.51 |
| 51:1:145:C:H2' | 51:1:146:A:C8 | 2.46 | 0.51 |
| 51:1:800:A:H4' | 51:1:801:G:H3' | 1.92 | 0.51 |
| 51:1:1717:A:H2' | 51:1:1718:G:C5' | 2.40 | 0.51 |
| 58:B1:1361:THR:OG1 | 59:B2:1282:GLY:O | 2.28 | 0.51 |
| 59:B2:246:LEU:HB3 | 59:B2:269:ILE:HD13 | 1.91 | 0.51 |
| 27:b:50:THR:HG23 | 51:1:1813:G:H21 | 1.76 | 0.50 |
| 27:b:207:ALA:HB2 | 51:1:1790:C:O2' | 2.11 | 0.50 |
| 51:1:580:U:O5' | 51:1:580:U:H6 | 1.94 | 0.50 |
| 51:1:1468:U:H2' | 51:1:1522:A:N6 | 2.26 | 0.50 |
| 51:1:2285:C:O2' | 51:1:2286:G:H5' | 2.11 | 0.50 |
| 53:3:928:G:O2' | 53:3:1533:C:OP1 | 2.22 | 0.50 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 10:J:23:THR:HG22 | 10:J:28:ARG:HB3 | 1.91 | 0.50 |
| 15:O:29:ALA:O | 15:O:33:GLY:N | 2.42 | 0.50 |
| 28:c:161:MET:HE1 | 51:1:2050:C:O2 | 2.11 | 0.50 |
| 29:d:77:ILE:HG23 | 51:1:1256:G:N2 | 2.26 | 0.50 |
| 33:i:126:ARG:HD2 | 51:1:1080:A:H4' | 1.93 | 0.50 |
| 37:m:38:ARG:HB3 | 37:m:98:PRO:HD3 | 1.92 | 0.50 |
| 51:1:2593:U:O2' | 51:1:2594:C:H5' | 2.11 | 0.50 |
| 51:1:2815:C:O2' | 51:1:2816:G:H5' | 2.11 | 0.50 |
| 53:3:202:G:H1 | 53:3:215:C:H42 | 1.57 | 0.50 |
| 58:B1:505:ASP:OD2 | 59:B2:812:PHE:HA | 2.11 | 0.50 |
| 64:6:43:A:H2' | 64:6:44:A:C8 | 2.45 | 0.50 |
| 29:d:191:ASP:O | 29:d:195:GLN:NE2 | 2.44 | 0.50 |
| 33:i:25:PRO:HG3 | 51:1:1095:A:C2 | 2.46 | 0.50 |
| 35:k:75:SER:OG | 40:p:72:VAL:O | 2.26 | 0.50 |
| 51:1:208:C:O5' | 51:1:208:C:H6 | 1.93 | 0.50 |
| 51:1:928:A:O2' | 51:1:929:U:H5' | 2.10 | 0.50 |
| 51:1:1270:C:H5" | 51:1:1271:G:H5" | 1.93 | 0.50 |
| 51:1:1310:G:H2' | 51:1:1311:G:C5' | 2.38 | 0.50 |
| 51:1:1416:G:H2' | 51:1:1417:C:C6 | 2.45 | 0.50 |
| 51:1:1754:A:C6 | 51:1:1755:A:C6 | 2.98 | 0.50 |
| 62:NG:161:SER:HA | 62:NG:170:PRO:HA | 1.93 | 0.50 |
| 14:N:89:TYR:HB3 | 14:N:93:LEU:HD21 | 1.92 | 0.50 |
| 51:1:288:U:H2' | 51:1:289:G:C8 | 2.47 | 0.50 |
| 51:1:438:G:H2' | 51:1:439:A:H8 | 1.76 | 0.50 |
| 51:1:630:G:H4' | 51:1:640:C:H4' | 1.93 | 0.50 |
| 51:1:1528:A:H2' | 51:1:1529:G:O4' | 2.11 | 0.50 |
| 51:1:1539:U:H2' | 51:1:1540:G:H8 | 1.76 | 0.50 |
| 51:1:1676:A:H8 | 51:1:1676:A:O5' | 1.95 | 0.50 |
| 51:1:2052:A:C2' | 51:1:2053:G:H5' | 2.41 | 0.50 |
| 59:B2:9:LYS:HG2 | 59:B2:1171:ARG:HH12 | 1.77 | 0.50 |
| 59:B2:974:ARG:HD2 | 59:B2:1014:LEU:HD21 | 1.92 | 0.50 |
| 12:L:65:LEU:O | 12:L:69:ARG:N | 2.43 | 0.50 |
| 51:1:155:A:H2' | 51:1:156:A:H8 | 1.76 | 0.50 |
| 51:1:386:G:H3' | 51:1:387:U:C5' | 2.41 | 0.50 |
| 51:1:673:C:H2' | 51:1:674:G:C5' | 2.41 | 0.50 |
| 51:1:1293:C:H2' | 51:1:1294:U:C6 | 2.46 | 0.50 |
| 51:1:2248:C:H2' | 51:1:2249:U:H5' | 1.93 | 0.50 |
| 55:8:13:DT:OP2 | 58:B1:791:ALA:CB | 2.59 | 0.50 |
| 64:7:9:G:C2 | 64:7:45:G:C6 | 3.00 | 0.50 |
| 19:S:68:ARG:NH2 | 53:3:974:A:OP1 | 2.45 | 0.50 |
| 20:T:23:SER:OG | 20:T:25:GLU:OE1 | 2.30 | 0.50 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 46:v:51:GLN:OE1 | 46:v:79:ARG:NH2 | 2.40 | 0.50 |
| 51:1:539:G:O2' | 51:1:540:C:H5' | 2.11 | 0.50 |
| 51:1:1441:G:H2' | 51:1:1442:U:H6 | 1.71 | 0.50 |
| 51:1:2302:U:O2' | 51:1:2303:G:H5' | 2.12 | 0.50 |
| 51:1:2888:C:H2' | 51:1:2889:C:H6 | 1.77 | 0.50 |
| 57:A1:18:GLN:HA | 57:A1:24:ALA:HA | 1.94 | 0.50 |
| 7:G:103:TRP:HA | 7:G:106:VAL:HG12 | 1.93 | 0.50 |
| 20:T:2:LEU:HD22 | 20:T:34:GLN:HB2 | 1.92 | 0.50 |
| 27:b:206:LYS:HD2 | 51:1:729:G:C8 | 2.46 | 0.50 |
| 51:1:1348:C:C5 | 51:1:1349:C:C5 | 3.00 | 0.50 |
| 51:1:2348:U:O2' | 51:1:2349:G:H5' | 2.12 | 0.50 |
| 53:3:494:G:H2' | 53:3:496:A:H8 | 1.76 | 0.50 |
| 58:B1:102:MET:HG2 | 58:B1:246:PRO:HD3 | 1.94 | 0.50 |
| 58:B1:902:ASP:HB3 | 58:B1:905:ARG:HB2 | 1.93 | 0.50 |
| 58:B1:1371:ARG:HE | 58:B1:1372:ARG:NH1 | 2.10 | 0.50 |
| 59:B2:232:ILE:HG12 | 59:B2:237:LEU:HG | 1.94 | 0.50 |
| 59:B2:400:VAL:HG11 | 59:B2:452:ARG:HD2 | 1.94 | 0.50 |
| 17:Q:40:THR:CG2 | 65:h:6:5OH:OS | 2.55 | 0.50 |
| 27:b:257:ARG:HH22 | 27:b:262:THR:HG1 | 1.57 | 0.50 |
| 33:i:134:SER:OG | 51:1:1062:G:N2 | 2.45 | 0.50 |
| 34:j:2:LYS:HG2 | 51:1:995:C:N4 | 2.27 | 0.50 |
| 51:1:197:A:H2 | 51:1:2434:A:N6 | 2.10 | 0.50 |
| 51:1:1087:G:H2' | 51:1:1089:A:H5' | 1.94 | 0.50 |
| 51:1:1345:C:H6 | 51:1:1345:C:H5' | 1.77 | 0.50 |
| 51:1:1593:A:H2' | 51:1:1594:U:C6 | 2.47 | 0.50 |
| 51:1:2250:G:H8 | 51:1:2250:G:O5' | 1.95 | 0.50 |
| 51:1:2525:G:N2 | 51:1:2539:C:C2 | 2.79 | 0.50 |
| 51:1:2670:A:O2' | 51:1:2671:G:H5' | 2.12 | 0.50 |
| 53:3:664:G:H22 | 53:3:741:G:H1 | 1.60 | 0.50 |
| 58:B1:145:VAL:HG12 | 58:B1:184:ALA:HB1 | 1.94 | 0.50 |
| 1:A:35:ASP:OD1 | 1:A:35:ASP:N | 2.42 | 0.50 |
| 8:H:4:VAL:HG21 | 8:H:9:ILE:HD13 | 1.93 | 0.50 |
| 21:U:5:ARG:HB3 | 53:3:376:G:H5" | 1.93 | 0.50 |
| 51:1:131:A:H2' | 51:1:132:G:H8 | 1.77 | 0.50 |
| 51:1:262:A:H2' | 51:1:263:G:O4' | 2.12 | 0.50 |
| 64:7:9:G:O4' | 64:7:46:G:C2 | 2.65 | 0.50 |
| 15:O:42:LEU:HB3 | 15:O:71:LEU:HB2 | 1.94 | 0.49 |
| 17:Q:120:ARG:HH12 | 53:3:500:G:H5' | 1.77 | 0.49 |
| 27:b:137:GLY:O | 27:b:162:GLN:NE2 | 2.45 | 0.49 |
| 27:b:146:LYS:HB2 | 27:b:149:LYS:HB2 | 1.93 | 0.49 |
| 38:n:49:GLU:O | 38:n:53:THR:OG1 | 2.29 | 0.49 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 44:t:7:LEU:HD13 | 44:t:46:ALA:HA | 1.94 | 0.49 |
| 51:1:30:G:H2' | 51:1:31:C:C6 | 2.47 | 0.49 |
| 51:1:173:A:H2' | 51:1:174:U:C6 | 2.47 | 0.49 |
| 51:1:521:U:H2' | 51:1:522:A:H8 | 1.73 | 0.49 |
| 51:1:840:C:O2' | 51:1:841:G:H5' | 2.12 | 0.49 |
| 51:1:898:C:H2' | 51:1:899:A:O4' | 2.12 | 0.49 |
| 51:1:1061:U:H4' | 51:1:1070:A:H1' | 1.93 | 0.49 |
| 51:1:1144:A:H2' | 51:1:1145:C:C6 | 2.47 | 0.49 |
| 51:1:1614:A:H2' | 51:1:1615:C:H5' | 1.94 | 0.49 |
| 51:1:2257:U:O2' | 51:1:2258:C:H5' | 2.13 | 0.49 |
| 53:3:1266:G:N2 | 53:3:1269:A:OP2 | 2.29 | 0.49 |
| 58:B1:437:PHE:HZ | 58:B1:453:VAL:HG11 | 1.76 | 0.49 |
| 59:B2:902:LEU:HD21 | 59:B2:908:GLU:HB2 | 1.93 | 0.49 |
| 7:G:221:ARG:HG2 | 7:G:224:ARG:HH11 | 1.77 | 0.49 |
| 21:U:36:VAL:HG12 | 21:U:53:ASP:HB3 | 1.95 | 0.49 |
| 27:b:50:THR:HG23 | 51:1:1813:G:N2 | 2.27 | 0.49 |
| 27:b:92:LEU:HD21 | 27:b:100:ARG:HD3 | 1.93 | 0.49 |
| 28:c:81:GLU:HG3 | 51:1:2636:C:O5' | 2.13 | 0.49 |
| 31:f:41:GLU:HG2 | 31:f:54:ARG:HH21 | 1.78 | 0.49 |
| 33:i:25:PRO:HB3 | 51:1:1095:A:N1 | 2.27 | 0.49 |
| 51:1:355:U:H2' | 51:1:356:G:H8 | 1.77 | 0.49 |
| 51:1:644:A:H2' | 51:1:645:C:C4' | 2.42 | 0.49 |
| 51:1:1748:C:H2' | 51:1:1749:A:C8 | 2.47 | 0.49 |
| 51:1:2533:U:H2' | 51:1:2534:A:C5' | 2.42 | 0.49 |
| 51:1:2634:A:O2' | 51:1:2635:A:H5' | 2.12 | 0.49 |
| 53:3:517:G:N2 | 53:3:533:A:OP2 | 2.34 | 0.49 |
| 53:3:1137:C:H4' | 53:3:1138:G:H5' | 1.94 | 0.49 |
| 11:K:42:TRP:HB2 | 11:K:59:TYR:HB2 | 1.93 | 0.49 |
| 27:b:147:PRO:HG3 | 27:b:184:GLU:HG2 | 1.92 | 0.49 |
| 51:1:1916:A:H2' | 51:1:1917:U:O4' | 2.12 | 0.49 |
| 51:1:2758:A:C2' | 51:1:2759:G:H5' | 2.40 | 0.49 |
| 55:8:3:DC:H2" | 55:8:4:DT:C7 | 2.42 | 0.49 |
| 58:B1:220:ARG:HG2 | 58:B1:220:ARG:NH1 | 2.25 | 0.49 |
| 58:B1:421:VAL:O | 58:B1:436:ALA:HA | 2.12 | 0.49 |
| 59:B2:533:LEU:HD13 | 59:B2:540:ARG:HH21 | 1.77 | 0.49 |
| 11:K:46:GLN:HA | 11:K:56:LYS:HB3 | 1.94 | 0.49 |
| 28:c:13:ARG:NH2 | 40:p:74:GLN:OE1 | 2.43 | 0.49 |
| 28:c:56:LYS:NZ | 51:1:2830:C:H5" | 2.28 | 0.49 |
| 51:1:16:C:H2' | 51:1:17:G:H8 | 1.77 | 0.49 |
| 51:1:286:U:H2' | 51:1:287:G:C8 | 2.47 | 0.49 |
| 51:1:519:U:H2' | 51:1:520:G:C8 | 2.48 | 0.49 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 51:1:1084:A:O2' | 51:1:1105:U:H4' | 2.12 | 0.49 |
| 51:1:1388:G:O2' | 51:1:1389:G:H5' | 2.12 | 0.49 |
| 51:1:2241:A:O2' | 51:1:2242:G:H5' | 2.12 | 0.49 |
| 51:1:2298:A:O2' | 51:1:2299:U:H5' | 2.12 | 0.49 |
| 51:1:2734:A:H2' | 51:1:2735:G:C5' | 2.42 | 0.49 |
| 25:Y:53:MET:HE2 | 25:Y:57:VAL:HG21 | 1.94 | 0.49 |
| 25:Y:59:ARG:O | 25:Y:63:LYS:N | 2.46 | 0.49 |
| 27:b:70:LYS:O | 27:b:117:SER:OG | 2.30 | 0.49 |
| 30:e:135:ILE:HG23 | 30:e:140:ILE:HD11 | 1.93 | 0.49 |
| 31:f:87:GLN:NE2 | 31:f:129:GLU:OE2 | 2.45 | 0.49 |
| 33:i:110:GLN:HG2 | 33:i:121:ILE:HD13 | 1.93 | 0.49 |
| 51:1:78:U:H2' | 51:1:79:C:H6 | 1.77 | 0.49 |
| 51:1:367:G:H2' | 51:1:368:A:O4' | 2.13 | 0.49 |
| 51:1:886:A:C5 | 51:1:887:U:H1' | 2.47 | 0.49 |
| 51:1:905:A:H2' | 51:1:906:U:C5' | 2.40 | 0.49 |
| 51:1:2286:G:H21 | 51:1:2287:A:N6 | 2.09 | 0.49 |
| 51:1:2836:U:H2' | 51:1:2837:A:C8 | 2.47 | 0.49 |
| 53:3:1538:C:O2' | 53:3:1539:C:H5' | 2.11 | 0.49 |
| 59:B2:18:ARG:HE | 59:B2:620:ASN:HA | 1.77 | 0.49 |
| 17:Q:97:VAL:HG12 | 17:Q:99:GLY:H | 1.78 | 0.49 |
| 27:b:56:GLY:HA2 | 27:b:212:TRP:HA | 1.94 | 0.49 |
| 51:1:69:C:O2' | 51:1:70:G:H5' | 2.13 | 0.49 |
| 51:1:187:G:C6 | 51:1:188:G:N7 | 2.80 | 0.49 |
| 51:1:236:C:H2' | 51:1:237:C:C6 | 2.46 | 0.49 |
| 51:1:488:G:H22 | 51:1:491:G:H5" | 1.77 | 0.49 |
| 51:1:898:C:C2' | 51:1:899:A:H5' | 2.43 | 0.49 |
| 51:1:900:A:H2' | 51:1:901:C:H5' | 1.94 | 0.49 |
| 51:1:1796:U:H2' | 51:1:1797:G:C8 | 2.45 | 0.49 |
| 53:3:1178:G:N2 | 53:3:1181:G:OP2 | 2.43 | 0.49 |
| 58:B1:124:ILE:HG23 | 58:B1:128:LEU:HD12 | 1.94 | 0.49 |
| 7:G:101:THR:HG23 | 7:G:174:GLU:HG3 | 1.95 | 0.49 |
| 15:O:89:ARG:HH22 | 62:NG:165:PHE:H | 1.60 | 0.49 |
| 30:e:57:ALA:HB2 | 30:e:64:PRO:HD3 | 1.95 | 0.49 |
| 38:n:8:ARG:HH21 | 38:n:43:GLU:HG3 | 1.77 | 0.49 |
| 42:r:71:LYS:HA | 42:r:90:ARG:HG2 | 1.95 | 0.49 |
| 51:1:609:A:H2' | 51:1:610:C:O4' | 2.11 | 0.49 |
| 53:3:113:G:N3 | 53:3:353:A:O2' | 2.42 | 0.49 |
| 53:3:890:G:O2' | 53:3:906:A:N6 | 2.46 | 0.49 |
| 59:B2:732:ILE:HD11 | 59:B2:769:PRO:HB3 | 1.95 | 0.49 |
| 59:B2:857:VAL:HG13 | 59:B2:919:ARG:HH21 | 1.78 | 0.49 |
| 63:5:51:U:H2' | 63:5:52:G:C8 | 2.48 | 0.49 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 12:L:2:ARG:NH2 | 53:3:933:G:O6 | 2.46 | 0.49 |
| 30:e:84:ILE:HD11 | 51:1:2311:A:H1' | 1.94 | 0.49 |
| 51:1:121:G:H4' | 51:1:149:A:H5' | 1.95 | 0.49 |
| 51:1:1119:U:O2' | 51:1:1120:G:H5' | 2.13 | 0.49 |
| 53:3:401:C:O2' | 53:3:621:A:N3 | 2.45 | 0.49 |
| 53:3:481:G:O2' | 53:3:483:C:N4 | 2.46 | 0.49 |
| 58:B1:201:LEU:HD11 | 58:B1:220:ARG:HG2 | 1.95 | 0.49 |
| 58:B1:749:LYS:HB3 | 58:B1:755:ILE:HD11 | 1.94 | 0.49 |
| 51:1:482:A:H1' | 51:1:498:G:N2 | 2.27 | 0.49 |
| 51:1:1111:A:H2' | 51:1:1111:A:N3 | 2.28 | 0.49 |
| 51:1:1785:A:O2' | 51:1:1786:A:H8 | 1.96 | 0.49 |
| 51:1:2283:C:H2' | 51:1:2284:A:O4' | 2.11 | 0.49 |
| 51:1:2553:G:H22 | 63:5:75:C:H42 | 1.60 | 0.49 |
| 53:3:1064:G:O2' | 53:3:1190:G:N2 | 2.46 | 0.49 |
| 58:B1:550:VAL:O | 58:B1:569:LEU:HA | 2.13 | 0.49 |
| 59:B2:565:GLU:HA | 59:B2:569:ILE:HG12 | 1.95 | 0.49 |
| 13:M:29:SER:OG | 13:M:30:LYS:N | 2.43 | 0.49 |
| 17:Q:70:GLY:O | 17:Q:107:LYS:NZ | 2.44 | 0.49 |
| 35:k:5:GLN:HE21 | 51:1:1668:A:H5" | 1.78 | 0.49 |
| 48:x:1:SER:O | 48:x:49:ARG:NH1 | 2.46 | 0.49 |
| 51:1:67:U:H2' | 51:1:68:G:H8 | 1.77 | 0.49 |
| 51:1:1668:A:N3 | 51:1:1670:C:N4 | 2.60 | 0.49 |
| 51:1:2180:U:O2' | 51:1:2181:U:H5' | 2.13 | 0.49 |
| 51:1:2281:A:O2' | 51:1:2282:G:H5' | 2.12 | 0.49 |
| 51:1:2510:C:N4 | 51:1:2511:U:C4 | 2.81 | 0.49 |
| 53:3:780:A:N6 | 53:3:801:U:OP2 | 2.42 | 0.49 |
| 55:8:14:DC:H2' | 55:8:15:DC:C6 | 2.48 | 0.49 |
| 57:A2:294:ASN:HA | 61:NA:463:GLY:CA | 2.41 | 0.49 |
| 11:K:41:ASP:OD1 | 11:K:58:HIS:NE2 | 2.39 | 0.48 |
| 44:t:70:HIS:N | 44:t:73:ARG:O | 2.44 | 0.48 |
| 51:1:554:U:O2' | 51:1:555:G:H5' | 2.13 | 0.48 |
| 51:1:940:G:H2' | 51:1:941:A:C5' | 2.41 | 0.48 |
| 51:1:1077:A:H8 | 51:1:1078:U:H1' | 1.77 | 0.48 |
| 51:1:1266:G:O2' | 51:1:2012:G:O6 | 2.25 | 0.48 |
| 51:1:1400:U:H2' | 51:1:1401:G:H8 | 1.78 | 0.48 |
| 51:1:1465:G:H2' | 51:1:1466:U:O4' | 2.13 | 0.48 |
| 51:1:1534:U:H4' | 51:1:1535:A:N1 | 2.27 | 0.48 |
| 51:1:2329:U:H2' | 51:1:2330:G:H8 | 1.78 | 0.48 |
| 51:1:2527:C:O2' | 51:1:2528:U:H5' | 2.13 | 0.48 |
| 57:A1:100:LEU:HB2 | 57:A1:144:ILE:HG23 | 1.94 | 0.48 |
| 40:p:2:ASN:HD21 | 51:1:2876:G:H4' | 1.79 | 0.48 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 51:1:54:G:H2' | 51:1:55:G:O4' | 2.12 | 0.48 |
| 51:1:360:U:H2' | 51:1:361:G:C1' | 2.44 | 0.48 |
| 51:1:481:G:C2' | 51:1:482:A:OP2 | 2.61 | 0.48 |
| 51:1:718:A:H2' | 51:1:719:C:O4' | 2.12 | 0.48 |
| 51:1:1387:A:C5' | 51:1:1469:A:H1' | 2.38 | 0.48 |
| 51:1:1409:U:H2' | 51:1:1410:G:H8 | 1.76 | 0.48 |
| 51:1:1871:A:H2' | 51:1:1872:A:O4' | 2.13 | 0.48 |
| 51:1:1910:G:N2 | 51:1:1911:U:C2 | 2.81 | 0.48 |
| 51:1:2214:C:H2' | 51:1:2215:C:O4' | 2.14 | 0.48 |
| 51:1:2367:G:O2' | 51:1:2368:C:H5' | 2.13 | 0.48 |
| 9:I:153:ARG:NH2 | 53:3:435:A:N3 | 2.61 | 0.48 |
| 26:Z:55:HIS:HA | 26:Z:58:LYS:HD2 | 1.95 | 0.48 |
| 31:f:163:TYR:HB2 | 31:f:166:GLU:HB2 | 1.95 | 0.48 |
| 33:i:85:ILE:HD12 | 33:i:97:VAL:HG12 | 1.95 | 0.48 |
| 37:m:74:THR:HG21 | 37:m:86:LYS:HG2 | 1.94 | 0.48 |
| 45:u:88:ASP:OD1 | 45:u:88:ASP:N | 2.43 | 0.48 |
| 51:1:92:U:H2' | 51:1:93:G:H5' | 1.95 | 0.48 |
| 51:1:841:G:C2 | 51:1:938:G:C2 | 3.01 | 0.48 |
| 51:1:1117:C:H2' | 51:1:1118:C:H6 | 1.78 | 0.48 |
| 51:1:2843:G:O2' | 51:1:2844:G:H5' | 2.13 | 0.48 |
| 65:h:6:5OH:N | 65:h:6:5OH:CS | 2.75 | 0.48 |
| 14:N:10:ARG:NH2 | 53:3:1119:C:OP2 | 2.47 | 0.48 |
| 40:p:59:THR:HG22 | 40:p:72:VAL:HG12 | 1.95 | 0.48 |
| 49:y:16:THR:O | 49:y:20:ASN:ND2 | 2.46 | 0.48 |
| 51:1:214:G:H2' | 51:1:215:G:C8 | 2.48 | 0.48 |
| 51:1:553:G:H2' | 51:1:554:U:O4' | 2.13 | 0.48 |
| 51:1:572:A:H8 | 51:1:572:A:O5' | 1.97 | 0.48 |
| 51:1:898:C:O2' | 51:1:899:A:H5' | 2.13 | 0.48 |
| 51:1:1645:G:H5" | 51:1:1646:C:H5' | 1.94 | 0.48 |
| 51:1:1702:G:H2' | 51:1:1703:G:C5' | 2.35 | 0.48 |
| 53:3:768:A:N3 | 53:3:1512:U:O2' | 2.46 | 0.48 |
| 53:3:898:G:N2 | 53:3:901:A:OP2 | 2.46 | 0.48 |
| 53:3:1223:C:H5' | 53:3:1224:U:H5" | 1.96 | 0.48 |
| 59:B2:318:SER:OG | 59:B2:320:ASP:OD1 | 2.31 | 0.48 |
| 59:B2:411:ARG:NH2 | 59:B2:427:ASP:OD2 | 2.44 | 0.48 |
| 59:B2:836:LEU:HD13 | 59:B2:1054:LEU:HD13 | 1.95 | 0.48 |
| 14:N:91:GLU:HA | 14:N:94:ARG:HB2 | 1.94 | 0.48 |
| 16:P:96:ILE:HD13 | 16:P:109:ILE:HD13 | 1.94 | 0.48 |
| 17:Q:110:LYS:HG3 | 17:Q:121:PRO:HG3 | 1.94 | 0.48 |
| 21:U:18:GLN:HA | 21:U:38:PHE:HA | 1.95 | 0.48 |
| 31:f:122:ALA:HB2 | 31:f:132:LEU:HD23 | 1.94 | 0.48 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 39:o:15:ARG:NH2 | 52:2:8:C:OP1 | 2.47 | 0.48 |
| 51:1:118:A:H2' | 51:1:120:U:O4 | 2.13 | 0.48 |
| 51:1:706:A:H2' | 51:1:707:G:H5' | 1.95 | 0.48 |
| 51:1:1437:C:H2' | 51:1:1438:U:H6 | 1.78 | 0.48 |
| 51:1:1536:C:H5" | 51:1:1537:G:C4 | 2.48 | 0.48 |
| 51:1:1729:U:H5 | 51:1:1731:G:N2 | 2.12 | 0.48 |
| 51:1:2126:A:H5' | 51:1:2127:G:O5' | 2.13 | 0.48 |
| 53:3:776:G:N2 | 53:3:802:A:OP2 | 2.39 | 0.48 |
| 53:3:880:C:H2' | 53:3:881:G:H8 | 1.78 | 0.48 |
| 58:B1:115:TRP:O | 58:B1:1333:THR:HG21 | 2.13 | 0.48 |
| 42:r:68:ARG:O | 42:r:90:ARG:NH2 | 2.46 | 0.48 |
| 51:1:107:G:O2' | 51:1:108:G:H5' | 2.14 | 0.48 |
| 51:1:415:A:H2' | 51:1:416:U:C6 | 2.49 | 0.48 |
| 51:1:1087:G:O6 | 51:1:1089:A:C2 | 2.67 | 0.48 |
| 51:1:1680:U:O2' | 51:1:1681:G:H5' | 2.13 | 0.48 |
| 58:B1:968:ASN:HA | 58:B1:1117:SER:HB2 | 1.96 | 0.48 |
| 1:A:37:CYS:O | 1:A:41:HIS:N | 2.45 | 0.48 |
| 9:I:94:GLU:HG3 | 9:I:190:LEU:HD21 | 1.95 | 0.48 |
| 45:u:39:ASN:HB3 | 45:u:62:ALA:HB3 | 1.95 | 0.48 |
| 51:1:2393:U:H2' | 51:1:2394:C:H5' | 1.94 | 0.48 |
| 53:3:673:A:H2' | 53:3:674:G:C8 | 2.49 | 0.48 |
| 58:B1:1347:LEU:HG | 58:B1:1357:ILE:HG23 | 1.96 | 0.48 |
| 6:F:6:SER:O | 6:F:6:SER:OG | 2.31 | 0.48 |
| 13:M:83:ARG:NH2 | 53:3:587:G:OP1 | 2.44 | 0.48 |
| 15:O:58:ASN:ND2 | 53:3:1061:G:O2' | 2.45 | 0.48 |
| 17:Q:82:ARG:O | 17:Q:95:HIS:N | 2.47 | 0.48 |
| 29:d:143:LEU:HD13 | 29:d:146:VAL:HG11 | 1.94 | 0.48 |
| 41:q:103:VAL:HA | 41:q:106:THR:HG22 | 1.94 | 0.48 |
| 51:1:129:C:H2' | 51:1:130:C:H6 | 1.79 | 0.48 |
| 51:1:217:A:H2' | 51:1:218:A:O4' | 2.13 | 0.48 |
| 51:1:2547:A:H61 | 51:1:2561:U:H3 | 1.62 | 0.48 |
| 59:B2:363:LEU:HB3 | 59:B2:381:ALA:HB1 | 1.96 | 0.48 |
| 14:N:44:ARG:HG2 | 14:N:45:MET:HE2 | 1.95 | 0.48 |
| 38:n:100:CYS:H | 38:n:111:ALA:HA | 1.79 | 0.48 |
| 51:1:820:A:H2' | 51:1:821:A:O4' | 2.14 | 0.48 |
| 51:1:1257:C:O5' | 51:1:1257:C:H6 | 1.97 | 0.48 |
| 51:1:1537:G:H3' | 51:1:1537:G:N3 | 2.28 | 0.48 |
| 51:1:1742:U:O2' | 51:1:1743:G:H5' | 2.14 | 0.48 |
| 51:1:2016:U:O5' | 51:1:2016:U:H6 | 1.97 | 0.48 |
| 53:3:358:U:H2' | 53:3:359:G:H8 | 1.78 | 0.48 |
| 58:B1:190:LYS:HB2 | 58:B1:190:LYS:HE3 | 1.41 | 0.48 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 59:B2:554:HIS:HD2 | 59:B2:558:VAL:HB | 1.77 | 0.48 |
| 12:L:41:ILE:HD11 | 53:3:1240:U:H5' | 1.94 | 0.48 |
| 14:N:94:ARG:HG2 | 14:N:97:LEU:HD12 | 1.95 | 0.48 |
| 20:T:48:ASP:OD1 | 53:3:667:G:O2' | 2.25 | 0.48 |
| 29:d:149:ILE:HD11 | 29:d:172:ALA:HA | 1.96 | 0.48 |
| 42:r:7:SER:OG | 42:r:8:GLY:N | 2.47 | 0.48 |
| 46:v:79:ARG:HA | 46:v:86:LEU:HA | 1.95 | 0.48 |
| 51:1:473:G:O2' | 51:1:474:G:H5' | 2.14 | 0.48 |
| 51:1:2050:C:N4 | 51:1:2051:A:C6 | 2.81 | 0.48 |
| 51:1:2208:C:H2' | 51:1:2209:G:C8 | 2.48 | 0.48 |
| 51:1:2649:C:O2' | 51:1:2650:U:H5' | 2.13 | 0.48 |
| 53:3:1531:A:O2' | 53:3:1532:U:H5' | 2.14 | 0.48 |
| 59:B2:562:GLU:OE1 | 59:B2:662:SER:OG | 2.28 | 0.48 |
| 59:B2:1286:THR:O | 59:B2:1290:MET:HB2 | 2.14 | 0.48 |
| 33:i:79:LEU:HD13 | 33:i:132:ALA:HB2 | 1.94 | 0.47 |
| 36:l:129:LYS:HG2 | 51:1:636:G:OP1 | 2.14 | 0.47 |
| 51:1:5:A:H2' | 51:1:6:A:C8 | 2.49 | 0.47 |
| 51:1:275:C:C3' | 51:1:276:U:H5" | 2.40 | 0.47 |
| 51:1:596:U:C2 | 51:1:662:G:N2 | 2.82 | 0.47 |
| 57:A1:182:ARG:O | 57:A1:205:MET:HA | 2.14 | 0.47 |
| 58:B1:103:GLY:H | 58:B1:244:VAL:HG22 | 1.79 | 0.47 |
| 58:B1:395:LYS:NZ | 58:B1:399:LYS:CE | 2.77 | 0.47 |
| 58:B1:1221:LEU:HD22 | 58:B1:1306:LEU:HB2 | 1.96 | 0.47 |
| 59:B2:529:ARG:HH11 | 59:B2:572:ILE:HG22 | 1.77 | 0.47 |
| 64:7:50:U:H2' | 64:7:51:C:C5 | 2.49 | 0.47 |
| 29:d:48:THR:OG1 | 29:d:49:ARG:N | 2.47 | 0.47 |
| 51:1:40:U:H2' | 51:1:41:C:H6 | 1.78 | 0.47 |
| 51:1:476:G:H4' | 51:1:502:A:N1 | 2.28 | 0.47 |
| 51:1:813:U:C2 | 51:1:1195:G:N2 | 2.83 | 0.47 |
| 51:1:2098:U:H2' | 51:1:2099:U:O4' | 2.14 | 0.47 |
| 51:1:2286:G:H21 | 51:1:2287:A:H61 | 1.62 | 0.47 |
| 51:1:2895:G:H2' | 51:1:2896:C:C6 | 2.49 | 0.47 |
| 58:B1:1027:VAL:HB | 58:B1:1121:LEU:HB2 | 1.95 | 0.47 |
| 14:N:86:LEU:HD12 | 14:N:97:LEU:HD11 | 1.95 | 0.47 |
| 27:b:152:GLN:HB3 | 51:1:1818:U:N3 | 2.29 | 0.47 |
| 28:c:190:LYS:HE2 | 51:1:2729:G:H4' | 1.95 | 0.47 |
| 47:w:19:VAL:HA | 47:w:34:VAL:HG22 | 1.96 | 0.47 |
| 51:1:214:G:O2' | 51:1:215:G:H5' | 2.14 | 0.47 |
| 51:1:852:U:H2' | 51:1:853:C:C6 | 2.49 | 0.47 |
| 51:1:1026:G:OP2 | 51:1:1134:A:H1' | 2.13 | 0.47 |
| 51:1:1324:G:O2' | 51:1:1326:U:OP2 | 2.29 | 0.47 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 51:1:1807:G:C2’ | 51:1:1808:A:H5’ | 2.29 | 0.47 |
| 51:1:2047:C:O5’ | 51:1:2047:C:H6 | 1.98 | 0.47 |
| 51:1:2362:C:O5’ | 51:1:2362:C:H6 | 1.97 | 0.47 |
| 51:1:2828:G:O2’ | 51:1:2829:A:H5’ | 2.13 | 0.47 |
| 52:2:51:G:H22 | 52:2:53:A:H62 | 1.61 | 0.47 |
| 53:3:530:G:N1 | 53:3:1492:A:N1 | 2.59 | 0.47 |
| 57:A2:102:LEU:HD12 | 57:A2:115:ILE:HG12 | 1.96 | 0.47 |
| 58:B1:29:MET:HG2 | 59:B2:1336:ASN:ND2 | 2.29 | 0.47 |
| 58:B1:1261:LEU:HD12 | 58:B1:1304:ARG:HH21 | 1.78 | 0.47 |
| 63:5:37:A:H3’ | 63:5:38:A:C8 | 2.49 | 0.47 |
| 7:G:129:THR:HB | 7:G:132:GLU:HB2 | 1.96 | 0.47 |
| 9:I:93:LEU:O | 9:I:99:ASN:ND2 | 2.39 | 0.47 |
| 27:b:131:MET:HE2 | 27:b:187:CYS:HB2 | 1.96 | 0.47 |
| 51:1:1267:U:H2’ | 51:1:1267:U:O2 | 2.14 | 0.47 |
| 51:1:1509:A:H2’ | 51:1:1510:G:C8 | 2.49 | 0.47 |
| 51:1:2149:U:H2’ | 51:1:2150:C:C6 | 2.49 | 0.47 |
| 51:1:2298:A:C2’ | 51:1:2299:U:H5’ | 2.45 | 0.47 |
| 51:1:2554:U:H2’ | 51:1:2555:U:O2 | 2.15 | 0.47 |
| 55:8:14:DC:H2’ | 55:8:15:DC:H6 | 1.79 | 0.47 |
| 59:B2:1311:GLY:O | 60:W0:31:GLN:NE2 | 2.47 | 0.47 |
| 62:NG:161:SER:CA | 62:NG:170:PRO:HA | 2.43 | 0.47 |
| 63:5:29:G:H3’ | 63:5:30:G:C8 | 2.50 | 0.47 |
| 9:I:171:GLU:HB3 | 9:I:180:THR:HG22 | 1.97 | 0.47 |
| 12:L:112:ASP:HB2 | 12:L:118:ARG:HG2 | 1.96 | 0.47 |
| 16:P:34:THR:OG1 | 16:P:35:ASP:N | 2.47 | 0.47 |
| 33:i:8:VAL:HG21 | 33:i:26:ALA:HB1 | 1.96 | 0.47 |
| 34:j:65:THR:HG22 | 51:1:1141:U:OP2 | 2.15 | 0.47 |
| 47:w:29:ALA:N | 47:w:60:ASP:OD1 | 2.48 | 0.47 |
| 51:1:1098:A:O2’ | 51:1:1099:G:H5’ | 2.15 | 0.47 |
| 51:1:1285:A:H2’ | 51:1:1286:A:H5’ | 1.96 | 0.47 |
| 51:1:1400:U:H2’ | 51:1:1401:G:C8 | 2.50 | 0.47 |
| 51:1:1463:C:H2’ | 51:1:1464:G:C8 | 2.49 | 0.47 |
| 51:1:1464:G:H2’ | 51:1:1465:G:C8 | 2.49 | 0.47 |
| 51:1:1491:G:H2’ | 51:1:1492:G:H8 | 1.80 | 0.47 |
| 51:1:1913:A:N7 | 53:3:1494:G:H4’ | 2.29 | 0.47 |
| 51:1:2156:G:C3’ | 51:1:2157:G:H5’ | 2.44 | 0.47 |
| 53:3:38:G:H22 | 53:3:397:A:H5’ | 1.78 | 0.47 |
| 58:B1:255:LEU:HD23 | 58:B1:261:ALA:HB2 | 1.95 | 0.47 |
| 58:B1:809:VAL:HG21 | 58:B1:909:ILE:HG12 | 1.95 | 0.47 |
| 12:L:79:VAL:HB | 12:L:84:TYR:HD2 | 1.80 | 0.47 |
| 12:L:107:ALA:HA | 12:L:122:GLU:HG3 | 1.95 | 0.47 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 17:Q:114:SER:O | 53:3:35:G:O2' | 2.30 | 0.47 |
| 18:R:15:VAL:HG11 | 18:R:30:LYS:HG2 | 1.97 | 0.47 |
| 28:c:136:ASN:OD1 | 51:1:2579:C:O2' | 2.32 | 0.47 |
| 33:i:79:LEU:HD21 | 33:i:105:LEU:HD21 | 1.96 | 0.47 |
| 49:y:15:ASN:OD1 | 49:y:16:THR:N | 2.48 | 0.47 |
| 51:1:149:A:H2' | 51:1:150:U:C6 | 2.49 | 0.47 |
| 51:1:297:G:H2' | 51:1:298:G:O4' | 2.14 | 0.47 |
| 51:1:762:U:N3 | 51:1:1431:A:OP1 | 2.47 | 0.47 |
| 51:1:1464:G:H2' | 51:1:1465:G:H8 | 1.78 | 0.47 |
| 53:3:1305:G:N2 | 53:3:1331:G:H2' | 2.29 | 0.47 |
| 58:B1:128:LEU:HD21 | 58:B1:188:LEU:HB3 | 1.97 | 0.47 |
| 58:B1:352:ARG:HB2 | 59:B2:1268:GLN:NE2 | 2.30 | 0.47 |
| 58:B1:833:GLU:N | 58:B1:1242:ARG:HH12 | 2.12 | 0.47 |
| 58:B1:1150:PRO:HG3 | 58:B1:1214:PRO:HB2 | 1.96 | 0.47 |
| 58:B1:1167:LYS:NZ | 58:B1:1170:LYS:HB2 | 2.30 | 0.47 |
| 4:D:29:GLN:O | 4:D:29:GLN:NE2 | 2.47 | 0.47 |
| 9:I:159:GLU:HA | 9:I:162:GLU:HB2 | 1.97 | 0.47 |
| 11:K:10:VAL:HG23 | 11:K:58:HIS:HB3 | 1.97 | 0.47 |
| 12:L:149:ALA:HB1 | 16:P:58:THR:HG21 | 1.97 | 0.47 |
| 17:Q:70:GLY:O | 17:Q:98:ARG:NH2 | 2.47 | 0.47 |
| 20:T:38:LEU:HD22 | 20:T:55:LEU:HD13 | 1.96 | 0.47 |
| 21:U:25:ARG:NH1 | 53:3:230:G:O2' | 2.48 | 0.47 |
| 26:Z:19:LYS:H | 26:Z:19:LYS:HG3 | 1.53 | 0.47 |
| 31:f:16:VAL:HA | 31:f:25:ILE:HG12 | 1.96 | 0.47 |
| 31:f:87:GLN:HB3 | 31:f:162:ARG:HG3 | 1.97 | 0.47 |
| 31:f:88:LEU:HD21 | 31:f:104:LEU:HD23 | 1.97 | 0.47 |
| 32:g:8:LYS:HD3 | 32:g:14:SER:HA | 1.96 | 0.47 |
| 32:g:47:PHE:HA | 32:g:51:ARG:HB2 | 1.96 | 0.47 |
| 33:i:20:SER:HA | 33:i:24:GLY:HA3 | 1.95 | 0.47 |
| 51:1:156:A:H2' | 51:1:157:C:C6 | 2.50 | 0.47 |
| 51:1:555:G:O2' | 51:1:556:A:H8 | 1.96 | 0.47 |
| 51:1:555:G:HO2' | 51:1:556:A:H8 | 1.61 | 0.47 |
| 51:1:1019:U:N3 | 51:1:1142:A:N6 | 2.57 | 0.47 |
| 51:1:1036:G:O2' | 51:1:1037:G:H5' | 2.15 | 0.47 |
| 51:1:1105:U:H2' | 51:1:1106:G:H8 | 1.80 | 0.47 |
| 51:1:1141:U:H4' | 51:1:1142:A:C1' | 2.45 | 0.47 |
| 51:1:1219:U:O2' | 51:1:1220:G:H5' | 2.15 | 0.47 |
| 51:1:1297:C:H2' | 51:1:1298:C:H6 | 1.79 | 0.47 |
| 51:1:1389:G:C2 | 51:1:1390:U:C2 | 3.02 | 0.47 |
| 51:1:1435:G:O2' | 51:1:1436:G:H5' | 2.15 | 0.47 |
| 51:1:1465:G:HO2' | 51:1:1466:U:H5' | 1.80 | 0.47 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 51:1:1517:G:O2' | 51:1:1518:C:H5' | 2.15 | 0.47 |
| 51:1:1851:U:OP1 | 64:7:4:G:H4' | 2.15 | 0.47 |
| 51:1:2155:U:H2' | 51:1:2156:G:O4' | 2.15 | 0.47 |
| 51:1:2194:U:O2' | 51:1:2195:U:H5' | 2.15 | 0.47 |
| 51:1:2295:C:O2' | 51:1:2296:U:H5' | 2.15 | 0.47 |
| 51:1:2445:G:C6 | 51:1:2446:G:C6 | 3.02 | 0.47 |
| 51:1:2455:G:C6 | 51:1:2456:C:N4 | 2.83 | 0.47 |
| 51:1:2899:A:H2' | 51:1:2900:A:O4' | 2.15 | 0.47 |
| 53:3:410:G:H21 | 53:3:432:A:H62 | 1.62 | 0.47 |
| 53:3:617:G:H1 | 53:3:623:C:H42 | 1.62 | 0.47 |
| 58:B1:842:ARG:HH22 | 58:B1:1250:ASP:HB2 | 1.80 | 0.47 |
| 63:5:50:U:H2' | 63:5:51:U:C6 | 2.49 | 0.47 |
| 64:7:48:C:H5" | 64:7:50:U:OP1 | 2.15 | 0.47 |
| 27:b:156:SER:OG | 27:b:157:ALA:N | 2.44 | 0.47 |
| 36:l:39:LYS:HG2 | 51:1:832:U:OP1 | 2.15 | 0.47 |
| 51:1:435:C:C2' | 51:1:436:C:H5' | 2.44 | 0.47 |
| 51:1:551:G:O2' | 51:1:552:U:H5' | 2.15 | 0.47 |
| 51:1:708:G:H2' | 51:1:709:U:C6 | 2.50 | 0.47 |
| 51:1:1020:A:C1' | 51:1:1021:A:OP2 | 2.61 | 0.47 |
| 51:1:1068:G:H2' | 51:1:1069:A:H4' | 1.96 | 0.47 |
| 51:1:1090:A:H61 | 51:1:1101:U:H3 | 1.62 | 0.47 |
| 51:1:1090:A:C2 | 51:1:1102:C:H1' | 2.50 | 0.47 |
| 51:1:1922:G:H2' | 51:1:1923:U:C6 | 2.50 | 0.47 |
| 51:1:2259:U:H2' | 51:1:2260:C:O4' | 2.15 | 0.47 |
| 54:4:3:G:H1 | 64:6:34:C:H42 | 1.63 | 0.47 |
| 58:B1:87:LYS:HA | 62:NG:140:PRO:HA | 1.97 | 0.47 |
| 58:B1:772:TYR:HE2 | 59:B2:561:ILE:HG21 | 1.80 | 0.47 |
| 58:B1:1036:ARG:HE | 58:B1:1081:VAL:HG11 | 1.79 | 0.47 |
| 59:B2:103:VAL:HG12 | 59:B2:117:ILE:HG22 | 1.97 | 0.47 |
| 59:B2:689:ALA:HB2 | 59:B2:1233:LEU:HD23 | 1.97 | 0.47 |
| 5:E:5:THR:HG22 | 5:E:62:PRO:HD2 | 1.97 | 0.47 |
| 19:S:32:ASP:O | 19:S:34:ASN:ND2 | 2.48 | 0.47 |
| 39:o:68:LYS:HE3 | 52:2:49:C:H5" | 1.97 | 0.47 |
| 51:1:30:G:C5 | 51:1:31:C:C4 | 3.03 | 0.47 |
| 51:1:143:C:H2' | 51:1:144:A:C8 | 2.49 | 0.47 |
| 51:1:466:A:H2' | 51:1:467:G:C5' | 2.44 | 0.47 |
| 51:1:712:G:H2' | 51:1:713:G:H5' | 1.96 | 0.47 |
| 51:1:854:C:H2' | 51:1:855:G:H8 | 1.79 | 0.47 |
| 51:1:900:A:C2' | 51:1:901:C:H5' | 2.45 | 0.47 |
| 51:1:1873:G:O2' | 51:1:1874:C:H5' | 2.15 | 0.47 |
| 51:1:1874:C:H2' | 51:1:1875:G:O4' | 2.15 | 0.47 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 51:1:1927:A:H2' | 51:1:1928:A:C8 | 2.50 | 0.47 |
| 51:1:2241:A:H2' | 51:1:2242:G:C8 | 2.50 | 0.47 |
| 51:1:2395:C:H2' | 51:1:2396:G:O4' | 2.15 | 0.47 |
| 51:1:2563:U:H2' | 51:1:2565:A:OP2 | 2.15 | 0.47 |
| 51:1:2679:A:O2' | 51:1:2680:U:H5' | 2.15 | 0.47 |
| 6:F:27:CYS:HG | 6:F:33:HIS:HD1 | 1.55 | 0.47 |
| 27:b:145:MET:HE1 | 51:1:1800:C:H2' | 1.98 | 0.47 |
| 27:b:184:GLU:HG3 | 27:b:186:ASP:H | 1.80 | 0.47 |
| 33:i:54:ILE:HD12 | 33:i:73:PRO:HD3 | 1.95 | 0.47 |
| 34:j:2:LYS:HA | 51:1:995:C:C4 | 2.50 | 0.47 |
| 46:v:26:PHE:HE2 | 46:v:89:ILE:HG13 | 1.80 | 0.47 |
| 51:1:859:G:C2' | 51:1:860:U:OP2 | 2.62 | 0.47 |
| 51:1:877:A:O2' | 51:1:878:A:H5" | 2.14 | 0.47 |
| 51:1:1067:A:H2' | 51:1:1068:G:C8 | 2.49 | 0.47 |
| 51:1:1922:G:O2' | 51:1:1923:U:H5' | 2.15 | 0.47 |
| 53:3:512:U:H2' | 53:3:513:C:C6 | 2.50 | 0.47 |
| 57:A1:35:PHE:HA | 57:A1:38:THR:HG22 | 1.97 | 0.47 |
| 58:B1:891:ASP:OD2 | 58:B1:1290:ARG:NH2 | 2.47 | 0.47 |
| 58:B1:1060:VAL:HG13 | 58:B1:1106:ILE:HG12 | 1.97 | 0.47 |
| 9:I:1:ALA:N | 53:3:405:U:O4 | 2.45 | 0.46 |
| 29:d:119:ILE:HB | 29:d:187:VAL:HG12 | 1.96 | 0.46 |
| 31:f:29:ASN:ND2 | 31:f:80:GLU:O | 2.48 | 0.46 |
| 35:k:47:ILE:HG22 | 35:k:49:ARG:H | 1.80 | 0.46 |
| 46:v:83:LYS:HB3 | 46:v:85:LYS:HZ3 | 1.80 | 0.46 |
| 51:1:283:G:C2' | 51:1:284:U:H5' | 2.45 | 0.46 |
| 51:1:979:A:H2' | 51:1:982:C:H42 | 1.81 | 0.46 |
| 51:1:1536:C:H5" | 51:1:1537:G:C5 | 2.50 | 0.46 |
| 53:3:1225:A:H2' | 53:3:1225:A:N3 | 2.30 | 0.46 |
| 58:B1:108:ALA:HB1 | 58:B1:279:LEU:HD22 | 1.96 | 0.46 |
| 17:Q:45:ASN:ND2 | 17:Q:88:ASP:OD2 | 2.39 | 0.46 |
| 18:R:7:ASN:HD22 | 18:R:20:SER:HB2 | 1.80 | 0.46 |
| 26:Z:29:ALA:O | 26:Z:32:ARG:NH1 | 2.49 | 0.46 |
| 51:1:338:G:O2' | 51:1:339:U:H5' | 2.14 | 0.46 |
| 51:1:554:U:C2' | 51:1:555:G:H5' | 2.46 | 0.46 |
| 51:1:570:G:H5' | 51:1:983:A:C2 | 2.51 | 0.46 |
| 51:1:848:C:H2' | 51:1:849:A:H8 | 1.81 | 0.46 |
| 51:1:2294:G:O2' | 51:1:2295:C:H5' | 2.15 | 0.46 |
| 51:1:2626:C:H2' | 51:1:2627:G:H8 | 1.80 | 0.46 |
| 53:3:1035:A:H1' | 53:3:1036:A:O5' | 2.16 | 0.46 |
| 58:B1:385:LEU:HD23 | 58:B1:390:LEU:HB2 | 1.98 | 0.46 |
| 58:B1:526:VAL:HG12 | 58:B1:549:LYS:HB2 | 1.96 | 0.46 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 58:B1:1146:GLU:OE2 | 58:B1:1310:THR:HG22 | 2.14 | 0.46 |
| 58:B1:1219:ASP:O | 58:B1:1223:LEU:HB2 | 2.15 | 0.46 |
| 58:B1:1357:ILE:HD13 | 59:B2:1279:GLU:HG2 | 1.97 | 0.46 |
| 59:B2:400:VAL:HG22 | 59:B2:584:TYR:HB3 | 1.96 | 0.46 |
| 59:B2:903:ARG:HA | 59:B2:907:GLY:HA2 | 1.97 | 0.46 |
| 12:L:137:ARG:NH1 | 12:L:138:GLU:OE2 | 2.48 | 0.46 |
| 14:N:40:ARG:NH2 | 53:3:1291:U:O3' | 2.38 | 0.46 |
| 31:f:90:GLY:HA2 | 31:f:159:LYS:HG2 | 1.98 | 0.46 |
| 48:x:38:TRP:NE1 | 48:x:40:GLU:OE1 | 2.41 | 0.46 |
| 51:1:93:G:O2' | 51:1:94:A:H5' | 2.16 | 0.46 |
| 51:1:438:G:O2' | 51:1:439:A:H5' | 2.16 | 0.46 |
| 51:1:1117:C:H2' | 51:1:1118:C:C6 | 2.50 | 0.46 |
| 51:1:1146:C:O2' | 51:1:1147:A:H5' | 2.16 | 0.46 |
| 51:1:2858:C:H2' | 51:1:2859:G:O4' | 2.15 | 0.46 |
| 58:B1:211:GLU:CG | 58:B1:215:LYS:HE3 | 2.44 | 0.46 |
| 59:B2:1314:GLN:HB2 | 60:W0:28:ARG:HH12 | 1.79 | 0.46 |
| 63:5:8:U:H2' | 63:5:13:C:N4 | 2.30 | 0.46 |
| 14:N:11:ARG:NH2 | 53:3:1347:G:O6 | 2.49 | 0.46 |
| 20:T:37:HIS:HD2 | 20:T:38:LEU:HD12 | 1.80 | 0.46 |
| 45:u:6:ARG:HB2 | 51:1:85:G:P | 2.55 | 0.46 |
| 51:1:538:A:O2' | 51:1:539:G:H5' | 2.14 | 0.46 |
| 51:1:686:U:H6 | 51:1:788:A:H61 | 1.61 | 0.46 |
| 51:1:1209:U:O3' | 51:1:1212:G:H5' | 2.16 | 0.46 |
| 52:2:39:A:O2' | 52:2:46:A:N1 | 2.47 | 0.46 |
| 58:B1:375:GLU:HB3 | 59:B2:1245:ALA:HB3 | 1.97 | 0.46 |
| 58:B1:800:LEU:HD12 | 58:B1:800:LEU:HA | 1.79 | 0.46 |
| 59:B2:1002:LEU:HD21 | 59:B2:1007:LYS:HB2 | 1.98 | 0.46 |
| 3:C:13:SER:OG | 3:C:47:ILE:O | 2.27 | 0.46 |
| 8:H:171:ARG:HG2 | 8:H:173:PRO:HD3 | 1.96 | 0.46 |
| 12:L:142:ARG:HA | 12:L:145:GLU:HG3 | 1.97 | 0.46 |
| 17:Q:72:ASN:HD21 | 17:Q:103:CYS:HA | 1.81 | 0.46 |
| 31:f:100:ASN:OD1 | 31:f:100:ASN:N | 2.47 | 0.46 |
| 33:i:115:ASP:OD2 | 51:1:1059:G:H4' | 2.14 | 0.46 |
| 48:x:14:GLY:HA3 | 48:x:28:PHE:HE1 | 1.81 | 0.46 |
| 51:1:848:C:H2' | 51:1:849:A:C8 | 2.51 | 0.46 |
| 51:1:853:C:O2' | 51:1:854:C:H5' | 2.16 | 0.46 |
| 51:1:1367:A:H3' | 51:1:1368:G:O4' | 2.15 | 0.46 |
| 51:1:1572:A:H2' | 51:1:1573:G:O4' | 2.16 | 0.46 |
| 51:1:1768:C:H42 | 51:1:1984:G:H1 | 1.62 | 0.46 |
| 51:1:2247:A:H2' | 51:1:2248:C:H6 | 1.81 | 0.46 |
| 58:B1:43:THR:HG22 | 58:B1:57:PHE:HE1 | 1.80 | 0.46 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 58:B1:198:CYS:HA | 58:B1:221:ILE:CD1 | 2.45 | 0.46 |
| 59:B2:517:GLN:HB3 | 59:B2:760:ASN:H | 1.79 | 0.46 |
| 10:J:73:VAL:HG11 | 10:J:143:LEU:HB3 | 1.98 | 0.46 |
| 11:K:3:HIS:HA | 11:K:65:GLU:HA | 1.97 | 0.46 |
| 43:s:72:THR:OG1 | 43:s:73:LYS:N | 2.48 | 0.46 |
| 51:1:569:U:H1' | 51:1:947:A:O4' | 2.16 | 0.46 |
| 51:1:1183:U:H2' | 51:1:1184:U:H6 | 1.80 | 0.46 |
| 51:1:1381:G:H2' | 51:1:1382:G:H5' | 1.98 | 0.46 |
| 51:1:1528:A:H2' | 51:1:1529:G:C5' | 2.44 | 0.46 |
| 51:1:2290:G:O2' | 51:1:2291:U:H5' | 2.16 | 0.46 |
| 51:1:2496:C:H2' | 51:1:2497:A:O4' | 2.16 | 0.46 |
| 51:1:2528:U:O2' | 51:1:2529:G:H3' | 2.16 | 0.46 |
| 51:1:2743:U:H2' | 51:1:2744:G:O4' | 2.16 | 0.46 |
| 58:B1:420:PRO:HA | 58:B1:437:PHE:O | 2.15 | 0.46 |
| 64:6:21:A:H62 | 64:6:47:U:H1' | 1.81 | 0.46 |
| 28:c:4:LEU:HD11 | 28:c:100:LEU:HD21 | 1.98 | 0.46 |
| 29:d:132:LYS:HG2 | 29:d:136:GLN:HE22 | 1.81 | 0.46 |
| 40:p:74:GLN:O | 40:p:77:SER:OG | 2.30 | 0.46 |
| 51:1:44:A:H2' | 51:1:45:G:O4' | 2.15 | 0.46 |
| 51:1:389:G:O2' | 51:1:390:U:H5' | 2.15 | 0.46 |
| 51:1:409:G:H2' | 51:1:410:G:C8 | 2.51 | 0.46 |
| 51:1:1516:G:O2' | 51:1:1517:G:H5' | 2.15 | 0.46 |
| 51:1:1574:C:H2' | 51:1:1575:C:C6 | 2.50 | 0.46 |
| 51:1:1726:C:H2' | 51:1:1727:C:C6 | 2.50 | 0.46 |
| 51:1:1766:G:C2' | 51:1:1767:G:H5' | 2.45 | 0.46 |
| 51:1:1923:U:O2' | 51:1:1924:C:H5' | 2.16 | 0.46 |
| 51:1:2180:U:H2' | 51:1:2181:U:O4' | 2.14 | 0.46 |
| 53:3:1383:C:H4' | 64:7:35:A:H2 | 1.81 | 0.46 |
| 57:A1:59:VAL:HG22 | 57:A1:144:ILE:HA | 1.97 | 0.46 |
| 58:B1:175:GLU:H | 58:B1:175:GLU:HG3 | 1.66 | 0.46 |
| 58:B1:343:LEU:HD11 | 58:B1:1324:SER:HB3 | 1.97 | 0.46 |
| 59:B2:712:SER:OG | 59:B2:713:GLY:N | 2.49 | 0.46 |
| 2:B:31:LYS:HG2 | 51:1:2885:G:N2 | 2.31 | 0.46 |
| 11:K:5:GLU:HB2 | 11:K:90:MET:HB2 | 1.98 | 0.46 |
| 33:i:109:ALA:HA | 33:i:112:LYS:HB2 | 1.98 | 0.46 |
| 51:1:595:C:C2 | 51:1:596:U:C5 | 3.04 | 0.46 |
| 51:1:1173:U:C6 | 51:1:1174:U:H1' | 2.51 | 0.46 |
| 51:1:1344:U:H3' | 51:1:1345:C:H5' | 1.97 | 0.46 |
| 51:1:1480:C:H2' | 51:1:1481:U:C6 | 2.49 | 0.46 |
| 51:1:2315:G:H2' | 51:1:2316:G:H8 | 1.80 | 0.46 |
| 51:1:2329:U:H2' | 51:1:2330:G:C8 | 2.51 | 0.46 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 51:1:2581:G:H2' | 51:1:2581:G:N3 | 2.30 | 0.46 |
| 51:1:2625:G:H2' | 51:1:2626:C:H6 | 1.76 | 0.46 |
| 51:1:2836:U:H2' | 51:1:2837:A:H8 | 1.81 | 0.46 |
| 59:B2:207:THR:OG1 | 59:B2:354:ASP:OD2 | 2.32 | 0.46 |
| 62:NG:135:ARG:O | 62:NG:178:VAL:HA | 2.16 | 0.46 |
| 6:F:33:HIS:O | 6:F:34:LYS:C | 2.59 | 0.46 |
| 16:P:127:ARG:HB2 | 26:Z:34:ARG:HH22 | 1.81 | 0.46 |
| 18:R:97:ARG:HB2 | 18:R:99:GLN:HE22 | 1.81 | 0.46 |
| 27:b:99:GLU:OE2 | 51:1:1491:G:O2' | 2.33 | 0.46 |
| 28:c:170:VAL:HG21 | 51:1:2679:A:H5' | 1.97 | 0.46 |
| 35:k:70:ARG:NH1 | 51:1:2684:U:O4' | 2.49 | 0.46 |
| 51:1:688:U:H5' | 51:1:1780:A:C2 | 2.51 | 0.46 |
| 51:1:1486:U:O2' | 51:1:1487:U:H5' | 2.14 | 0.46 |
| 51:1:1520:U:H2' | 51:1:1521:G:O4' | 2.16 | 0.46 |
| 51:1:2360:G:H2' | 51:1:2361:G:C5' | 2.40 | 0.46 |
| 51:1:2783:U:H2' | 51:1:2784:U:C6 | 2.51 | 0.46 |
| 53:3:459:A:H2' | 53:3:460:A:C8 | 2.50 | 0.46 |
| 53:3:618:C:N4 | 53:3:621:A:OP2 | 2.49 | 0.46 |
| 58:B1:109:SER:HB2 | 58:B1:296:LYS:HG2 | 1.98 | 0.46 |
| 58:B1:515:ARG:NH2 | 58:B1:718:SER:O | 2.48 | 0.46 |
| 63:5:26:A:H61 | 63:5:44:G:H22 | 1.64 | 0.46 |
| 8:H:152:VAL:HG12 | 8:H:197:VAL:HG22 | 1.98 | 0.46 |
| 10:J:28:ARG:NH2 | 53:3:1397:C:OP2 | 2.38 | 0.46 |
| 10:J:110:MET:HE3 | 10:J:110:MET:HB2 | 1.79 | 0.46 |
| 17:Q:23:LEU:HD12 | 17:Q:29:LYS:HD2 | 1.97 | 0.46 |
| 30:e:71:LYS:HA | 30:e:71:LYS:HD2 | 1.78 | 0.46 |
| 31:f:1:SER:HA | 51:1:2749:A:OP1 | 2.15 | 0.46 |
| 43:s:82:MET:HE1 | 51:1:1322:A:H5" | 1.98 | 0.46 |
| 51:1:28:A:O2' | 51:1:29:U:H5' | 2.16 | 0.46 |
| 51:1:289:G:H2' | 51:1:290:U:C6 | 2.50 | 0.46 |
| 51:1:1034:G:C5 | 51:1:1035:U:C4 | 3.04 | 0.46 |
| 51:1:2101:A:H2' | 51:1:2102:G:H8 | 1.81 | 0.46 |
| 51:1:2813:A:O2' | 51:1:2814:A:H5' | 2.15 | 0.46 |
| 53:3:1200:C:H5" | 53:3:1201:A:H3' | 1.97 | 0.46 |
| 55:8:1:DC:H2" | 55:8:2:DC:C6 | 2.51 | 0.46 |
| 58:B1:201:LEU:CD1 | 58:B1:224:LEU:HD12 | 2.47 | 0.46 |
| 59:B2:900:LYS:HB3 | 59:B2:900:LYS:HE3 | 1.62 | 0.46 |
| 63:5:6:G:H2' | 63:5:7:A:C8 | 2.51 | 0.46 |
| 9:I:173:ASP:HB3 | 9:I:178:GLU:HB3 | 1.98 | 0.45 |
| 15:O:100:ILE:O | 62:NG:170:PRO:O | 2.34 | 0.45 |
| 22:V:10:ARG:NE | 22:V:55:GLY:O | 2.48 | 0.45 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 23:W:33:THR:OG1 | 23:W:34:GLU:N | 2.49 | 0.45 |
| 35:k:5:GLN:NE2 | 51:1:1668:A:H5" | 2.31 | 0.45 |
| 35:k:121:GLU:HG2 | 35:k:122:VAL:HG23 | 1.97 | 0.45 |
| 39:o:29:HIS:HB3 | 39:o:36:TYR:HB2 | 1.98 | 0.45 |
| 51:1:540:C:O2' | 51:1:541:A:H5' | 2.16 | 0.45 |
| 51:1:1287:A:O2' | 51:1:1288:G:H5' | 2.16 | 0.45 |
| 51:1:1807:G:H2' | 51:1:1808:A:C5' | 2.30 | 0.45 |
| 51:1:1923:U:H5" | 64:6:24:U:O2' | 2.17 | 0.45 |
| 51:1:2642:G:O5' | 51:1:2642:G:H8 | 1.98 | 0.45 |
| 51:1:2849:U:H4' | 51:1:2868:A:C2 | 2.51 | 0.45 |
| 9:I:114:ARG:HA | 9:I:117:VAL:HG22 | 1.98 | 0.45 |
| 36:l:69:ARG:NH1 | 51:1:2406:A:C2 | 2.84 | 0.45 |
| 37:m:34:LYS:N | 37:m:129:THR:O | 2.47 | 0.45 |
| 51:1:6:A:H2' | 51:1:7:G:C8 | 2.52 | 0.45 |
| 51:1:290:U:O2' | 51:1:291:G:H5' | 2.16 | 0.45 |
| 51:1:342:A:H2' | 51:1:343:C:O4' | 2.16 | 0.45 |
| 51:1:367:G:O2' | 51:1:368:A:H5' | 2.17 | 0.45 |
| 51:1:438:G:H2' | 51:1:439:A:C8 | 2.51 | 0.45 |
| 51:1:607:U:O4 | 51:1:620:G:H5' | 2.17 | 0.45 |
| 51:1:637:A:C6 | 51:1:652:U:H4' | 2.50 | 0.45 |
| 51:1:1550:C:O2' | 51:1:1551:A:H5' | 2.17 | 0.45 |
| 51:1:1710:G:H2' | 51:1:1711:A:C8 | 2.51 | 0.45 |
| 51:1:2030:A:N3 | 51:1:2499:C:H5" | 2.31 | 0.45 |
| 51:1:2085:U:O2' | 51:1:2086:U:H5' | 2.16 | 0.45 |
| 51:1:2350:C:H2' | 51:1:2351:G:O4' | 2.16 | 0.45 |
| 55:8:13:DT:C6 | 58:B1:791:ALA:HA | 2.51 | 0.45 |
| 57:A1:231:PHE:O | 57:A2:218:ARG:NH1 | 2.49 | 0.45 |
| 57:A2:64:VAL:HG11 | 57:A2:78:ILE:HG21 | 1.97 | 0.45 |
| 4:D:12:ARG:NH1 | 51:1:465:G:OP1 | 2.49 | 0.45 |
| 10:J:101:GLY:H | 10:J:121:ASN:HB3 | 1.81 | 0.45 |
| 16:P:124:LYS:HB3 | 26:Z:34:ARG:HB3 | 1.98 | 0.45 |
| 22:V:11:VAL:HG13 | 22:V:58:VAL:HG21 | 1.98 | 0.45 |
| 28:c:151:THR:O | 51:1:1130:U:C4 | 2.70 | 0.45 |
| 32:g:28:ASN:ND2 | 51:1:2092:U:OP2 | 2.36 | 0.45 |
| 51:1:2047:C:O2' | 51:1:2048:G:H5' | 2.16 | 0.45 |
| 51:1:2122:U:H2' | 51:1:2123:G:O4' | 2.16 | 0.45 |
| 51:1:2339:C:H2' | 51:1:2340:A:H8 | 1.81 | 0.45 |
| 51:1:2651:C:H2' | 51:1:2652:C:H6 | 1.81 | 0.45 |
| 51:1:2844:G:H2' | 51:1:2845:U:O4' | 2.16 | 0.45 |
| 59:B2:28:LEU:HD21 | 59:B2:524:ILE:HG13 | 1.98 | 0.45 |
| 63:5:22:G:H2' | 63:5:23:A:C8 | 2.51 | 0.45 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 7:G:18:GLN:HG3 | 7:G:189:ASN:CB | 2.40 | 0.45 |
| 9:I:13:ARG:NH1 | 53:3:542:G:O3' | 2.50 | 0.45 |
| 19:S:58:ARG:HH21 | 53:3:980:C:H4' | 1.81 | 0.45 |
| 40:p:92:ARG:H | 40:p:92:ARG:HG2 | 1.60 | 0.45 |
| 42:r:38:VAL:HG13 | 42:r:54:VAL:HG12 | 1.99 | 0.45 |
| 51:1:239:C:H2' | 51:1:240:C:O4' | 2.16 | 0.45 |
| 51:1:360:U:H2' | 51:1:361:G:H1' | 1.99 | 0.45 |
| 51:1:519:U:C2 | 51:1:520:G:C8 | 3.03 | 0.45 |
| 51:1:536:G:H2' | 51:1:537:G:C5' | 2.44 | 0.45 |
| 51:1:1049:C:C2' | 51:1:1050:A:H5' | 2.47 | 0.45 |
| 51:1:1140:C:C2' | 51:1:1141:U:H5' | 2.47 | 0.45 |
| 51:1:2661:G:O2' | 51:1:2662:A:H5' | 2.16 | 0.45 |
| 60:W0:25:ARG:NH1 | 60:W0:61:ASN:OD1 | 2.49 | 0.45 |
| 63:5:49:C:H2' | 63:5:50:U:C6 | 2.52 | 0.45 |
| 64:7:7:G:H3' | 64:7:49:G:OP2 | 2.16 | 0.45 |
| 7:G:65:LYS:HG2 | 7:G:153:MET:HG3 | 1.98 | 0.45 |
| 7:G:172:ILE:O | 7:G:176:ASN:ND2 | 2.50 | 0.45 |
| 23:W:47:ARG:HA | 23:W:47:ARG:HD3 | 1.80 | 0.45 |
| 29:d:136:GLN:HA | 29:d:139:LYS:HE2 | 1.99 | 0.45 |
| 33:i:10:LEU:HD21 | 33:i:27:LEU:HD21 | 1.99 | 0.45 |
| 34:j:108:MET:CE | 51:1:1138:G:H21 | 2.29 | 0.45 |
| 51:1:654:A:N3 | 51:1:654:A:H5" | 2.31 | 0.45 |
| 51:1:707:G:C2' | 51:1:708:G:H5' | 2.47 | 0.45 |
| 51:1:1210:G:P | 51:1:1212:G:H5' | 2.56 | 0.45 |
| 51:1:1239:G:O2' | 51:1:1240:U:H5' | 2.17 | 0.45 |
| 51:1:1412:U:H2' | 51:1:1413:A:H8 | 1.81 | 0.45 |
| 51:1:1930:G:HO2' | 51:1:1931:U:P | 2.38 | 0.45 |
| 51:1:2648:G:C2 | 51:1:2649:C:C2 | 3.04 | 0.45 |
| 53:3:647:C:H2' | 53:3:648:A:H8 | 1.81 | 0.45 |
| 53:3:1253:G:H2' | 53:3:1254:A:C8 | 2.52 | 0.45 |
| 58:B1:67:ASP:OD1 | 58:B1:67:ASP:O | 2.35 | 0.45 |
| 58:B1:75:TYR:CD2 | 58:B1:75:TYR:O | 2.70 | 0.45 |
| 58:B1:1158:GLU:HA | 58:B1:1223:LEU:HD21 | 1.99 | 0.45 |
| 59:B2:735:LYS:HA | 59:B2:748:ILE:HG22 | 1.97 | 0.45 |
| 64:6:46:G:H5" | 64:6:47:U:OP2 | 2.17 | 0.45 |
| 2:B:8:THR:OG1 | 2:B:9:ARG:N | 2.49 | 0.45 |
| 31:f:133:LYS:NZ | 31:f:134:GLY:O | 2.44 | 0.45 |
| 34:j:85:LYS:NZ | 51:1:2768:U:OP1 | 2.49 | 0.45 |
| 51:1:111:A:O2' | 51:1:112:U:H5' | 2.17 | 0.45 |
| 51:1:639:U:H2' | 51:1:640:C:C6 | 2.52 | 0.45 |
| 51:1:1500:G:O2' | 51:1:1501:G:H5' | 2.17 | 0.45 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 51:1:1832:C:O5' | 51:1:1832:C:H6 | 2.00 | 0.45 |
| 51:1:1952:A:H2' | 51:1:1953:A:C8 | 2.51 | 0.45 |
| 51:1:2141:G:H1 | 51:1:2151:U:H3 | 1.63 | 0.45 |
| 51:1:2364:C:O2' | 51:1:2365:G:H5' | 2.17 | 0.45 |
| 51:1:2889:C:O2' | 51:1:2890:G:H5' | 2.17 | 0.45 |
| 53:3:112:G:N2 | 53:3:354:G:O5' | 2.48 | 0.45 |
| 53:3:1376:U:H2' | 53:3:1377:A:C8 | 2.52 | 0.45 |
| 58:B1:213:LYS:HA | 58:B1:213:LYS:HE3 | 1.99 | 0.45 |
| 59:B2:230:PHE:HB2 | 59:B2:333:ILE:HB | 1.98 | 0.45 |
| 7:G:166:ASP:HB3 | 7:G:190:SER:HB2 | 1.99 | 0.45 |
| 8:H:5:HIS:CE1 | 8:H:7:ASN:HB3 | 2.51 | 0.45 |
| 12:L:142:ARG:HH21 | 64:7:42:G:H4' | 1.81 | 0.45 |
| 16:P:35:ASP:OD1 | 16:P:39:ASN:N | 2.50 | 0.45 |
| 29:d:32:VAL:HG21 | 36:l:6:LEU:HD13 | 1.99 | 0.45 |
| 51:1:355:U:H6 | 51:1:355:U:O5' | 1.99 | 0.45 |
| 51:1:1863:G:H2' | 51:1:1864:U:C6 | 2.51 | 0.45 |
| 51:1:2658:C:H2' | 51:1:2659:G:O4' | 2.16 | 0.45 |
| 58:B1:395:LYS:NZ | 58:B1:399:LYS:HE2 | 2.32 | 0.45 |
| 11:K:75:GLU:O | 11:K:79:ARG:N | 2.47 | 0.45 |
| 33:i:112:LYS:HD2 | 33:i:128:ILE:HD12 | 1.97 | 0.45 |
| 48:x:30:PRO:HG2 | 48:x:32:LEU:HD11 | 1.98 | 0.45 |
| 51:1:195:A:H3' | 51:1:196:A:H4' | 1.98 | 0.45 |
| 51:1:1140:C:H2' | 51:1:1141:U:H5' | 1.97 | 0.45 |
| 51:1:1170:C:H2' | 51:1:1171:G:C8 | 2.51 | 0.45 |
| 51:1:2636:C:O2' | 51:1:2637:U:H5' | 2.16 | 0.45 |
| 51:1:2869:G:H2' | 51:1:2870:C:O4' | 2.17 | 0.45 |
| 55:8:20:DA:H4' | 59:B2:143:ARG:NH1 | 2.31 | 0.45 |
| 58:B1:375:GLU:O | 59:B2:1247:SER:HB3 | 2.16 | 0.45 |
| 59:B2:674:ASP:OD2 | 59:B2:1070:HIS:ND1 | 2.50 | 0.45 |
| 59:B2:800:MET:HB2 | 59:B2:800:MET:HE3 | 1.69 | 0.45 |
| 59:B2:1314:GLN:HA | 60:W0:28:ARG:HH22 | 1.80 | 0.45 |
| 5:E:48:MET:HE3 | 5:E:48:MET:HB3 | 1.86 | 0.45 |
| 7:G:142:LYS:NZ | 53:3:1098:C:OP1 | 2.49 | 0.45 |
| 24:X:27:LYS:HE2 | 24:X:27:LYS:HB3 | 1.77 | 0.45 |
| 33:i:135:MET:CE | 51:1:1062:G:H21 | 2.30 | 0.45 |
| 44:t:34:VAL:HG21 | 44:t:43:ILE:HD11 | 1.99 | 0.45 |
| 51:1:198:C:N4 | 51:1:248:G:H1 | 2.14 | 0.45 |
| 51:1:854:C:H2' | 51:1:855:G:C8 | 2.52 | 0.45 |
| 51:1:2201:G:H2' | 51:1:2202:U:O4' | 2.17 | 0.45 |
| 51:1:2717:C:N3 | 51:1:2718:G:N7 | 2.65 | 0.45 |
| 53:3:959:A:O2' | 53:3:984:C:O2' | 2.25 | 0.45 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 53:3:1498:U:H4' | 53:3:1519:A:H2 | 1.82 | 0.45 |
| 58:B1:388:ARG:HG2 | 58:B1:388:ARG:NH1 | 2.32 | 0.45 |
| 8:H:5:HIS:HE1 | 8:H:7:ASN:HB3 | 1.82 | 0.45 |
| 45:u:12:VAL:HA | 45:u:69:VAL:HG12 | 1.99 | 0.45 |
| 49:y:19:LEU:HD23 | 49:y:19:LEU:HA | 1.86 | 0.45 |
| 51:1:1020:A:C2 | 51:1:1141:U:C2 | 3.05 | 0.45 |
| 51:1:1280:G:C2' | 51:1:1281:G:H5' | 2.46 | 0.45 |
| 51:1:1672:A:N3 | 51:1:2582:G:H5' | 2.27 | 0.45 |
| 51:1:1680:U:C2' | 51:1:1681:G:H5' | 2.47 | 0.45 |
| 51:1:1749:A:H2' | 51:1:1750:G:H8 | 1.82 | 0.45 |
| 51:1:1866:A:H2' | 51:1:1867:G:O4' | 2.16 | 0.45 |
| 51:1:2204:G:H2' | 51:1:2205:A:H8 | 1.81 | 0.45 |
| 51:1:2241:A:H2' | 51:1:2242:G:H8 | 1.82 | 0.45 |
| 58:B1:770:LEU:HD13 | 59:B2:618:GLN:CD | 2.42 | 0.45 |
| 58:B1:1357:ILE:HG22 | 58:B1:1359:ALA:H | 1.82 | 0.45 |
| 59:B2:557:ARG:NH2 | 59:B2:607:SER:O | 2.49 | 0.45 |
| 59:B2:746:ALA:O | 59:B2:974:ARG:NH2 | 2.45 | 0.45 |
| 7:G:26:MET:HE1 | 7:G:186:VAL:HB | 1.99 | 0.44 |
| 9:I:120:LYS:HG2 | 9:I:130:ASN:HB3 | 1.99 | 0.44 |
| 15:O:29:ALA:HB2 | 15:O:87:LEU:HD11 | 1.99 | 0.44 |
| 25:Y:4:LYS:HA | 25:Y:4:LYS:HD3 | 1.86 | 0.44 |
| 40:p:88:ARG:HH11 | 40:p:114:ASN:HD21 | 1.66 | 0.44 |
| 45:u:32:LYS:HG2 | 45:u:65:GLN:HA | 1.99 | 0.44 |
| 51:1:432:A:O2' | 51:1:433:C:H5' | 2.17 | 0.44 |
| 51:1:500:G:N2 | 51:1:502:A:H3' | 2.32 | 0.44 |
| 51:1:940:G:H3' | 51:1:941:A:H5" | 1.97 | 0.44 |
| 51:1:1173:U:H5 | 51:1:1174:U:H1' | 1.81 | 0.44 |
| 51:1:1507:C:H2' | 51:1:1508:A:H4' | 1.99 | 0.44 |
| 51:1:1868:C:H2' | 51:1:1869:G:C8 | 2.52 | 0.44 |
| 51:1:2880:C:O2 | 51:1:2880:C:H2' | 2.17 | 0.44 |
| 58:B1:128:LEU:CD2 | 58:B1:188:LEU:HB3 | 2.47 | 0.44 |
| 58:B1:213:LYS:HE3 | 58:B1:213:LYS:CA | 2.47 | 0.44 |
| 58:B1:352:ARG:CD | 59:B2:1268:GLN:NE2 | 2.67 | 0.44 |
| 58:B1:484:MET:CE | 59:B2:1278:LEU:HD21 | 2.47 | 0.44 |
| 58:B1:1227:HIS:HA | 58:B1:1230:THR:HG22 | 1.99 | 0.44 |
| 62:NG:133:MET:HA | 62:NG:147:VAL:HA | 1.98 | 0.44 |
| 63:5:8:U:H2' | 63:5:13:C:H41 | 1.81 | 0.44 |
| 11:K:62:MET:HB3 | 11:K:64:VAL:HG13 | 1.98 | 0.44 |
| 12:L:70:PRO:HG3 | 12:L:98:LEU:HD23 | 1.97 | 0.44 |
| 14:N:84:ARG:NH2 | 53:3:1119:C:OP1 | 2.48 | 0.44 |
| 19:S:44:VAL:O | 19:S:48:GLN:NE2 | 2.50 | 0.44 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 27:b:107:LYS:HE2 | 27:b:107:LYS:HB2 | 1.87 | 0.44 |
| 28:c:59:ARG:HA | 28:c:59:ARG:HD3 | 1.83 | 0.44 |
| 30:e:122:ASP:OD2 | 30:e:126:ASN:ND2 | 2.42 | 0.44 |
| 31:f:132:LEU:HB3 | 31:f:140:ILE:HD11 | 1.99 | 0.44 |
| 40:p:52:ARG:NH2 | 51:1:2720:U:OP1 | 2.50 | 0.44 |
| 45:u:17:ASP:HA | 45:u:20:LYS:HE2 | 2.00 | 0.44 |
| 51:1:167:A:H2' | 51:1:168:G:O4' | 2.16 | 0.44 |
| 51:1:395:U:H2' | 51:1:396:G:C8 | 2.52 | 0.44 |
| 51:1:974:G:H1' | 51:1:975:A:C8 | 2.52 | 0.44 |
| 51:1:1488:C:H2' | 51:1:1489:C:C6 | 2.51 | 0.44 |
| 51:1:2312:U:O2' | 51:1:2313:C:H5' | 2.17 | 0.44 |
| 53:3:765:G:H1 | 53:3:812:G:HO2' | 1.63 | 0.44 |
| 58:B1:115:TRP:HB3 | 58:B1:1333:THR:CG2 | 2.46 | 0.44 |
| 65:h:2:DPP:NG | 65:h:3:SER:N | 2.65 | 0.44 |
| 2:B:4:GLN:HG3 | 51:1:2054:A:C2 | 2.52 | 0.44 |
| 21:U:70:ARG:O | 21:U:74:LEU:N | 2.47 | 0.44 |
| 27:b:1:ALA:N | 27:b:19:VAL:O | 2.41 | 0.44 |
| 31:f:175:LYS:HD3 | 31:f:175:LYS:HA | 1.70 | 0.44 |
| 32:g:1:MET:N | 32:g:20:ASN:OD1 | 2.39 | 0.44 |
| 33:i:9:LYS:HD2 | 51:1:1061:U:OP1 | 2.18 | 0.44 |
| 51:1:354:A:H2' | 51:1:355:U:O4' | 2.17 | 0.44 |
| 51:1:893:C:H2' | 51:1:894:U:O4' | 2.17 | 0.44 |
| 51:1:1710:G:O2' | 51:1:1711:A:H5' | 2.17 | 0.44 |
| 51:1:1800:C:O2 | 51:1:1802:A:C8 | 2.70 | 0.44 |
| 51:1:1893:C:C2' | 51:1:1894:C:H5' | 2.47 | 0.44 |
| 51:1:1922:G:H2' | 51:1:1923:U:O4' | 2.18 | 0.44 |
| 51:1:2402:U:O2' | 51:1:2403:C:H3' | 2.17 | 0.44 |
| 51:1:2411:A:H2' | 51:1:2412:A:C8 | 2.53 | 0.44 |
| 53:3:142:G:O2' | 53:3:196:A:N1 | 2.45 | 0.44 |
| 58:B1:478:LEU:HD21 | 60:W0:47:THR:HG23 | 1.99 | 0.44 |
| 58:B1:804:ALA:HB2 | 58:B1:1256:ILE:CD1 | 2.48 | 0.44 |
| 59:B2:909:LYS:HD3 | 59:B2:909:LYS:HA | 1.36 | 0.44 |
| 63:5:70:G:H2' | 63:5:71:G:C8 | 2.51 | 0.44 |
| 4:D:12:ARG:HH12 | 51:1:465:G:P | 2.41 | 0.44 |
| 7:G:33:ALA:HB3 | 7:G:37:VAL:HG12 | 1.99 | 0.44 |
| 8:H:134:LYS:HB3 | 8:H:134:LYS:HE2 | 1.84 | 0.44 |
| 10:J:24:VAL:HG23 | 10:J:26:GLY:H | 1.82 | 0.44 |
| 17:Q:72:ASN:OD1 | 17:Q:72:ASN:N | 2.50 | 0.44 |
| 41:q:82:LEU:HD22 | 41:q:87:VAL:HB | 1.98 | 0.44 |
| 42:r:48:LYS:HA | 42:r:48:LYS:HD2 | 1.77 | 0.44 |
| 47:w:12:SER:OG | 47:w:13:GLU:N | 2.51 | 0.44 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 50:z:30:ARG:HG2 | 50:z:33:HIS:HB2 | 1.99 | 0.44 |
| 51:1:30:G:H2' | 51:1:31:C:O4' | 2.16 | 0.44 |
| 51:1:208:C:O2' | 51:1:209:C:H5' | 2.18 | 0.44 |
| 51:1:336:C:O2' | 51:1:337:C:H5' | 2.18 | 0.44 |
| 51:1:1232:G:H2' | 51:1:1233:C:C6 | 2.53 | 0.44 |
| 51:1:1539:U:H2' | 51:1:1540:G:C8 | 2.53 | 0.44 |
| 51:1:1717:A:C2 | 51:1:1718:G:H1' | 2.53 | 0.44 |
| 51:1:2137:U:H2' | 51:1:2138:G:C8 | 2.50 | 0.44 |
| 51:1:2626:C:H2' | 51:1:2627:G:C8 | 2.51 | 0.44 |
| 51:1:2741:A:H2' | 51:1:2742:G:H5' | 1.98 | 0.44 |
| 53:3:477:C:H2' | 53:3:478:A:C8 | 2.52 | 0.44 |
| 57:A1:192:VAL:HG12 | 57:A1:193:GLU:H | 1.82 | 0.44 |
| 57:A1:212:ASP:OD1 | 57:A1:212:ASP:N | 2.48 | 0.44 |
| 58:B1:76:LYS:NZ | 58:B1:76:LYS:HB3 | 2.32 | 0.44 |
| 58:B1:472:LEU:CD1 | 59:B2:1294:LYS:HG2 | 2.47 | 0.44 |
| 58:B1:850:LYS:HB3 | 58:B1:855:ASP:HB2 | 2.00 | 0.44 |
| 59:B2:176:ILE:HD11 | 59:B2:428:VAL:HG21 | 1.98 | 0.44 |
| 14:N:104:THR:HG23 | 53:3:1180:A:H5' | 1.99 | 0.44 |
| 38:n:103:ARG:HH11 | 51:1:1287:A:H5' | 1.83 | 0.44 |
| 47:w:37:ARG:HA | 47:w:37:ARG:HD3 | 1.70 | 0.44 |
| 48:x:51:SER:OG | 48:x:54:GLY:N | 2.48 | 0.44 |
| 49:y:6:LEU:HD13 | 49:y:56:LEU:HD22 | 1.98 | 0.44 |
| 49:y:20:ASN:HA | 49:y:23:ARG:HB2 | 1.99 | 0.44 |
| 51:1:169:G:O2' | 51:1:170:U:H5' | 2.18 | 0.44 |
| 51:1:402:A:H2' | 51:1:403:U:C5' | 2.44 | 0.44 |
| 51:1:704:G:H1' | 51:1:727:A:H62 | 1.83 | 0.44 |
| 51:1:720:U:H2' | 51:1:721:A:H8 | 1.82 | 0.44 |
| 51:1:1452:G:H2' | 51:1:1453:A:OP2 | 2.17 | 0.44 |
| 51:1:1869:G:H3' | 51:1:1870:C:C5' | 2.38 | 0.44 |
| 51:1:1882:U:O2' | 51:1:1883:U:H5' | 2.17 | 0.44 |
| 51:1:2805:C:O2' | 51:1:2806:C:H5' | 2.18 | 0.44 |
| 53:3:75:G:H2' | 53:3:76:G:C8 | 2.53 | 0.44 |
| 57:A2:48:LEU:HA | 57:A2:48:LEU:HD23 | 1.86 | 0.44 |
| 57:A2:80:GLU:HG3 | 59:B2:694:ARG:HH22 | 1.81 | 0.44 |
| 58:B1:62:PHE:N | 58:B1:62:PHE:CD1 | 2.86 | 0.44 |
| 58:B1:209:ASN:HA | 58:B1:214:ARG:NH2 | 2.30 | 0.44 |
| 58:B1:434:ILE:HD11 | 59:B2:1274:GLU:HG3 | 1.99 | 0.44 |
| 58:B1:506:VAL:HG23 | 58:B1:628:GLY:HA3 | 1.99 | 0.44 |
| 58:B1:926:PRO:HB2 | 58:B1:1241:TYR:HE1 | 1.82 | 0.44 |
| 59:B2:444:ASP:OD1 | 59:B2:444:ASP:N | 2.51 | 0.44 |
| 12:L:113:LYS:HB3 | 53:3:1297:G:H21 | 1.82 | 0.44 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 21:U:28:ARG:NH1 | 53:3:390:U:O2' | 2.46 | 0.44 |
| 28:c:106:LYS:HA | 28:c:176:ASP:HA | 1.99 | 0.44 |
| 28:c:150:GLN:HE22 | 51:1:2032:G:H1' | 1.82 | 0.44 |
| 31:f:106:LEU:O | 31:f:151:ARG:NH2 | 2.38 | 0.44 |
| 33:i:131:THR:HB | 51:1:1060:U:O4 | 2.18 | 0.44 |
| 34:j:34:ARG:NH2 | 34:j:39:LYS:O | 2.51 | 0.44 |
| 51:1:107:G:H2' | 51:1:108:G:H8 | 1.82 | 0.44 |
| 51:1:293:U:H2' | 51:1:294:A:H5" | 1.99 | 0.44 |
| 51:1:327:G:H2' | 51:1:328:U:O4' | 2.18 | 0.44 |
| 51:1:545:U:O2 | 51:1:546:U:H1' | 2.17 | 0.44 |
| 51:1:696:G:H2' | 51:1:697:G:O4' | 2.18 | 0.44 |
| 51:1:1288:G:C5 | 51:1:1327:A:C2 | 3.04 | 0.44 |
| 51:1:1465:G:O2' | 51:1:1466:U:H5' | 2.17 | 0.44 |
| 51:1:1507:C:H2' | 51:1:1508:A:O4' | 2.18 | 0.44 |
| 53:3:146:G:N2 | 53:3:177:G:N7 | 2.66 | 0.44 |
| 53:3:490:C:H2' | 53:3:491:G:C8 | 2.53 | 0.44 |
| 58:B1:68:TYR:O | 58:B1:75:TYR:CD2 | 2.70 | 0.44 |
| 58:B1:161:THR:H | 58:B1:164:GLN:HB2 | 1.82 | 0.44 |
| 58:B1:1033:GLY:HA3 | 58:B1:1081:VAL:O | 2.18 | 0.44 |
| 63:5:69:G:H2' | 63:5:70:G:C8 | 2.52 | 0.44 |
| 18:R:43:LYS:HB2 | 18:R:46:GLU:HG2 | 1.99 | 0.44 |
| 18:R:107:THR:OG1 | 53:3:947:G:O3' | 2.35 | 0.44 |
| 27:b:97:ASP:N | 27:b:97:ASP:OD1 | 2.45 | 0.44 |
| 29:d:147:LEU:HD11 | 29:d:170:ARG:HG2 | 1.98 | 0.44 |
| 33:i:91:LYS:HB2 | 33:i:91:LYS:HE3 | 1.72 | 0.44 |
| 33:i:106:GLN:OE1 | 33:i:125:THR:OG1 | 2.31 | 0.44 |
| 42:r:19:THR:OG1 | 42:r:95:ASP:OD1 | 2.35 | 0.44 |
| 45:u:76:THR:HB | 45:u:78:LYS:HE3 | 1.99 | 0.44 |
| 51:1:68:G:H2' | 51:1:69:C:O4' | 2.18 | 0.44 |
| 51:1:163:C:O2' | 51:1:164:C:H5' | 2.17 | 0.44 |
| 51:1:473:G:C2' | 51:1:474:G:H5' | 2.48 | 0.44 |
| 51:1:819:A:H5' | 51:1:973:A:N1 | 2.33 | 0.44 |
| 51:1:1087:G:H22 | 51:1:1103:A:H1' | 1.76 | 0.44 |
| 51:1:1605:C:H2' | 51:1:1606:C:H5' | 1.98 | 0.44 |
| 51:1:1625:C:H2' | 51:1:1626:A:O4' | 2.18 | 0.44 |
| 51:1:2700:A:O2' | 51:1:2701:U:H5' | 2.17 | 0.44 |
| 53:3:1200:C:O2' | 53:3:1205:U:O4 | 2.34 | 0.44 |
| 55:8:16:DT:H2' | 55:8:17:DC:C6 | 2.52 | 0.44 |
| 58:B1:1046:ILE:HG22 | 58:B1:1061:VAL:HA | 2.00 | 0.44 |
| 59:B2:24:VAL:HG11 | 59:B2:704:MET:HE1 | 1.98 | 0.44 |
| 59:B2:1246:ARG:HH11 | 59:B2:1266:GLY:HA2 | 1.82 | 0.44 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 15:O:88:MET:HE3 | 15:O:88:MET:HB3 | 1.70 | 0.44 |
| 36:l:95:LEU:HD22 | 36:l:100:ILE:HD11 | 2.00 | 0.44 |
| 51:1:131:A:H2' | 51:1:132:G:C8 | 2.53 | 0.44 |
| 51:1:255:A:H2' | 51:1:256:A:O4' | 2.18 | 0.44 |
| 51:1:388:G:N7 | 51:1:390:U:H2' | 2.33 | 0.44 |
| 51:1:1199:U:H2' | 51:1:1200:C:C6 | 2.52 | 0.44 |
| 51:1:1338:G:H2' | 51:1:1339:G:C8 | 2.51 | 0.44 |
| 51:1:1998:A:O2' | 51:1:1999:C:H5' | 2.18 | 0.44 |
| 51:1:2226:C:C5 | 51:1:2227:A:N7 | 2.86 | 0.44 |
| 58:B1:287:ALA:HB1 | 58:B1:288:PRO:HD2 | 1.99 | 0.44 |
| 58:B1:978:ARG:HD3 | 58:B1:999:TYR:H | 1.83 | 0.44 |
| 59:B2:829:THR:HG23 | 59:B2:1059:ARG:HG2 | 2.00 | 0.44 |
| 63:5:63:G:H2' | 63:5:64:A:C8 | 2.53 | 0.44 |
| 8:H:37:LYS:HD3 | 8:H:37:LYS:HA | 1.81 | 0.44 |
| 9:I:85:THR:HA | 9:I:88:ASN:HB2 | 2.00 | 0.44 |
| 14:N:74:GLN:OE1 | 53:3:1249:C:O2' | 2.35 | 0.44 |
| 14:N:119:LYS:NZ | 53:3:1350:A:N7 | 2.64 | 0.44 |
| 18:R:1:ALA:HB3 | 18:R:56:ARG:HH22 | 1.82 | 0.44 |
| 24:X:76:THR:OG1 | 24:X:77:ARG:N | 2.51 | 0.44 |
| 29:d:68:ALA:HA | 51:1:1255:U:C6 | 2.52 | 0.44 |
| 42:r:1:MET:HE3 | 42:r:101:ILE:HB | 1.99 | 0.44 |
| 51:1:29:U:O5' | 51:1:29:U:H6 | 2.01 | 0.44 |
| 51:1:518:G:O2' | 51:1:519:U:H5' | 2.18 | 0.44 |
| 51:1:1536:C:H4' | 51:1:1537:G:N1 | 2.32 | 0.44 |
| 51:1:1565:C:C5 | 51:1:1567:G:C6 | 3.06 | 0.44 |
| 51:1:1747:U:H2' | 51:1:1748:C:C6 | 2.53 | 0.44 |
| 51:1:2671:G:C2 | 51:1:2672:U:C2 | 3.06 | 0.44 |
| 52:2:66:A:H4' | 52:2:67:G:C8 | 2.53 | 0.44 |
| 53:3:560:A:H5" | 53:3:561:U:H5' | 2.00 | 0.44 |
| 53:3:908:A:H2' | 53:3:909:A:H8 | 1.83 | 0.44 |
| 59:B2:906:PHE:HE2 | 61:NA:102:PHE:CB | 2.28 | 0.44 |
| 7:G:122:ASP:N | 7:G:122:ASP:OD1 | 2.51 | 0.43 |
| 8:H:76:ILE:HB | 8:H:80:GLY:HA2 | 2.00 | 0.43 |
| 17:Q:3:VAL:HA | 17:Q:6:LEU:HD12 | 2.00 | 0.43 |
| 25:Y:67:HIS:O | 25:Y:69:ASN:ND2 | 2.51 | 0.43 |
| 42:r:80:ARG:HD3 | 51:1:566:U:O4 | 2.17 | 0.43 |
| 51:1:150:U:H2' | 51:1:151:C:C6 | 2.52 | 0.43 |
| 51:1:350:G:H2' | 51:1:351:C:O4' | 2.18 | 0.43 |
| 51:1:1010:A:H1' | 51:1:1153:C:H1' | 2.00 | 0.43 |
| 51:1:1670:C:O2' | 51:1:1671:U:H5' | 2.16 | 0.43 |
| 51:1:2236:U:H2' | 51:1:2237:G:C5' | 2.46 | 0.43 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 53:3:162:A:C5 | 53:3:163:C:H1' | 2.53 | 0.43 |
| 53:3:1053:G:H4' | 53:3:1054:C:H3' | 2.00 | 0.43 |
| 58:B1:139:LEU:HD23 | 58:B1:139:LEU:HA | 1.89 | 0.43 |
| 59:B2:300:ASP:OD1 | 59:B2:313:ALA:N | 2.51 | 0.43 |
| 59:B2:538:LEU:HD13 | 59:B2:543:ALA:HB2 | 2.00 | 0.43 |
| 62:NG:161:SER:CB | 62:NG:170:PRO:HA | 2.48 | 0.43 |
| 63:5:13:C:H42 | 63:5:46:G:N2 | 2.16 | 0.43 |
| 2:B:4:GLN:NE2 | 51:1:2056:G:O2' | 2.52 | 0.43 |
| 2:B:8:THR:HG23 | 2:B:11:LYS:H | 1.81 | 0.43 |
| 7:G:67:LEU:HD21 | 7:G:91:VAL:HG23 | 2.00 | 0.43 |
| 9:I:125:ASN:HB2 | 9:I:127:ARG:HD3 | 2.01 | 0.43 |
| 10:J:104:ILE:HD11 | 10:J:114:LEU:HD13 | 1.99 | 0.43 |
| 22:V:44:HIS:HB3 | 22:V:70:LYS:HG2 | 1.99 | 0.43 |
| 27:b:153:LEU:HD23 | 51:1:1799:G:N2 | 2.33 | 0.43 |
| 34:j:109:LEU:HA | 34:j:109:LEU:HD23 | 1.85 | 0.43 |
| 38:n:65:LEU:HD11 | 51:1:2870:C:H5" | 1.99 | 0.43 |
| 41:q:47:ARG:NH2 | 41:q:51:GLN:OE1 | 2.51 | 0.43 |
| 51:1:150:U:O2' | 51:1:151:C:H5' | 2.18 | 0.43 |
| 51:1:161:A:C5 | 51:1:162:U:H5 | 2.36 | 0.43 |
| 51:1:1095:A:H3' | 51:1:1096:A:H8 | 1.83 | 0.43 |
| 51:1:1571:A:H2' | 51:1:1572:A:C8 | 2.54 | 0.43 |
| 51:1:1761:C:H2' | 51:1:1762:A:O4' | 2.18 | 0.43 |
| 51:1:2285:C:C2' | 51:1:2286:G:H5' | 2.48 | 0.43 |
| 57:A1:185:TYR:HA | 57:A1:202:VAL:O | 2.16 | 0.43 |
| 58:B1:33:TRP:HZ2 | 59:B2:1336:ASN:OD1 | 2.00 | 0.43 |
| 58:B1:141:PHE:HE2 | 58:B1:296:LYS:CB | 2.23 | 0.43 |
| 58:B1:1024:THR:HG23 | 58:B1:1123:ARG:HA | 2.00 | 0.43 |
| 8:H:134:LYS:HG2 | 8:H:138:GLN:HE21 | 1.82 | 0.43 |
| 10:J:110:MET:HA | 10:J:113:VAL:HG12 | 2.00 | 0.43 |
| 13:M:24:VAL:HG23 | 13:M:60:LEU:HB2 | 2.00 | 0.43 |
| 21:U:79:ASN:HB2 | 21:U:82:ALA:HB3 | 1.99 | 0.43 |
| 27:b:20:ASN:HB3 | 27:b:23:LEU:HD13 | 2.01 | 0.43 |
| 35:k:38:ILE:HG22 | 35:k:61:VAL:HB | 2.01 | 0.43 |
| 48:x:1:SER:OG | 51:1:1365:A:OP2 | 2.35 | 0.43 |
| 48:x:36:ARG:NH2 | 51:1:2200:C:OP2 | 2.52 | 0.43 |
| 51:1:648:G:H2' | 51:1:649:G:H8 | 1.83 | 0.43 |
| 51:1:993:G:O2' | 51:1:994:C:H5' | 2.19 | 0.43 |
| 51:1:1383:A:H2 | 51:1:1406:U:H1' | 1.83 | 0.43 |
| 51:1:2643:G:C2' | 51:1:2644:G:H5' | 2.49 | 0.43 |
| 58:B1:58:CYS:SG | 58:B1:60:ARG:HG2 | 2.59 | 0.43 |
| 58:B1:515:ARG:HH12 | 58:B1:724:MET:HG2 | 1.84 | 0.43 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 58:B1:1079:LYS:HD3 | 58:B1:1098:GLN:HB3 | 2.00 | 0.43 |
| 59:B2:895:LEU:HD13 | 59:B2:895:LEU:HA | 1.71 | 0.43 |
| 59:B2:1072:ASN:OD1 | 59:B2:1072:ASN:N | 2.52 | 0.43 |
| 63:5:27:G:H1 | 63:5:43:C:H42 | 1.64 | 0.43 |
| 8:H:51:VAL:HA | 8:H:69:THR:HG22 | 2.00 | 0.43 |
| 14:N:98:ARG:HG2 | 14:N:103:VAL:HG21 | 2.01 | 0.43 |
| 16:P:17:ASP:OD1 | 16:P:17:ASP:N | 2.44 | 0.43 |
| 21:U:31:ARG:HB2 | 53:3:310:G:H5" | 2.00 | 0.43 |
| 23:W:33:THR:HG22 | 23:W:37:LYS:H | 1.83 | 0.43 |
| 24:X:6:LYS:NZ | 53:3:1314:C:OP1 | 2.52 | 0.43 |
| 27:b:140:VAL:HG12 | 27:b:191:LEU:HD23 | 2.01 | 0.43 |
| 31:f:84:LYS:HD2 | 31:f:84:LYS:HA | 1.87 | 0.43 |
| 38:n:58:ASP:OD1 | 38:n:63:ARG:NH2 | 2.44 | 0.43 |
| 51:1:28:A:H2' | 51:1:29:U:C6 | 2.53 | 0.43 |
| 51:1:721:A:H2' | 51:1:722:A:C8 | 2.53 | 0.43 |
| 51:1:1741:C:O2' | 51:1:1742:U:H5' | 2.19 | 0.43 |
| 53:3:680:C:H2' | 53:3:681:A:H8 | 1.84 | 0.43 |
| 53:3:1513:A:H2' | 53:3:1514:G:H8 | 1.83 | 0.43 |
| 55:8:3:DC:N1 | 55:8:4:DT:H72 | 2.34 | 0.43 |
| 55:8:15:DC:H5' | 59:B2:1269:ARG:HD3 | 2.00 | 0.43 |
| 58:B1:45:ASN:HD22 | 58:B1:48:THR:H | 1.65 | 0.43 |
| 58:B1:111:THR:CG2 | 58:B1:300:GLN:HA | 2.48 | 0.43 |
| 58:B1:201:LEU:CB | 58:B1:221:ILE:HD13 | 2.47 | 0.43 |
| 58:B1:362:ARG:HB2 | 58:B1:364:HIS:HD2 | 1.83 | 0.43 |
| 14:N:105:ARG:NH1 | 14:N:109:GLN:OE1 | 2.49 | 0.43 |
| 17:Q:50:LYS:HE2 | 17:Q:70:GLY:HA2 | 2.01 | 0.43 |
| 17:Q:67:GLY:O | 17:Q:98:ARG:NH1 | 2.52 | 0.43 |
| 18:R:28:ARG:HH21 | 18:R:62:PHE:HB2 | 1.84 | 0.43 |
| 25:Y:14:GLU:OE1 | 25:Y:17:ARG:NH2 | 2.52 | 0.43 |
| 25:Y:49:ALA:HA | 25:Y:52:GLU:HG3 | 2.00 | 0.43 |
| 28:c:62:LYS:NZ | 51:1:2810:A:H5" | 2.34 | 0.43 |
| 38:n:39:PRO:HG2 | 51:1:1651:G:H4' | 2.00 | 0.43 |
| 51:1:30:G:O2' | 51:1:31:C:H5' | 2.17 | 0.43 |
| 51:1:648:G:H5" | 51:1:2352:A:H5" | 2.00 | 0.43 |
| 51:1:684:G:C2 | 51:1:794:A:C2 | 3.06 | 0.43 |
| 51:1:1087:G:H5" | 51:1:1088:A:OP2 | 2.18 | 0.43 |
| 51:1:1306:C:N4 | 51:1:1606:C:H2' | 2.34 | 0.43 |
| 53:3:422:C:H4' | 53:3:423:G:C2 | 2.54 | 0.43 |
| 53:3:490:C:H2' | 53:3:491:G:H8 | 1.84 | 0.43 |
| 53:3:501:C:H2' | 53:3:502:A:C8 | 2.53 | 0.43 |
| 53:3:1442:G:H1 | 53:3:1460:C:H42 | 1.66 | 0.43 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 59:B2:646:SER:OG | 59:B2:647:ARG:N | 2.51 | 0.43 |
| 59:B2:998:LEU:HG | 59:B2:1011:LEU:HB3 | 1.99 | 0.43 |
| 60:W0:58:LEU:HD12 | 60:W0:59:ILE:HG12 | 2.00 | 0.43 |
| 11:K:47:LEU:HG | 11:K:56:LYS:HA | 2.01 | 0.43 |
| 30:e:171:ALA:C | 30:e:173:ASP:H | 2.26 | 0.43 |
| 33:i:123:ALA:HB1 | 51:1:1081:U:H4' | 2.00 | 0.43 |
| 33:i:129:GLU:HG3 | 33:i:139:VAL:HG21 | 2.00 | 0.43 |
| 34:j:47:HIS:CG | 51:1:536:G:H21 | 2.37 | 0.43 |
| 36:l:69:ARG:CZ | 51:1:2406:A:N3 | 2.82 | 0.43 |
| 43:s:74:ILE:HB | 43:s:105:VAL:HG23 | 1.99 | 0.43 |
| 51:1:43:G:H2' | 51:1:44:A:C8 | 2.53 | 0.43 |
| 51:1:192:C:H2' | 51:1:193:U:H5' | 1.99 | 0.43 |
| 51:1:365:U:H2' | 51:1:366:C:C6 | 2.53 | 0.43 |
| 51:1:541:A:H2' | 51:1:542:C:O4' | 2.19 | 0.43 |
| 51:1:1258:U:H2' | 51:1:1259:G:C8 | 2.54 | 0.43 |
| 51:1:1751:U:H2' | 51:1:1752:C:C6 | 2.54 | 0.43 |
| 51:1:2305:U:O2' | 51:1:2306:C:H5' | 2.19 | 0.43 |
| 51:1:2371:G:O2' | 51:1:2372:U:H5' | 2.19 | 0.43 |
| 51:1:2562:U:C2' | 51:1:2563:U:H5' | 2.49 | 0.43 |
| 51:1:2736:A:O2' | 51:1:2737:G:H5' | 2.19 | 0.43 |
| 53:3:944:G:N1 | 53:3:1338:G:OP2 | 2.34 | 0.43 |
| 58:B1:105:ILE:HD12 | 58:B1:242:LEU:CD2 | 2.44 | 0.43 |
| 58:B1:120:LEU:HD22 | 58:B1:120:LEU:HA | 1.77 | 0.43 |
| 59:B2:11:ILE:HG22 | 59:B2:1172:LEU:HD11 | 1.99 | 0.43 |
| 59:B2:811:ASN:ND2 | 59:B2:1098:LEU:O | 2.51 | 0.43 |
| 62:NG:125:LYS:O | 62:NG:127:LEU:N | 2.52 | 0.43 |
| 13:M:52:GLY:HA3 | 13:M:56:PRO:HA | 2.01 | 0.43 |
| 27:b:48:ILE:HG12 | 51:1:779:U:OP2 | 2.18 | 0.43 |
| 29:d:3:LEU:HD23 | 29:d:3:LEU:HA | 1.88 | 0.43 |
| 51:1:841:G:C2' | 51:1:842:U:H5' | 2.49 | 0.43 |
| 51:1:870:U:H2' | 51:1:871:U:C5' | 2.48 | 0.43 |
| 51:1:1287:A:H3' | 51:1:1288:G:N2 | 2.33 | 0.43 |
| 51:1:1426:G:C6 | 51:1:1427:A:C6 | 3.06 | 0.43 |
| 51:1:1915:U:O2 | 51:1:1915:U:O4' | 2.34 | 0.43 |
| 51:1:2660:A:H2' | 51:1:2661:G:O4' | 2.18 | 0.43 |
| 51:1:2834:G:C2' | 51:1:2835:A:H5' | 2.49 | 0.43 |
| 51:1:2839:G:O2' | 51:1:2840:C:H5' | 2.18 | 0.43 |
| 53:3:28:A:O2' | 53:3:296:U:OP1 | 2.33 | 0.43 |
| 53:3:1253:G:H2' | 53:3:1254:A:H8 | 1.83 | 0.43 |
| 55:8:12:DG:OP1 | 58:B1:795:TYR:CE1 | 2.71 | 0.43 |
| 58:B1:797:THR:HG22 | 58:B1:924:GLY:HA3 | 2.01 | 0.43 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 16:P:115:ILE:HD12 | 16:P:116:PRO:HD2 | 1.99 | 0.43 |
| 17:Q:31:GLY:HA2 | 17:Q:56:LEU:HA | 2.01 | 0.43 |
| 27:b:7:PRO:HB3 | 27:b:13:ARG:HG3 | 2.00 | 0.43 |
| 27:b:131:MET:H | 27:b:131:MET:HG2 | 1.57 | 0.43 |
| 27:b:244:VAL:HG12 | 27:b:250:GLN:HA | 2.01 | 0.43 |
| 29:d:188:MET:HB2 | 29:d:192:ALA:HB3 | 1.99 | 0.43 |
| 31:f:151:ARG:HD3 | 31:f:151:ARG:HA | 1.88 | 0.43 |
| 34:j:51:GLY:HA3 | 34:j:121:LYS:HE2 | 2.00 | 0.43 |
| 37:m:17:ASN:OD1 | 37:m:97:GLN:NE2 | 2.51 | 0.43 |
| 51:1:156:A:O2' | 51:1:157:C:H5' | 2.18 | 0.43 |
| 51:1:467:G:O2' | 51:1:468:G:H5' | 2.19 | 0.43 |
| 51:1:572:A:O5' | 51:1:572:A:C8 | 2.72 | 0.43 |
| 51:1:623:C:O2' | 51:1:624:C:H5' | 2.18 | 0.43 |
| 51:1:1172:C:H2' | 51:1:1173:U:O4' | 2.19 | 0.43 |
| 51:1:1601:G:H2' | 51:1:1602:U:H5' | 2.01 | 0.43 |
| 51:1:1864:U:O5' | 51:1:1864:U:H6 | 2.02 | 0.43 |
| 51:1:2102:G:H1 | 51:1:2187:U:H3 | 1.66 | 0.43 |
| 51:1:2584:U:O5' | 51:1:2584:U:H6 | 2.02 | 0.43 |
| 57:A1:78:ILE:HA | 57:A1:81:ILE:HG22 | 2.00 | 0.43 |
| 58:B1:96:LYS:NZ | 59:B2:1298:VAL:HG11 | 2.34 | 0.43 |
| 58:B1:111:THR:HG21 | 58:B1:303:VAL:HB | 1.99 | 0.43 |
| 58:B1:820:ILE:HG12 | 58:B1:884:SER:HB2 | 2.01 | 0.43 |
| 58:B1:847:ASP:N | 58:B1:847:ASP:OD1 | 2.49 | 0.43 |
| 58:B1:1108:GLN:HG3 | 58:B1:1109:LEU:HD12 | 2.00 | 0.43 |
| 59:B2:125:GLY:H | 59:B2:495:ALA:HB1 | 1.84 | 0.43 |
| 64:7:11:A:H2' | 64:7:12:G:C8 | 2.52 | 0.43 |
| 17:Q:113:ARG:NH1 | 53:3:36:C:O2' | 2.51 | 0.43 |
| 30:e:77:LYS:HE2 | 30:e:77:LYS:HB2 | 1.89 | 0.43 |
| 32:g:1:MET:HE3 | 32:g:1:MET:HB3 | 1.77 | 0.43 |
| 36:l:109:LYS:HE2 | 51:1:636:G:N7 | 2.34 | 0.43 |
| 37:m:96:ILE:HD13 | 37:m:96:ILE:HA | 1.82 | 0.43 |
| 51:1:108:G:O2' | 51:1:109:C:H5' | 2.19 | 0.43 |
| 51:1:864:G:C2' | 51:1:865:C:H5' | 2.48 | 0.43 |
| 51:1:1092:C:H2' | 51:1:1093:G:O4' | 2.18 | 0.43 |
| 51:1:1306:C:H41 | 51:1:1606:C:H2' | 1.84 | 0.43 |
| 51:1:2152:G:N3 | 51:1:2152:G:H2' | 2.33 | 0.43 |
| 51:1:2870:C:H2' | 51:1:2871:U:H5' | 2.01 | 0.43 |
| 53:3:1005:A:OP2 | 53:3:1024:G:N2 | 2.48 | 0.43 |
| 58:B1:141:PHE:CD2 | 58:B1:297:ARG:HB2 | 2.54 | 0.43 |
| 58:B1:568:SER:HB3 | 58:B1:570:LYS:NZ | 2.34 | 0.43 |
| 59:B2:1313:HIS:CD2 | 60:W0:31:GLN:HE22 | 2.37 | 0.43 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 34:j:47:HIS:CG | 51:1:536:G:N2 | 2.87 | 0.43 |
| 42:r:24:LYS:HE2 | 42:r:24:LYS:HB3 | 1.89 | 0.43 |
| 51:1:12:U:O2 | 51:1:12:U:H2' | 2.18 | 0.43 |
| 51:1:528:A:C2 | 51:1:2043:C:H4' | 2.53 | 0.43 |
| 51:1:595:C:H2' | 51:1:596:U:C6 | 2.54 | 0.43 |
| 51:1:629:G:H2' | 51:1:630:G:O4' | 2.19 | 0.43 |
| 51:1:783:A:C8 | 51:1:783:A:H3' | 2.54 | 0.43 |
| 51:1:918:A:H2' | 51:1:919:U:O4' | 2.19 | 0.43 |
| 51:1:1487:U:H2' | 51:1:1488:C:C6 | 2.54 | 0.43 |
| 51:1:2462:C:H2' | 51:1:2463:C:C6 | 2.53 | 0.43 |
| 51:1:2713:U:C3' | 51:1:2714:G:H5' | 2.27 | 0.43 |
| 53:3:1209:C:O2' | 53:3:1214:C:N4 | 2.52 | 0.43 |
| 55:8:2:DC:H6 | 55:8:2:DC:H2' | 1.73 | 0.43 |
| 58:B1:141:PHE:CE2 | 58:B1:296:LYS:CB | 2.94 | 0.43 |
| 58:B1:282:LEU:CA | 58:B1:286:ALA:HA | 2.45 | 0.43 |
| 58:B1:395:LYS:NZ | 58:B1:399:LYS:CD | 2.74 | 0.43 |
| 58:B1:894:VAL:HG22 | 58:B1:1258:ARG:HH11 | 1.83 | 0.43 |
| 27:b:206:LYS:HB2 | 51:1:729:G:C5 | 2.54 | 0.42 |
| 39:o:40:ILE:HA | 39:o:47:VAL:HA | 2.00 | 0.42 |
| 49:y:11:VAL:HA | 49:y:14:LEU:HB2 | 2.00 | 0.42 |
| 51:1:128:C:H2' | 51:1:129:C:C6 | 2.53 | 0.42 |
| 51:1:705:A:C2 | 51:1:727:A:H1' | 2.54 | 0.42 |
| 51:1:712:G:C2' | 51:1:713:G:H5' | 2.49 | 0.42 |
| 51:1:871:U:H2' | 51:1:872:U:C6 | 2.54 | 0.42 |
| 51:1:1049:C:H2' | 51:1:1050:A:H5' | 2.00 | 0.42 |
| 51:1:1054:A:H2' | 51:1:1055:G:C8 | 2.54 | 0.42 |
| 51:1:1230:A:H2' | 51:1:1231:U:O4' | 2.19 | 0.42 |
| 51:1:1520:U:C2' | 51:1:1521:G:H5' | 2.49 | 0.42 |
| 51:1:1739:A:H2' | 51:1:1740:G:O4' | 2.19 | 0.42 |
| 51:1:1993:U:O2 | 51:1:1993:U:H2' | 2.18 | 0.42 |
| 51:1:2073:C:C2' | 51:1:2074:U:H5' | 2.49 | 0.42 |
| 51:1:2144:G:H1' | 51:1:2147:A:N6 | 2.34 | 0.42 |
| 53:3:958:A:N3 | 53:3:985:C:O2' | 2.48 | 0.42 |
| 58:B1:242:LEU:C | 58:B1:242:LEU:HD23 | 2.44 | 0.42 |
| 58:B1:244:VAL:HA | 58:B1:269:TYR:OH | 2.19 | 0.42 |
| 58:B1:731:ARG:HB3 | 59:B2:1105:SER:HB2 | 2.00 | 0.42 |
| 58:B1:950:ILE:HB | 58:B1:1018:ALA:HB3 | 2.01 | 0.42 |
| 59:B2:557:ARG:HB3 | 59:B2:587:LEU:HD13 | 2.00 | 0.42 |
| 64:6:69:C:H2' | 64:6:70:G:H8 | 1.83 | 0.42 |
| 8:H:106:ARG:HG2 | 8:H:107:LYS:HG3 | 2.01 | 0.42 |
| 9:I:53:GLN:HA | 9:I:198:LEU:HD12 | 2.01 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 9:I:119:HIS:O | 9:I:145:ARG:NH2 | 2.52 | 0.42 |
| 11:K:38:ARG:HH11 | 11:K:61:LEU:HD21 | 1.83 | 0.42 |
| 18:R:91:ARG:HD2 | 51:1:888:C:OP1 | 2.18 | 0.42 |
| 27:b:86:ARG:HD3 | 27:b:86:ARG:HA | 1.84 | 0.42 |
| 29:d:127:GLU:O | 29:d:156:ASN:ND2 | 2.51 | 0.42 |
| 33:i:127:SER:OG | 51:1:1059:G:N2 | 2.51 | 0.42 |
| 42:r:62:GLU:HG3 | 42:r:97:LYS:HB3 | 2.01 | 0.42 |
| 50:z:38:GLU:CD | 51:1:928:A:H5' | 2.43 | 0.42 |
| 51:1:1433:A:H2' | 51:1:1434:A:C1' | 2.49 | 0.42 |
| 51:1:1907:G:C5 | 51:1:1908:C:C4 | 3.07 | 0.42 |
| 51:1:2106:U:H2' | 51:1:2107:G:O4' | 2.18 | 0.42 |
| 51:1:2216:G:H2' | 51:1:2217:G:C8 | 2.54 | 0.42 |
| 53:3:460:A:H2' | 53:3:461:A:C8 | 2.54 | 0.42 |
| 53:3:987:G:H2' | 53:3:988:G:H8 | 1.84 | 0.42 |
| 53:3:1348:U:H2' | 53:3:1349:A:H8 | 1.84 | 0.42 |
| 58:B1:56:LEU:HD12 | 58:B1:56:LEU:HA | 1.84 | 0.42 |
| 58:B1:107:LEU:HA | 58:B1:276:ASN:ND2 | 2.33 | 0.42 |
| 58:B1:395:LYS:HE3 | 58:B1:395:LYS:HB3 | 1.45 | 0.42 |
| 58:B1:513:MET:HG3 | 58:B1:544:LEU:HD11 | 2.01 | 0.42 |
| 8:H:61:LYS:HE2 | 8:H:96:VAL:HG12 | 2.01 | 0.42 |
| 29:d:47:LYS:HE2 | 51:1:451:U:H4' | 2.00 | 0.42 |
| 51:1:8:C:C2 | 51:1:9:G:C8 | 3.07 | 0.42 |
| 51:1:481:G:H2' | 51:1:482:A:OP2 | 2.18 | 0.42 |
| 51:1:644:A:C3' | 51:1:645:C:H5" | 2.49 | 0.42 |
| 51:1:955:U:H2' | 51:1:956:G:H5' | 2.02 | 0.42 |
| 51:1:1246:A:H2' | 51:1:1247:A:O4' | 2.19 | 0.42 |
| 51:1:2314:A:H2' | 51:1:2315:G:H8 | 1.78 | 0.42 |
| 51:1:2812:G:O2' | 51:1:2813:A:H5' | 2.19 | 0.42 |
| 58:B1:59:ALA:HB1 | 58:B1:90:VAL:HG23 | 2.01 | 0.42 |
| 58:B1:68:TYR:HB3 | 58:B1:75:TYR:HE2 | 1.81 | 0.42 |
| 58:B1:385:LEU:CD2 | 58:B1:390:LEU:HB2 | 2.50 | 0.42 |
| 58:B1:824:PRO:HD3 | 58:B1:835:LEU:HD12 | 2.00 | 0.42 |
| 58:B1:839:VAL:HG12 | 58:B1:864:LEU:HD12 | 2.02 | 0.42 |
| 59:B2:741:MET:HE3 | 59:B2:974:ARG:HH12 | 1.84 | 0.42 |
| 16:P:126:ARG:O | 53:3:796:C:H5" | 2.19 | 0.42 |
| 24:X:51:HIS:HB2 | 24:X:56:HIS:CE1 | 2.55 | 0.42 |
| 29:d:53:THR:HB | 51:1:452:G:H8 | 1.85 | 0.42 |
| 29:d:106:LYS:HG3 | 29:d:200:LEU:HD13 | 2.01 | 0.42 |
| 35:k:17:ARG:HD3 | 35:k:47:ILE:HD11 | 2.02 | 0.42 |
| 37:m:69:PRO:HA | 37:m:94:ALA:HB2 | 2.01 | 0.42 |
| 51:1:1197:G:C2' | 51:1:1198:U:H5' | 2.50 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 51:1:2024:G:H2' | 51:1:2025:C:C6 | 2.54 | 0.42 |
| 57:A1:68:TYR:HE1 | 57:A1:79:LEU:HD13 | 1.83 | 0.42 |
| 58:B1:220:ARG:HH11 | 58:B1:220:ARG:CG | 2.26 | 0.42 |
| 58:B1:243:PRO:HG2 | 59:B2:1332:SER:C | 2.44 | 0.42 |
| 58:B1:375:GLU:HB3 | 59:B2:1245:ALA:CB | 2.48 | 0.42 |
| 9:I:101:VAL:HG22 | 9:I:106:PHE:HB2 | 2.01 | 0.42 |
| 14:N:30:ASN:HD21 | 14:N:66:VAL:H | 1.66 | 0.42 |
| 14:N:113:LYS:HA | 14:N:120:ALA:HB2 | 2.01 | 0.42 |
| 18:R:16:ILE:O | 18:R:19:THR:OG1 | 2.26 | 0.42 |
| 18:R:87:GLY:O | 18:R:91:ARG:N | 2.52 | 0.42 |
| 18:R:89:ARG:HB2 | 18:R:96:VAL:HG22 | 2.01 | 0.42 |
| 21:U:4:ILE:HG12 | 21:U:21:VAL:HG22 | 2.00 | 0.42 |
| 24:X:36:ARG:HB3 | 53:3:1320:C:N4 | 2.34 | 0.42 |
| 36:l:108:ALA:HB3 | 36:l:125:LEU:HG | 2.01 | 0.42 |
| 40:p:63:ILE:HA | 40:p:68:GLY:HA2 | 2.01 | 0.42 |
| 47:w:14:ALA:HB1 | 51:1:2271:G:OP1 | 2.19 | 0.42 |
| 51:1:90:U:H2' | 51:1:91:A:C8 | 2.55 | 0.42 |
| 51:1:1335:C:H2' | 51:1:1336:A:H8 | 1.84 | 0.42 |
| 51:1:1914:C:O2 | 51:1:1914:C:O4' | 2.38 | 0.42 |
| 51:1:1983:G:HO2' | 51:1:1984:G:H5' | 1.83 | 0.42 |
| 51:1:2482:A:H2' | 51:1:2483:C:C6 | 2.54 | 0.42 |
| 51:1:2741:A:N6 | 51:1:2742:G:C2 | 2.88 | 0.42 |
| 53:3:1531:A:C2' | 53:3:1532:U:H5' | 2.50 | 0.42 |
| 58:B1:24:LEU:HD21 | 58:B1:116:PHE:CE2 | 2.54 | 0.42 |
| 58:B1:388:ARG:HG2 | 58:B1:388:ARG:HH11 | 1.84 | 0.42 |
| 58:B1:586:GLY:HA3 | 58:B1:612:LEU:HD11 | 2.01 | 0.42 |
| 58:B1:616:PRO:HA | 58:B1:619:ILE:HG22 | 2.02 | 0.42 |
| 59:B2:1157:GLN:HG3 | 59:B2:1159:VAL:HG13 | 2.00 | 0.42 |
| 62:NG:135:ARG:O | 62:NG:178:VAL:CA | 2.68 | 0.42 |
| 18:R:11:HIS:HA | 18:R:43:LYS:HD2 | 2.01 | 0.42 |
| 34:j:138:GLN:H | 34:j:138:GLN:HG2 | 1.63 | 0.42 |
| 51:1:94:A:H2' | 51:1:95:A:C8 | 2.54 | 0.42 |
| 51:1:623:C:H2' | 51:1:624:C:H6 | 1.85 | 0.42 |
| 51:1:809:G:C6 | 51:1:810:U:C4 | 3.08 | 0.42 |
| 51:1:892:A:O2' | 51:1:893:C:H5' | 2.19 | 0.42 |
| 51:1:2091:C:H5 | 51:1:2092:U:O2' | 2.02 | 0.42 |
| 51:1:2292:U:H2' | 51:1:2293:G:C8 | 2.55 | 0.42 |
| 51:1:2852:G:H2' | 51:1:2853:C:O4' | 2.20 | 0.42 |
| 58:B1:137:ARG:HA | 58:B1:142:GLU:HG2 | 2.02 | 0.42 |
| 58:B1:434:ILE:HD11 | 59:B2:1274:GLU:CG | 2.49 | 0.42 |
| 8:H:1:GLY:HA2 | 53:3:1060:U:C5 | 2.54 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 9:I:152:SER:HB3 | 53:3:436:C:H4' | 2.00 | 0.42 |
| 16:P:124:LYS:H | 16:P:124:LYS:HG3 | 1.58 | 0.42 |
| 26:Z:39:LYS:HA | 26:Z:42:THR:HB | 2.02 | 0.42 |
| 28:c:134:HIS:HE1 | 51:1:1675:C:C4 | 2.38 | 0.42 |
| 36:l:39:LYS:HZ3 | 51:1:942:G:P | 2.41 | 0.42 |
| 38:n:16:HIS:CD2 | 51:1:1275:A:C2 | 3.07 | 0.42 |
| 41:q:111:LYS:HD2 | 41:q:111:LYS:HA | 1.80 | 0.42 |
| 43:s:87:PRO:HG3 | 51:1:1615:C:C6 | 2.54 | 0.42 |
| 51:1:4:U:O2' | 51:1:5:A:H5' | 2.20 | 0.42 |
| 51:1:510:C:OP1 | 51:1:510:C:H3' | 2.20 | 0.42 |
| 51:1:758:C:H2' | 51:1:759:G:H8 | 1.84 | 0.42 |
| 51:1:908:C:O2' | 51:1:909:A:H5' | 2.20 | 0.42 |
| 51:1:1020:A:O5' | 51:1:1020:A:H8 | 2.02 | 0.42 |
| 51:1:1204:A:H4' | 51:1:1205:A:H5" | 2.02 | 0.42 |
| 51:1:1327:A:H2' | 51:1:1328:A:H5' | 2.01 | 0.42 |
| 51:1:1642:G:H2' | 51:1:1643:G:O4' | 2.19 | 0.42 |
| 51:1:1710:G:H2' | 51:1:1711:A:H8 | 1.85 | 0.42 |
| 51:1:1901:A:C2 | 51:1:1902:C:C5 | 3.08 | 0.42 |
| 51:1:1931:U:C5 | 51:1:1968:G:N2 | 2.88 | 0.42 |
| 51:1:2098:U:C2' | 51:1:2099:U:H5' | 2.49 | 0.42 |
| 51:1:2583:G:H8 | 51:1:2583:G:O5' | 2.03 | 0.42 |
| 51:1:2701:U:H3' | 51:1:2702:G:H5" | 2.01 | 0.42 |
| 51:1:2741:A:H2' | 51:1:2742:G:C5' | 2.50 | 0.42 |
| 53:3:75:G:H1 | 53:3:95:C:H42 | 1.67 | 0.42 |
| 53:3:1243:C:H2' | 53:3:1244:G:H8 | 1.84 | 0.42 |
| 58:B1:848:VAL:HB | 58:B1:858:VAL:HG22 | 2.02 | 0.42 |
| 59:B2:524:ILE:HD12 | 59:B2:712:SER:HB2 | 2.02 | 0.42 |
| 59:B2:590:PRO:HB2 | 59:B2:655:VAL:HG21 | 2.01 | 0.42 |
| 20:T:66:LEU:HB3 | 20:T:77:TYR:HE1 | 1.84 | 0.42 |
| 39:o:33:ARG:O | 39:o:65:THR:OG1 | 2.28 | 0.42 |
| 46:v:62:THR:O | 46:v:62:THR:OG1 | 2.35 | 0.42 |
| 51:1:115:C:O2' | 51:1:116:C:H5' | 2.20 | 0.42 |
| 51:1:191:A:C2 | 51:1:192:C:C4 | 3.08 | 0.42 |
| 51:1:532:A:H2' | 51:1:532:A:N3 | 2.34 | 0.42 |
| 51:1:837:C:O5' | 51:1:837:C:H6 | 2.02 | 0.42 |
| 51:1:1034:G:C6 | 51:1:1035:U:N3 | 2.88 | 0.42 |
| 51:1:1917:U:H2' | 51:1:1918:A:H5' | 2.01 | 0.42 |
| 53:3:322:C:O2 | 53:3:332:G:N2 | 2.52 | 0.42 |
| 53:3:1013:G:N2 | 53:3:1016:A:OP2 | 2.35 | 0.42 |
| 53:3:1492:A:H5' | 65:h:6:5OH:NP | 2.35 | 0.42 |
| 58:B1:506:VAL:H | 58:B1:506:VAL:HG12 | 1.59 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 6:F:8:LYS:NZ | 51:1:2467:C:OP1 | 2.37 | 0.42 |
| 11:K:40:GLU:HB3 | 11:K:61:LEU:HB3 | 2.02 | 0.42 |
| 33:i:25:PRO:HG3 | 51:1:1095:A:N1 | 2.34 | 0.42 |
| 33:i:109:ALA:O | 33:i:113:ALA:N | 2.53 | 0.42 |
| 35:k:7:MET:HE2 | 35:k:18:ARG:HD3 | 2.01 | 0.42 |
| 41:q:54:ARG:HD3 | 51:1:1155:A:H5" | 2.01 | 0.42 |
| 44:t:40:LYS:HE3 | 44:t:60:THR:HG22 | 2.01 | 0.42 |
| 50:z:57:GLU:OE1 | 50:z:57:GLU:N | 2.53 | 0.42 |
| 51:1:552:U:O2' | 51:1:553:G:H5' | 2.20 | 0.42 |
| 51:1:673:C:O2' | 51:1:674:G:H5' | 2.19 | 0.42 |
| 51:1:1316:U:O2' | 51:1:1317:G:H5' | 2.20 | 0.42 |
| 51:1:1381:G:C2' | 51:1:1382:G:H5' | 2.49 | 0.42 |
| 51:1:1500:G:H2' | 51:1:1501:G:H8 | 1.83 | 0.42 |
| 51:1:1589:U:H2' | 51:1:1590:A:C8 | 2.55 | 0.42 |
| 51:1:2092:U:H5 | 51:1:2199:A:C2 | 2.30 | 0.42 |
| 51:1:2193:G:H2' | 51:1:2194:U:H6 | 1.83 | 0.42 |
| 51:1:2848:G:C2 | 51:1:2867:G:C4 | 3.08 | 0.42 |
| 53:3:1410:A:C2 | 53:3:1491:G:N1 | 2.88 | 0.42 |
| 58:B1:201:LEU:HD11 | 58:B1:220:ARG:NH1 | 2.32 | 0.42 |
| 58:B1:279:LEU:HD13 | 58:B1:299:LEU:HD13 | 2.02 | 0.42 |
| 58:B1:1026:PRO:HB2 | 58:B1:1028:ILE:HG23 | 2.00 | 0.42 |
| 59:B2:50:GLU:HG2 | 59:B2:73:TYR:HE1 | 1.85 | 0.42 |
| 59:B2:861:ALA:HB1 | 59:B2:882:ILE:HD13 | 2.01 | 0.42 |
| 59:B2:1275:VAL:HG13 | 59:B2:1287:LEU:HD11 | 2.01 | 0.42 |
| 15:O:46:LYS:HE3 | 15:O:46:LYS:HB2 | 1.88 | 0.42 |
| 18:R:32:ILE:HG23 | 18:R:58:GLU:HB3 | 2.02 | 0.42 |
| 28:c:176:ASP:N | 28:c:176:ASP:OD1 | 2.44 | 0.42 |
| 43:s:9:HIS:H | 43:s:102:HIS:CE1 | 2.38 | 0.42 |
| 51:1:196:A:N3 | 51:1:196:A:H2' | 2.35 | 0.42 |
| 51:1:256:A:C2' | 51:1:257:C:H5' | 2.50 | 0.42 |
| 51:1:397:U:O5' | 51:1:397:U:H6 | 2.03 | 0.42 |
| 51:1:422:A:H2' | 51:1:423:A:O4' | 2.20 | 0.42 |
| 51:1:431:U:O5' | 51:1:431:U:H6 | 2.03 | 0.42 |
| 51:1:598:U:H2' | 51:1:599:A:C8 | 2.54 | 0.42 |
| 51:1:903:C:H2' | 51:1:904:G:H8 | 1.85 | 0.42 |
| 51:1:1336:A:H2' | 51:1:1337:G:H8 | 1.85 | 0.42 |
| 51:1:1600:C:H2' | 51:1:1601:G:C8 | 2.55 | 0.42 |
| 51:1:1812:U:H5" | 51:1:1812:U:H6 | 1.85 | 0.42 |
| 51:1:1886:U:O2' | 51:1:1887:C:H5' | 2.20 | 0.42 |
| 51:1:2628:C:H3' | 51:1:2629:U:H5' | 2.01 | 0.42 |
| 53:3:73:C:H2' | 53:3:74:A:C8 | 2.55 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 53:3:1238:A:OP1 | 53:3:1335:U:O2' | 2.35 | 0.42 |
| 53:3:1513:A:H2' | 53:3:1514:G:C8 | 2.55 | 0.42 |
| 58:B1:559:ALA:HB3 | 58:B1:562:GLU:HB3 | 2.01 | 0.42 |
| 58:B1:820:ILE:HD11 | 58:B1:822:MET:HE2 | 2.02 | 0.42 |
| 63:5:4:C:H2' | 63:5:5:G:C8 | 2.55 | 0.42 |
| 8:H:110:LEU:HD21 | 8:H:143:LEU:HB3 | 2.02 | 0.41 |
| 12:L:68:VAL:HG23 | 12:L:99:ALA:HB1 | 2.02 | 0.41 |
| 13:M:42:GLU:HG2 | 13:M:100:ILE:HG21 | 2.02 | 0.41 |
| 21:U:68:SER:OG | 21:U:69:ASP:N | 2.53 | 0.41 |
| 40:p:113:LEU:HD13 | 40:p:113:LEU:HA | 1.86 | 0.41 |
| 46:v:14:LYS:HB2 | 52:2:98:G:H1 | 1.84 | 0.41 |
| 48:x:71:ARG:NH2 | 48:x:77:TYR:OH | 2.42 | 0.41 |
| 49:y:30:MET:HE3 | 49:y:30:MET:HB3 | 1.83 | 0.41 |
| 51:1:281:C:H2' | 51:1:282:A:C8 | 2.54 | 0.41 |
| 51:1:535:G:O2' | 51:1:536:G:H5' | 2.20 | 0.41 |
| 51:1:1070:A:H5' | 51:1:1072:C:OP1 | 2.20 | 0.41 |
| 51:1:1314:C:H42 | 51:1:1338:G:H1 | 1.68 | 0.41 |
| 51:1:1719:G:O2' | 51:1:1720:U:H5' | 2.20 | 0.41 |
| 51:1:2389:G:H5" | 51:1:2390:U:H5' | 2.01 | 0.41 |
| 51:1:2612:C:O5' | 51:1:2612:C:H6 | 2.04 | 0.41 |
| 51:1:2895:G:H2' | 51:1:2896:C:H6 | 1.84 | 0.41 |
| 53:3:440:C:H2' | 53:3:441:A:H8 | 1.85 | 0.41 |
| 58:B1:245:LEU:CG | 58:B1:246:PRO:HD2 | 2.47 | 0.41 |
| 58:B1:390:LEU:H | 58:B1:390:LEU:HD13 | 1.85 | 0.41 |
| 59:B2:478:ARG:HD2 | 59:B2:492:MET:HA | 2.02 | 0.41 |
| 59:B2:542:ARG:H | 59:B2:542:ARG:HG2 | 1.69 | 0.41 |
| 59:B2:699:LEU:HG | 59:B2:799:ASN:HD22 | 1.85 | 0.41 |
| 59:B2:998:LEU:HD21 | 59:B2:1015:ALA:HB2 | 2.02 | 0.41 |
| 7:G:162:VAL:N | 7:G:183:PHE:O | 2.38 | 0.41 |
| 8:H:19:SER:HB2 | 8:H:39:ARG:HH21 | 1.85 | 0.41 |
| 17:Q:29:LYS:HA | 17:Q:29:LYS:HD3 | 1.65 | 0.41 |
| 17:Q:98:ARG:HA | 17:Q:103:CYS:HB2 | 2.02 | 0.41 |
| 18:R:7:ASN:CG | 18:R:9:PRO:HD2 | 2.45 | 0.41 |
| 29:d:145:ASP:HA | 29:d:166:LYS:HB3 | 2.02 | 0.41 |
| 32:g:11:ASN:ND2 | 51:1:2095:A:OP1 | 2.53 | 0.41 |
| 33:i:78:LEU:HA | 33:i:81:LYS:HB3 | 2.02 | 0.41 |
| 35:k:53:LYS:HA | 35:k:53:LYS:HD3 | 1.96 | 0.41 |
| 46:v:58:SER:OG | 46:v:59:GLU:OE1 | 2.36 | 0.41 |
| 51:1:439:A:H2' | 51:1:440:C:O4' | 2.19 | 0.41 |
| 51:1:1727:C:O2' | 51:1:1728:C:H5' | 2.20 | 0.41 |
| 51:1:2160:C:H2' | 51:1:2161:C:O4' | 2.20 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 53:3:842:U:H5” | 53:3:846:G:C6 | 2.55 | 0.41 |
| 53:3:1382:C:H2’ | 53:3:1383:C:H6 | 1.84 | 0.41 |
| 58:B1:390:LEU:N | 58:B1:390:LEU:HD13 | 2.35 | 0.41 |
| 15:O:12:ALA:HB2 | 15:O:96:VAL:HG13 | 2.03 | 0.41 |
| 22:V:7:LEU:N | 22:V:59:GLU:OE2 | 2.53 | 0.41 |
| 37:m:123:LYS:HE2 | 51:1:2467:C:O2 | 2.20 | 0.41 |
| 50:z:37:ARG:HD3 | 50:z:37:ARG:HA | 1.83 | 0.41 |
| 51:1:191:A:H2’ | 51:1:192:C:C6 | 2.56 | 0.41 |
| 51:1:573:U:O2’ | 51:1:574:A:H3’ | 2.20 | 0.41 |
| 51:1:630:G:N2 | 51:1:634:C:C4 | 2.88 | 0.41 |
| 51:1:849:A:H2’ | 51:1:850:U:C5 | 2.54 | 0.41 |
| 51:1:1176:U:H2’ | 51:1:1177:G:N9 | 2.35 | 0.41 |
| 51:1:1343:G:N3 | 51:1:1343:G:H2’ | 2.35 | 0.41 |
| 51:1:1488:C:H2’ | 51:1:1489:C:H6 | 1.84 | 0.41 |
| 51:1:1594:U:O2’ | 51:1:1595:C:H5’ | 2.20 | 0.41 |
| 51:1:1964:G:H4’ | 51:1:1965:C:OP2 | 2.19 | 0.41 |
| 51:1:2287:A:C4 | 51:1:2289:G:N7 | 2.87 | 0.41 |
| 53:3:497:G:H2’ | 53:3:498:A:C8 | 2.55 | 0.41 |
| 53:3:1124:G:H1 | 53:3:1149:C:H42 | 1.68 | 0.41 |
| 54:4:55:G:H5’ | 59:B2:688:GLN:HE22 | 1.85 | 0.41 |
| 55:8:14:DC:C2 | 55:8:15:DC:C5 | 3.09 | 0.41 |
| 58:B1:144:TYR:CE1 | 58:B1:162:GLU:OE1 | 2.73 | 0.41 |
| 58:B1:201:LEU:HD23 | 58:B1:201:LEU:HA | 1.92 | 0.41 |
| 58:B1:450:HIS:HA | 58:B1:451:PRO:HD3 | 1.91 | 0.41 |
| 58:B1:515:ARG:HG2 | 58:B1:516:ASP:H | 1.85 | 0.41 |
| 58:B1:930:LEU:HA | 58:B1:1244:GLN:HG3 | 2.02 | 0.41 |
| 59:B2:741:MET:SD | 59:B2:974:ARG:NH2 | 2.93 | 0.41 |
| 7:G:190:SER:OG | 7:G:191:ASP:N | 2.54 | 0.41 |
| 15:O:57:VAL:HG22 | 15:O:58:ASN:H | 1.85 | 0.41 |
| 18:R:104:ASN:HB3 | 18:R:105:ALA:H | 1.69 | 0.41 |
| 22:V:11:VAL:HG23 | 22:V:55:GLY:H | 1.85 | 0.41 |
| 34:j:13:ARG:NH1 | 34:j:49:ASP:O | 2.41 | 0.41 |
| 41:q:23:TYR:HB3 | 41:q:27:ARG:HB2 | 2.02 | 0.41 |
| 42:r:49:ILE:HA | 42:r:54:VAL:HG23 | 2.02 | 0.41 |
| 51:1:127:A:H5” | 51:1:128:C:O4’ | 2.21 | 0.41 |
| 51:1:170:U:H2’ | 51:1:171:U:C6 | 2.55 | 0.41 |
| 51:1:638:G:H2’ | 51:1:639:U:C6 | 2.55 | 0.41 |
| 51:1:1213:A:C1’ | 51:1:1237:A:C2 | 3.03 | 0.41 |
| 51:1:1416:G:H2’ | 51:1:1417:C:H6 | 1.82 | 0.41 |
| 51:1:1721:G:H1’ | 51:1:1739:A:N6 | 2.35 | 0.41 |
| 51:1:2379:G:H2’ | 51:1:2380:C:C6 | 2.56 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 57:A1:76:GLU:HB3 | 57:A1:80:GLU:HB3 | 2.01 | 0.41 |
| 58:B1:109:SER:CB | 58:B1:296:LYS:HG2 | 2.51 | 0.41 |
| 59:B2:897:PRO:O | 59:B2:900:LYS:N | 2.53 | 0.41 |
| 62:NG:175:PHE:O | 62:NG:178:VAL:O | 2.38 | 0.41 |
| 8:H:178:ARG:NH1 | 53:3:1112:C:O2' | 2.54 | 0.41 |
| 9:I:24:VAL:HG22 | 53:3:409:U:H4' | 2.02 | 0.41 |
| 26:Z:9:GLU:HB3 | 26:Z:10:PRO:HD3 | 2.03 | 0.41 |
| 28:c:90:PHE:HD1 | 28:c:94:GLN:HG2 | 1.83 | 0.41 |
| 30:e:124:ARG:NH2 | 51:1:2315:G:N3 | 2.68 | 0.41 |
| 43:s:70:LYS:N | 43:s:108:SER:O | 2.45 | 0.41 |
| 50:z:31:ILE:HD11 | 51:1:989:G:P | 2.61 | 0.41 |
| 51:1:137:U:H3 | 51:1:142:A:H61 | 1.69 | 0.41 |
| 51:1:197:A:H2 | 51:1:2434:A:H62 | 1.69 | 0.41 |
| 51:1:543:G:C3' | 51:1:544:C:H5" | 2.51 | 0.41 |
| 51:1:722:A:H2' | 51:1:723:C:C6 | 2.56 | 0.41 |
| 51:1:724:U:H2' | 51:1:725:G:C8 | 2.56 | 0.41 |
| 51:1:759:G:H2' | 51:1:760:G:H8 | 1.83 | 0.41 |
| 51:1:1045:C:H1' | 51:1:1047:G:C2 | 2.56 | 0.41 |
| 51:1:1107:G:H2' | 51:1:1108:U:O4' | 2.20 | 0.41 |
| 51:1:1767:G:N2 | 51:1:1986:C:C2 | 2.89 | 0.41 |
| 51:1:2224:G:H4' | 51:1:2226:C:N3 | 2.35 | 0.41 |
| 51:1:2248:C:C2' | 51:1:2249:U:H5' | 2.49 | 0.41 |
| 51:1:2335:A:N7 | 51:1:2337:G:C5 | 2.88 | 0.41 |
| 51:1:2411:A:O2' | 51:1:2412:A:H5' | 2.20 | 0.41 |
| 51:1:2467:C:N4 | 51:1:2468:A:C6 | 2.89 | 0.41 |
| 51:1:2743:U:H2' | 51:1:2744:G:C4' | 2.50 | 0.41 |
| 58:B1:102:MET:HG2 | 58:B1:246:PRO:CG | 2.49 | 0.41 |
| 59:B2:22:LEU:HB3 | 59:B2:655:VAL:HG11 | 2.01 | 0.41 |
| 59:B2:22:LEU:HD22 | 59:B2:603:ILE:HG21 | 2.02 | 0.41 |
| 59:B2:870:ILE:HB | 59:B2:944:ARG:HD3 | 2.02 | 0.41 |
| 59:B2:979:LEU:HD11 | 59:B2:1011:LEU:HD11 | 2.03 | 0.41 |
| 63:5:9:A:H1' | 63:5:45:U:H2' | 2.01 | 0.41 |
| 9:I:44:LYS:HA | 9:I:44:LYS:HD2 | 1.55 | 0.41 |
| 15:O:89:ARG:NH2 | 62:NG:165:PHE:H | 2.18 | 0.41 |
| 33:i:100:ILE:HB | 33:i:139:VAL:HG12 | 2.03 | 0.41 |
| 36:l:39:LYS:HE3 | 36:l:39:LYS:HB2 | 1.84 | 0.41 |
| 39:o:16:ARG:HD3 | 39:o:16:ARG:HA | 1.84 | 0.41 |
| 41:q:57:ARG:NH1 | 51:1:1154:G:OP2 | 2.52 | 0.41 |
| 42:r:81:LYS:NZ | 51:1:568:U:O4 | 2.54 | 0.41 |
| 51:1:49:A:P | 51:1:51:G:H5' | 2.60 | 0.41 |
| 51:1:56:A:H1' | 51:1:127:A:C2 | 2.55 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 51:1:481:G:H1' | 51:1:506:G:H22 | 1.84 | 0.41 |
| 51:1:940:G:H2' | 51:1:941:A:C4' | 2.51 | 0.41 |
| 51:1:1024:G:H21 | 51:1:1144:A:C4' | 2.33 | 0.41 |
| 51:1:1092:C:O2' | 51:1:1093:G:H5' | 2.21 | 0.41 |
| 51:1:1239:G:H2' | 51:1:1240:U:O4' | 2.21 | 0.41 |
| 51:1:1412:U:H2' | 51:1:1413:A:C8 | 2.56 | 0.41 |
| 51:1:1782:U:C2' | 51:1:1783:A:H5" | 2.51 | 0.41 |
| 51:1:1936:A:N6 | 51:1:1963:U:H3 | 2.17 | 0.41 |
| 53:3:146:G:H2' | 53:3:147:G:C8 | 2.56 | 0.41 |
| 53:3:370:C:H2' | 53:3:371:A:H8 | 1.86 | 0.41 |
| 53:3:1228:C:H2' | 53:3:1229:A:C8 | 2.56 | 0.41 |
| 57:A2:57:THR:HG23 | 57:A2:158:ARG:HH21 | 1.86 | 0.41 |
| 58:B1:144:TYR:N | 58:B1:144:TYR:CD1 | 2.88 | 0.41 |
| 58:B1:224:LEU:HD23 | 58:B1:224:LEU:HA | 1.89 | 0.41 |
| 58:B1:609:TYR:HD2 | 58:B1:610:ARG:NH1 | 2.17 | 0.41 |
| 58:B1:647:PRO:HG3 | 58:B1:697:MET:HB3 | 2.01 | 0.41 |
| 58:B1:1350:ASN:HA | 58:B1:1353:VAL:HG12 | 2.02 | 0.41 |
| 59:B2:657:THR:HG21 | 59:B2:1188:ASP:HB2 | 2.03 | 0.41 |
| 7:G:17:HIS:C | 7:G:19:THR:H | 2.28 | 0.41 |
| 7:G:173:LYS:HE3 | 7:G:173:LYS:HB2 | 1.76 | 0.41 |
| 23:W:24:ASP:OD1 | 23:W:24:ASP:N | 2.53 | 0.41 |
| 30:e:39:VAL:HG12 | 30:e:85:GLY:HA2 | 2.03 | 0.41 |
| 39:o:8:ILE:O | 39:o:12:THR:OG1 | 2.33 | 0.41 |
| 45:u:4:ILE:HD13 | 45:u:69:VAL:HG23 | 2.03 | 0.41 |
| 51:1:191:A:C6 | 51:1:192:C:N4 | 2.88 | 0.41 |
| 51:1:259:G:O2' | 51:1:260:G:H5' | 2.20 | 0.41 |
| 51:1:284:U:H2' | 51:1:285:G:C8 | 2.55 | 0.41 |
| 51:1:518:G:C2 | 51:1:519:U:C2 | 3.08 | 0.41 |
| 51:1:859:G:HO2' | 51:1:860:U:P | 2.43 | 0.41 |
| 51:1:1048:A:C2' | 51:1:1049:C:H5' | 2.49 | 0.41 |
| 51:1:1150:C:C2 | 51:1:1151:A:C8 | 3.09 | 0.41 |
| 51:1:1418:G:H1' | 51:1:1581:G:N2 | 2.36 | 0.41 |
| 51:1:1505:A:O2' | 51:1:1506:U:H5' | 2.19 | 0.41 |
| 51:1:1614:A:O5' | 51:1:1614:A:C8 | 2.73 | 0.41 |
| 51:1:2646:C:H2' | 51:1:2647:U:O4' | 2.21 | 0.41 |
| 51:1:2697:G:C2 | 51:1:2711:A:C2 | 3.08 | 0.41 |
| 58:B1:239:LEU:HD23 | 58:B1:239:LEU:N | 2.36 | 0.41 |
| 59:B2:310:ILE:HG21 | 59:B2:325:LEU:HB3 | 2.02 | 0.41 |
| 59:B2:487:LEU:HD22 | 59:B2:487:LEU:HA | 1.77 | 0.41 |
| 59:B2:616:ILE:HG13 | 59:B2:652:TYR:HB2 | 2.01 | 0.41 |
| 59:B2:678:ARG:HA | 59:B2:678:ARG:HD3 | 1.84 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 10:J:146:MET:HE2 | 10:J:146:MET:HB3 | 1.76 | 0.41 |
| 27:b:57:HIS:ND1 | 51:1:1567:G:H5' | 2.35 | 0.41 |
| 27:b:209:ALA:HA | 27:b:212:TRP:CE2 | 2.55 | 0.41 |
| 33:i:41:PHE:O | 33:i:45:THR:N | 2.54 | 0.41 |
| 51:1:79:C:O2 | 51:1:346:A:H2 | 2.03 | 0.41 |
| 51:1:490:C:O2' | 51:1:491:G:P | 2.79 | 0.41 |
| 51:1:724:U:H2' | 51:1:725:G:O4' | 2.21 | 0.41 |
| 51:1:877:A:H2' | 51:1:878:A:H5" | 2.02 | 0.41 |
| 51:1:1063:G:N2 | 51:1:1075:C:H41 | 2.18 | 0.41 |
| 51:1:1283:G:N2 | 51:1:1285:A:H3' | 2.35 | 0.41 |
| 51:1:1328:A:H2' | 51:1:1330:C:C4 | 2.56 | 0.41 |
| 51:1:1334:G:C6 | 51:1:1335:C:C4 | 3.09 | 0.41 |
| 51:1:1467:U:C4 | 51:1:1468:U:C4 | 3.08 | 0.41 |
| 51:1:1553:A:O2' | 51:1:1554:U:H5 | 2.02 | 0.41 |
| 51:1:1750:G:H2' | 51:1:1751:U:C6 | 2.56 | 0.41 |
| 51:1:1991:U:H2' | 51:1:1992:G:H5' | 2.02 | 0.41 |
| 51:1:2600:A:H8 | 51:1:2600:A:O5' | 2.03 | 0.41 |
| 51:1:2660:A:H2' | 51:1:2661:G:C8 | 2.56 | 0.41 |
| 51:1:2757:A:H2' | 51:1:2758:A:H5" | 2.02 | 0.41 |
| 57:A1:205:MET:HE1 | 57:A1:217:ILE:HG13 | 2.02 | 0.41 |
| 58:B1:71:LEU:HB2 | 58:B1:90:VAL:HG11 | 2.03 | 0.41 |
| 60:W0:26:ARG:HA | 60:W0:26:ARG:HD2 | 1.92 | 0.41 |
| 2:B:39:ARG:HA | 2:B:39:ARG:HD2 | 1.91 | 0.41 |
| 5:E:7:ARG:NH2 | 51:1:245:G:N7 | 2.59 | 0.41 |
| 7:G:178:LEU:HD22 | 61:NA:244:ARG:CB | 2.50 | 0.41 |
| 10:J:90:GLY:O | 10:J:129:SER:OG | 2.36 | 0.41 |
| 27:b:70:LYS:HD2 | 27:b:73:ILE:HD12 | 2.02 | 0.41 |
| 28:c:4:LEU:HD21 | 28:c:98:VAL:HA | 2.03 | 0.41 |
| 28:c:169:ARG:O | 51:1:2773:C:H4' | 2.21 | 0.41 |
| 30:e:36:ASN:HB3 | 30:e:152:ASP:HB3 | 2.03 | 0.41 |
| 33:i:77:VAL:HA | 33:i:80:LYS:HE2 | 2.02 | 0.41 |
| 38:n:28:LEU:O | 38:n:32:GLU:N | 2.38 | 0.41 |
| 39:o:24:THR:HB | 39:o:42:PRO:HG3 | 2.03 | 0.41 |
| 43:s:29:VAL:HG21 | 43:s:55:ILE:HG21 | 2.03 | 0.41 |
| 51:1:211:C:O2' | 51:1:212:G:H5' | 2.21 | 0.41 |
| 51:1:511:U:H2' | 51:1:512:G:H5' | 2.03 | 0.41 |
| 51:1:679:C:H2' | 51:1:680:C:C6 | 2.56 | 0.41 |
| 51:1:724:U:C4 | 51:1:725:G:C6 | 3.08 | 0.41 |
| 51:1:924:G:O2' | 51:1:925:A:H5' | 2.21 | 0.41 |
| 51:1:1020:A:H5' | 51:1:1021:A:N7 | 2.35 | 0.41 |
| 51:1:1107:G:H2' | 51:1:1108:U:C6 | 2.56 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 51:1:1160:G:C6 | 51:1:1161:C:C4 | 3.09 | 0.41 |
| 51:1:1283:G:H22 | 51:1:1286:A:P | 2.44 | 0.41 |
| 51:1:1410:G:H2' | 51:1:1411:U:H6 | 1.85 | 0.41 |
| 51:1:1591:A:H2' | 51:1:1592:C:C6 | 2.56 | 0.41 |
| 51:1:1822:C:H2' | 51:1:1823:G:H8 | 1.85 | 0.41 |
| 51:1:1930:G:O2' | 51:1:1931:U:P | 2.79 | 0.41 |
| 51:1:1955:U:H5 | 51:1:2557:G:N2 | 2.19 | 0.41 |
| 51:1:2437:G:O4' | 51:1:2598:A:C2 | 2.73 | 0.41 |
| 58:B1:1361:THR:N | 59:B2:1282:GLY:O | 2.53 | 0.41 |
| 59:B2:738:GLU:HA | 59:B2:741:MET:HE2 | 2.03 | 0.41 |
| 59:B2:888:THR:HB | 59:B2:889:PRO:HD3 | 2.02 | 0.41 |
| 7:G:18:GLN:HB3 | 7:G:21:TYR:HB2 | 2.03 | 0.41 |
| 9:I:10:LEU:HG | 9:I:62:ARG:HD2 | 2.03 | 0.41 |
| 9:I:101:VAL:HG13 | 9:I:113:ALA:HB1 | 2.03 | 0.41 |
| 18:R:10:ASP:HB3 | 18:R:45:SER:HB3 | 2.03 | 0.41 |
| 24:X:49:ALA:HA | 24:X:58:PRO:HA | 2.03 | 0.41 |
| 31:f:157:LYS:HD3 | 51:1:2658:C:H5" | 2.02 | 0.41 |
| 51:1:426:C:O2' | 51:1:427:U:H5' | 2.21 | 0.41 |
| 51:1:706:A:H2' | 51:1:707:G:C5' | 2.51 | 0.41 |
| 51:1:1048:A:N6 | 51:1:1111:A:C8 | 2.89 | 0.41 |
| 51:1:1077:A:H3' | 51:1:1078:U:H4' | 2.02 | 0.41 |
| 51:1:1165:A:O2' | 51:1:1166:G:H5' | 2.21 | 0.41 |
| 51:1:1452:G:C2' | 51:1:1453:A:OP2 | 2.68 | 0.41 |
| 51:1:1482:G:H2' | 51:1:1483:G:H8 | 1.85 | 0.41 |
| 51:1:1868:C:H2' | 51:1:1869:G:H8 | 1.86 | 0.41 |
| 51:1:2105:U:C2 | 51:1:2184:A:H2 | 2.39 | 0.41 |
| 51:1:2221:G:H2' | 51:1:2222:C:C6 | 2.56 | 0.41 |
| 51:1:2293:G:O2' | 51:1:2294:G:H5' | 2.21 | 0.41 |
| 51:1:2393:U:C2' | 51:1:2394:C:H5' | 2.51 | 0.41 |
| 51:1:2575:C:H2' | 51:1:2578:G:O6 | 2.21 | 0.41 |
| 51:1:2776:A:C6 | 51:1:2778:A:C6 | 3.09 | 0.41 |
| 52:2:65:U:H3' | 52:2:108:A:N6 | 2.30 | 0.41 |
| 53:3:297:G:N2 | 53:3:300:A:OP2 | 2.39 | 0.41 |
| 53:3:373:A:N1 | 53:3:391:G:O2' | 2.49 | 0.41 |
| 57:A2:42:ALA:HB1 | 57:A2:224:LEU:HD11 | 2.03 | 0.41 |
| 58:B1:26:SER:HB3 | 58:B1:29:MET:H | 1.86 | 0.41 |
| 58:B1:1289:ASN:O | 58:B1:1293:GLU:HB2 | 2.20 | 0.41 |
| 59:B2:469:VAL:HA | 59:B2:472:GLU:HG2 | 2.01 | 0.41 |
| 9:I:87:GLU:N | 9:I:87:GLU:OE2 | 2.53 | 0.40 |
| 31:f:21:GLN:NE2 | 31:f:37:ASN:O | 2.54 | 0.40 |
| 34:j:17:VAL:HG13 | 34:j:137:PRO:HB2 | 2.03 | 0.40 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 38:n:22:ARG:HH22 | 51:1:2709:G:H5' | 1.86 | 0.40 |
| 38:n:71:ARG:HE | 38:n:71:ARG:HB3 | 1.68 | 0.40 |
| 42:r:4:VAL:HG23 | 42:r:39:LEU:HB2 | 2.03 | 0.40 |
| 44:t:17:SER:OG | 44:t:20:ALA:N | 2.48 | 0.40 |
| 44:t:68:LYS:HD3 | 44:t:68:LYS:HA | 1.83 | 0.40 |
| 51:1:244:A:H2' | 51:1:245:G:O4' | 2.20 | 0.40 |
| 51:1:518:G:H2' | 51:1:519:U:C6 | 2.55 | 0.40 |
| 51:1:597:G:H2' | 51:1:598:U:H6 | 1.85 | 0.40 |
| 51:1:688:U:O5' | 51:1:688:U:H6 | 2.03 | 0.40 |
| 51:1:914:G:H5' | 51:1:915:C:OP2 | 2.21 | 0.40 |
| 51:1:1116:G:O2' | 51:1:1117:C:H5' | 2.22 | 0.40 |
| 51:1:1279:G:H2' | 51:1:1280:G:C8 | 2.56 | 0.40 |
| 51:1:1430:G:O2' | 51:1:1431:A:H5' | 2.21 | 0.40 |
| 51:1:2098:U:H2' | 51:1:2099:U:H5' | 2.03 | 0.40 |
| 51:1:2106:U:H3' | 51:1:2107:G:H8 | 1.86 | 0.40 |
| 51:1:2210:U:H6 | 51:1:2210:U:OP1 | 2.04 | 0.40 |
| 51:1:2680:U:O2' | 51:1:2681:C:H5' | 2.21 | 0.40 |
| 53:3:202:G:H2' | 53:3:203:G:C8 | 2.55 | 0.40 |
| 53:3:1304:G:N1 | 53:3:1332:A:OP2 | 2.54 | 0.40 |
| 59:B2:176:ILE:HD12 | 59:B2:184:LEU:HD23 | 2.03 | 0.40 |
| 1:A:62:LYS:HE3 | 1:A:62:LYS:HB3 | 1.89 | 0.40 |
| 6:F:30:GLU:HA | 6:F:31:PRO:HD3 | 1.91 | 0.40 |
| 10:J:156:ARG:HE | 13:M:42:GLU:HG3 | 1.87 | 0.40 |
| 19:S:15:LEU:HB3 | 19:S:54:SER:HB3 | 2.02 | 0.40 |
| 30:e:64:PRO:HA | 30:e:88:VAL:HG22 | 2.03 | 0.40 |
| 38:n:114:GLU:OE1 | 38:n:118:ARG:NH1 | 2.50 | 0.40 |
| 44:t:28:ASN:HD21 | 44:t:91:GLN:HB3 | 1.85 | 0.40 |
| 51:1:55:G:N2 | 51:1:116:C:C2 | 2.90 | 0.40 |
| 51:1:224:U:O4 | 51:1:420:C:H5' | 2.21 | 0.40 |
| 51:1:309:A:N3 | 51:1:329:G:O2' | 2.53 | 0.40 |
| 51:1:466:A:C2' | 51:1:467:G:H5' | 2.46 | 0.40 |
| 51:1:1152:C:H2' | 51:1:1153:C:C6 | 2.55 | 0.40 |
| 51:1:1599:U:H2' | 51:1:1600:C:H6 | 1.85 | 0.40 |
| 51:1:1722:A:N6 | 51:1:1738:G:H1' | 2.36 | 0.40 |
| 51:1:2098:U:H2' | 51:1:2099:U:C5' | 2.51 | 0.40 |
| 51:1:2649:C:N3 | 51:1:2650:U:C4 | 2.89 | 0.40 |
| 59:B2:859:GLU:CB | 61:NA:38:LYS:O | 2.69 | 0.40 |
| 59:B2:1247:SER:OG | 59:B2:1248:THR:N | 2.55 | 0.40 |
| 14:N:22:PRO:HA | 14:N:60:LEU:HA | 2.03 | 0.40 |
| 16:P:30:ILE:HG23 | 16:P:45:THR:HB | 2.02 | 0.40 |
| 23:W:52:ARG:HE | 23:W:52:ARG:HB2 | 1.66 | 0.40 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 29:d:163:ASN:HD21 | 51:1:322:A:P | 2.45 | 0.40 |
| 51:1:120:U:C2 | 51:1:149:A:C6 | 3.10 | 0.40 |
| 51:1:194:G:O6 | 51:1:195:A:C6 | 2.75 | 0.40 |
| 51:1:955:U:H2' | 51:1:956:G:C5' | 2.52 | 0.40 |
| 51:1:1605:C:H2' | 51:1:1606:C:C5' | 2.52 | 0.40 |
| 51:1:1715:G:O2' | 51:1:1716:U:C6 | 2.75 | 0.40 |
| 51:1:1722:A:H2' | 51:1:1723:G:O4' | 2.21 | 0.40 |
| 51:1:2038:G:H2' | 51:1:2039:U:O4' | 2.21 | 0.40 |
| 51:1:2828:G:N1 | 51:1:2829:A:C5 | 2.90 | 0.40 |
| 53:3:146:G:H2' | 53:3:147:G:H8 | 1.86 | 0.40 |
| 53:3:987:G:H2' | 53:3:988:G:C8 | 2.56 | 0.40 |
| 58:B1:807:LEU:HD21 | 58:B1:894:VAL:HG21 | 2.04 | 0.40 |
| 63:5:17:C:H2' | 63:5:18:G:C8 | 2.56 | 0.40 |
| 64:7:10:G:OP1 | 64:7:46:G:H4' | 2.21 | 0.40 |
| 9:I:55:ARG:HA | 9:I:55:ARG:HD3 | 1.88 | 0.40 |
| 9:I:123:MET:HB2 | 9:I:143:SER:HB3 | 2.04 | 0.40 |
| 9:I:150:LYS:HD2 | 9:I:155:LYS:HD2 | 2.04 | 0.40 |
| 11:K:22:ILE:H | 11:K:22:ILE:HG13 | 1.70 | 0.40 |
| 12:L:125:ASP:HB2 | 12:L:130:LYS:HG3 | 2.03 | 0.40 |
| 17:Q:110:LYS:HB2 | 17:Q:110:LYS:HE2 | 1.89 | 0.40 |
| 48:x:55:MET:HE2 | 48:x:55:MET:HB3 | 1.91 | 0.40 |
| 51:1:10:A:C6 | 51:1:2800:A:C2 | 3.09 | 0.40 |
| 51:1:1346:G:O2' | 51:1:1347:A:H5' | 2.22 | 0.40 |
| 51:1:1695:G:H2' | 51:1:1696:G:O5' | 2.22 | 0.40 |
| 51:1:2568:U:O5' | 51:1:2568:U:H6 | 2.04 | 0.40 |
| 53:3:304:U:H2' | 53:3:305:G:C8 | 2.56 | 0.40 |
| 53:3:685:G:N1 | 53:3:704:A:OP2 | 2.52 | 0.40 |
| 55:8:2:DC:C6 | 55:8:2:DC:H5' | 2.56 | 0.40 |
| 64:7:69:C:H2' | 64:7:70:G:C8 | 2.56 | 0.40 |
| 8:H:14:VAL:HG11 | 8:H:180:ASP:HB3 | 2.03 | 0.40 |
| 9:I:146:GLU:HA | 9:I:149:LYS:HZ3 | 1.85 | 0.40 |
| 16:P:17:ASP:HB3 | 16:P:80:ASN:HD21 | 1.87 | 0.40 |
| 18:R:53:ASP:OD1 | 18:R:53:ASP:N | 2.55 | 0.40 |
| 34:j:78:THR:HB | 51:1:2641:G:H5" | 2.04 | 0.40 |
| 35:k:13:ASN:HB3 | 35:k:100:PHE:CZ | 2.57 | 0.40 |
| 51:1:379:G:N1 | 51:1:396:G:C6 | 2.89 | 0.40 |
| 51:1:467:G:H8 | 51:1:467:G:O5' | 2.04 | 0.40 |
| 51:1:485:C:O2' | 51:1:486:C:H5' | 2.22 | 0.40 |
| 51:1:1123:C:H2' | 51:1:1124:G:C8 | 2.57 | 0.40 |
| 51:1:1317:G:H2' | 51:1:1318:U:C6 | 2.56 | 0.40 |
| 51:1:1749:A:C4 | 51:1:1750:G:C8 | 3.10 | 0.40 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 51:1:1783:A:N1 | 51:1:2587:A:H2' | 2.37 | 0.40 |
| 51:1:1827:U:C2' | 51:1:1828:G:H5' | 2.51 | 0.40 |
| 51:1:1975:G:H2' | 51:1:1976:U:H5' | 2.04 | 0.40 |
| 51:1:2093:G:N7 | 51:1:2225:A:H2' | 2.37 | 0.40 |
| 51:1:2585:U:O2 | 51:1:2585:U:O4' | 2.39 | 0.40 |
| 51:1:2615:U:O2 | 51:1:2615:U:H2' | 2.20 | 0.40 |
| 51:1:2648:G:O2' | 51:1:2649:C:H5' | 2.21 | 0.40 |
| 51:1:2788:C:H2' | 51:1:2789:C:C6 | 2.56 | 0.40 |
| 51:1:2833:U:O2' | 51:1:2834:G:H5' | 2.22 | 0.40 |
| 52:2:31:C:H2' | 52:2:53:A:H61 | 1.86 | 0.40 |
| 53:3:202:G:H2' | 53:3:203:G:H8 | 1.85 | 0.40 |
| 58:B1:472:LEU:HD11 | 59:B2:1294:LYS:HG2 | 2.02 | 0.40 |
| 58:B1:734:ALA:O | 58:B1:738:ARG:HB2 | 2.22 | 0.40 |
| 58:B1:1050:THR:HG23 | 58:B1:1057:SER:HB3 | 2.02 | 0.40 |
| 58:B1:1064:SER:OG | 58:B1:1168:GLU:OE1 | 2.31 | 0.40 |
| 59:B2:859:GLU:HB3 | 61:NA:38:LYS:O | 2.21 | 0.40 |
| 59:B2:890:LYS:HB3 | 59:B2:891:GLY:H | 1.72 | 0.40 |

There are no symmetry-related clashes.

## 5.3 Torsion angles (i)

### 5.3.1 Protein backbone (i)

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

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

| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles |
|---|---|---|---|---|---|---|
| 1 | A | 64/70 (91%) | 59 (92%) | 5 (8%) | 0 | 100 100 |
| 2 | B | 54/57 (95%) | 48 (89%) | 4 (7%) | 2 (4%) | 2 20 |
| 3 | C | 48/55 (87%) | 41 (85%) | 7 (15%) | 0 | 100 100 |
| 4 | D | 44/46 (96%) | 42 (96%) | 2 (4%) | 0 | 100 100 |
| 5 | E | 62/65 (95%) | 57 (92%) | 5 (8%) | 0 | 100 100 |
| 6 | F | 36/38 (95%) | 32 (89%) | 3 (8%) | 1 (3%) | 4 24 |
| 7 | G | 216/241 (90%) | 187 (87%) | 27 (12%) | 2 (1%) | 14 51 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|---|---|---|---|---|---|---|---|
| 8 | H | 204/233 (88%) | 194 (95%) | 10 (5%) | 0 | 100 | 100 |
| 9 | I | 203/206 (98%) | 173 (85%) | 29 (14%) | 1 (0%) | 25 | 64 |
| 10 | J | 155/167 (93%) | 138 (89%) | 17 (11%) | 0 | 100 | 100 |
| 11 | K | 98/135 (73%) | 85 (87%) | 13 (13%) | 0 | 100 | 100 |
| 12 | L | 149/179 (83%) | 129 (87%) | 20 (13%) | 0 | 100 | 100 |
| 13 | M | 127/130 (98%) | 118 (93%) | 9 (7%) | 0 | 100 | 100 |
| 14 | N | 125/130 (96%) | 104 (83%) | 21 (17%) | 0 | 100 | 100 |
| 15 | O | 96/103 (93%) | 87 (91%) | 8 (8%) | 1 (1%) | 13 | 49 |
| 16 | P | 114/129 (88%) | 100 (88%) | 13 (11%) | 1 (1%) | 14 | 51 |
| 17 | Q | 121/124 (98%) | 94 (78%) | 27 (22%) | 0 | 100 | 100 |
| 18 | R | 112/118 (95%) | 99 (88%) | 12 (11%) | 1 (1%) | 14 | 51 |
| 19 | S | 98/101 (97%) | 83 (85%) | 15 (15%) | 0 | 100 | 100 |
| 20 | T | 86/89 (97%) | 75 (87%) | 11 (13%) | 0 | 100 | 100 |
| 21 | U | 80/82 (98%) | 69 (86%) | 11 (14%) | 0 | 100 | 100 |
| 22 | V | 78/84 (93%) | 69 (88%) | 8 (10%) | 1 (1%) | 10 | 42 |
| 23 | W | 63/75 (84%) | 56 (89%) | 5 (8%) | 2 (3%) | 3 | 21 |
| 24 | X | 77/92 (84%) | 71 (92%) | 6 (8%) | 0 | 100 | 100 |
| 25 | Y | 83/87 (95%) | 78 (94%) | 5 (6%) | 0 | 100 | 100 |
| 26 | Z | 63/71 (89%) | 44 (70%) | 18 (29%) | 1 (2%) | 8 | 37 |
| 27 | b | 269/273 (98%) | 244 (91%) | 25 (9%) | 0 | 100 | 100 |
| 28 | c | 207/209 (99%) | 189 (91%) | 18 (9%) | 0 | 100 | 100 |
| 29 | d | 199/201 (99%) | 186 (94%) | 13 (6%) | 0 | 100 | 100 |
| 30 | e | 175/179 (98%) | 157 (90%) | 18 (10%) | 0 | 100 | 100 |
| 31 | f | 174/177 (98%) | 159 (91%) | 15 (9%) | 0 | 100 | 100 |
| 32 | g | 50/149 (34%) | 44 (88%) | 5 (10%) | 1 (2%) | 6 | 31 |
| 33 | i | 139/142 (98%) | 116 (84%) | 23 (16%) | 0 | 100 | 100 |
| 34 | j | 140/142 (99%) | 128 (91%) | 12 (9%) | 0 | 100 | 100 |
| 35 | k | 120/123 (98%) | 106 (88%) | 14 (12%) | 0 | 100 | 100 |
| 36 | l | 141/144 (98%) | 129 (92%) | 12 (8%) | 0 | 100 | 100 |
| 37 | m | 134/136 (98%) | 128 (96%) | 6 (4%) | 0 | 100 | 100 |
| 38 | n | 118/127 (93%) | 103 (87%) | 15 (13%) | 0 | 100 | 100 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles |
|---|---|---|---|---|---|---|
| 39 | o | 114/117 (97%) | 109 (96%) | 5 (4%) | 0 | 100 100 |
| 40 | p | 112/115 (97%) | 103 (92%) | 9 (8%) | 0 | 100 100 |
| 41 | q | 115/118 (98%) | 110 (96%) | 3 (3%) | 2 (2%) | 7 35 |
| 42 | r | 101/103 (98%) | 90 (89%) | 10 (10%) | 1 (1%) | 13 49 |
| 43 | s | 108/110 (98%) | 101 (94%) | 7 (6%) | 0 | 100 100 |
| 44 | t | 91/100 (91%) | 82 (90%) | 9 (10%) | 0 | 100 100 |
| 45 | u | 100/104 (96%) | 84 (84%) | 15 (15%) | 1 (1%) | 13 49 |
| 46 | v | 92/94 (98%) | 87 (95%) | 5 (5%) | 0 | 100 100 |
| 47 | w | 73/85 (86%) | 67 (92%) | 6 (8%) | 0 | 100 100 |
| 48 | x | 75/78 (96%) | 72 (96%) | 2 (3%) | 1 (1%) | 10 42 |
| 49 | y | 61/63 (97%) | 55 (90%) | 6 (10%) | 0 | 100 100 |
| 50 | z | 56/59 (95%) | 52 (93%) | 4 (7%) | 0 | 100 100 |
| 57 | A1 | 295/329 (90%) | 273 (92%) | 21 (7%) | 1 (0%) | 37 72 |
| 57 | A2 | 282/329 (86%) | 271 (96%) | 11 (4%) | 0 | 100 100 |
| 58 | B1 | 1329/1407 (94%) | 1202 (90%) | 123 (9%) | 4 (0%) | 37 72 |
| 59 | B2 | 1338/1342 (100%) | 1201 (90%) | 131 (10%) | 6 (0%) | 30 68 |
| 60 | W0 | 80/91 (88%) | 77 (96%) | 3 (4%) | 0 | 100 100 |
| 61 | NA | 490/495 (99%) | 472 (96%) | 15 (3%) | 3 (1%) | 22 60 |
| 62 | NG | 150/181 (83%) | 132 (88%) | 12 (8%) | 6 (4%) | 2 18 |
| 65 | h | 2/6 (33%) | 1 (50%) | 1 (50%) | 0 | 100 100 |
| All | All | 9586/10235 (94%) | 8662 (90%) | 885 (9%) | 39 (0%) | 32 68 |

All (39) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 42 | r | 54 | VAL |
| 48 | x | 25 | LYS |
| 58 | B1 | 121 | PRO |
| 59 | B2 | 897 | PRO |
| 61 | NA | 187 | ARG |
| 61 | NA | 188 | PRO |
| 62 | NG | 102 | PRO |
| 6 | F | 34 | LYS |
| 57 | A1 | 250 | ASP |
| 59 | B2 | 43 | PRO |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 62 | NG | 126 | THR |
| 62 | NG | 163 | SER |
| 59 | B2 | 888 | THR |
| 2 | B | 23 | ALA |
| 7 | G | 19 | THR |
| 18 | R | 5 | GLY |
| 22 | V | 50 | ASN |
| 32 | g | 12 | LEU |
| 41 | q | 23 | TYR |
| 58 | B1 | 43 | THR |
| 58 | B1 | 193 | ASP |
| 7 | G | 17 | HIS |
| 15 | O | 58 | ASN |
| 23 | W | 13 | THR |
| 45 | u | 97 | SER |
| 58 | B1 | 1325 | PHE |
| 59 | B2 | 896 | THR |
| 59 | B2 | 909 | LYS |
| 9 | I | 45 | PRO |
| 23 | W | 17 | VAL |
| 61 | NA | 137 | ILE |
| 62 | NG | 169 | THR |
| 62 | NG | 170 | PRO |
| 26 | Z | 10 | PRO |
| 41 | q | 6 | GLY |
| 62 | NG | 122 | PRO |
| 59 | B2 | 1317 | PRO |
| 2 | B | 24 | VAL |
| 16 | P | 88 | 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 |
|---|---|---|---|---|---|
| 1 | A | 59/62 (95%) | 58 (98%) | 1 (2%) | 56 72 |
| 2 | B | 47/48 (98%) | 47 (100%) | 0 | 100 100 |

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| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles |
|---|---|---|---|---|---|
| 3 | C | 45/49 (92%) | 44 (98%) | 1 (2%) | 47 65 |
| 4 | D | 38/38 (100%) | 37 (97%) | 1 (3%) | 41 60 |
| 5 | E | 51/52 (98%) | 49 (96%) | 2 (4%) | 27 48 |
| 6 | F | 34/34 (100%) | 30 (88%) | 4 (12%) | 4 16 |
| 7 | G | 180/199 (90%) | 174 (97%) | 6 (3%) | 33 53 |
| 8 | H | 170/190 (90%) | 167 (98%) | 3 (2%) | 54 71 |
| 9 | I | 172/173 (99%) | 168 (98%) | 4 (2%) | 45 64 |
| 10 | J | 119/126 (94%) | 117 (98%) | 2 (2%) | 56 72 |
| 11 | K | 87/116 (75%) | 82 (94%) | 5 (6%) | 17 39 |
| 12 | L | 124/147 (84%) | 124 (100%) | 0 | 100 100 |
| 13 | M | 104/105 (99%) | 103 (99%) | 1 (1%) | 73 82 |
| 14 | N | 105/107 (98%) | 98 (93%) | 7 (7%) | 13 34 |
| 15 | O | 86/90 (96%) | 78 (91%) | 8 (9%) | 7 23 |
| 16 | P | 89/99 (90%) | 86 (97%) | 3 (3%) | 32 52 |
| 17 | Q | 103/104 (99%) | 98 (95%) | 5 (5%) | 21 42 |
| 18 | R | 92/96 (96%) | 91 (99%) | 1 (1%) | 70 80 |
| 19 | S | 83/84 (99%) | 83 (100%) | 0 | 100 100 |
| 20 | T | 76/77 (99%) | 73 (96%) | 3 (4%) | 27 48 |
| 21 | U | 65/65 (100%) | 64 (98%) | 1 (2%) | 60 75 |
| 22 | V | 74/78 (95%) | 72 (97%) | 2 (3%) | 40 59 |
| 23 | W | 56/65 (86%) | 52 (93%) | 4 (7%) | 12 32 |
| 24 | X | 70/79 (89%) | 70 (100%) | 0 | 100 100 |
| 25 | Y | 65/66 (98%) | 64 (98%) | 1 (2%) | 60 75 |
| 26 | Z | 55/61 (90%) | 47 (86%) | 8 (14%) | 2 12 |
| 27 | b | 216/218 (99%) | 212 (98%) | 4 (2%) | 52 70 |
| 28 | c | 164/164 (100%) | 164 (100%) | 0 | 100 100 |
| 29 | d | 165/165 (100%) | 162 (98%) | 3 (2%) | 54 71 |
| 30 | e | 148/150 (99%) | 145 (98%) | 3 (2%) | 50 68 |
| 31 | f | 137/138 (99%) | 135 (98%) | 2 (2%) | 60 75 |
| 32 | g | 41/114 (36%) | 38 (93%) | 3 (7%) | 11 31 |
| 33 | i | 109/110 (99%) | 108 (99%) | 1 (1%) | 75 83 |

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| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles |
|---|---|---|---|---|---|
| 34 | j | 116/116 (100%) | 116 (100%) | 0 | 100 100 |
| 35 | k | 103/104 (99%) | 103 (100%) | 0 | 100 100 |
| 36 | l | 102/103 (99%) | 101 (99%) | 1 (1%) | 73 82 |
| 37 | m | 109/109 (100%) | 103 (94%) | 6 (6%) | 18 40 |
| 38 | n | 100/103 (97%) | 99 (99%) | 1 (1%) | 73 82 |
| 39 | o | 86/87 (99%) | 86 (100%) | 0 | 100 100 |
| 40 | p | 99/100 (99%) | 99 (100%) | 0 | 100 100 |
| 41 | q | 89/90 (99%) | 86 (97%) | 3 (3%) | 32 52 |
| 42 | r | 84/84 (100%) | 82 (98%) | 2 (2%) | 44 63 |
| 43 | s | 93/93 (100%) | 92 (99%) | 1 (1%) | 70 80 |
| 44 | t | 80/84 (95%) | 80 (100%) | 0 | 100 100 |
| 45 | u | 83/85 (98%) | 79 (95%) | 4 (5%) | 21 43 |
| 46 | v | 78/78 (100%) | 77 (99%) | 1 (1%) | 65 77 |
| 47 | w | 57/63 (90%) | 57 (100%) | 0 | 100 100 |
| 48 | x | 67/68 (98%) | 67 (100%) | 0 | 100 100 |
| 49 | y | 55/55 (100%) | 55 (100%) | 0 | 100 100 |
| 50 | z | 48/49 (98%) | 46 (96%) | 2 (4%) | 25 47 |
| 57 | A1 | 185/286 (65%) | 174 (94%) | 11 (6%) | 16 38 |
| 57 | A2 | 186/286 (65%) | 185 (100%) | 1 (0%) | 86 89 |
| 58 | B1 | 1110/1168 (95%) | 1017 (92%) | 93 (8%) | 9 28 |
| 59 | B2 | 1150/1157 (99%) | 1117 (97%) | 33 (3%) | 37 57 |
| 60 | W0 | 70/75 (93%) | 69 (99%) | 1 (1%) | 62 76 |
| 65 | h | 2/2 (100%) | 2 (100%) | 0 | 100 100 |
| All | All | 7381/7914 (93%) | 7132 (97%) | 249 (3%) | 34 52 |

All (249) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | A | 21 | VAL |
| 3 | C | 22 | THR |
| 4 | D | 44 | VAL |
| 5 | E | 28 | LEU |
| 5 | E | 31 | ILE |
| 6 | F | 34 | LYS |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 6 | F | 35 | GLN |
| 6 | F | 36 | ARG |
| 6 | F | 37 | GLN |
| 7 | G | 8 | MET |
| 7 | G | 10 | LYS |
| 7 | G | 13 | VAL |
| 7 | G | 14 | HIS |
| 7 | G | 17 | HIS |
| 7 | G | 29 | PHE |
| 8 | H | 74 | ILE |
| 8 | H | 156 | LEU |
| 8 | H | 164 | THR |
| 9 | I | 44 | LYS |
| 9 | I | 46 | ARG |
| 9 | I | 96 | ARG |
| 9 | I | 97 | LEU |
| 10 | J | 55 | VAL |
| 10 | J | 130 | THR |
| 11 | K | 89 | VAL |
| 11 | K | 90 | MET |
| 11 | K | 91 | ARG |
| 11 | K | 92 | THR |
| 11 | K | 94 | HIS |
| 13 | M | 102 | VAL |
| 14 | N | 52 | GLU |
| 14 | N | 53 | LEU |
| 14 | N | 54 | VAL |
| 14 | N | 57 | VAL |
| 14 | N | 59 | LYS |
| 14 | N | 60 | LEU |
| 14 | N | 65 | THR |
| 15 | O | 16 | ARG |
| 15 | O | 82 | LYS |
| 15 | O | 83 | THR |
| 15 | O | 87 | LEU |
| 15 | O | 88 | MET |
| 15 | O | 89 | ARG |
| 15 | O | 91 | ASP |
| 15 | O | 92 | LEU |
| 16 | P | 120 | CYS |
| 16 | P | 121 | ARG |
| 16 | P | 124 | LYS |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 17 | Q | 15 | VAL |
| 17 | Q | 17 | LYS |
| 17 | Q | 20 | VAL |
| 17 | Q | 29 | LYS |
| 17 | Q | 34 | THR |
| 18 | R | 64 | VAL |
| 20 | T | 82 | GLU |
| 20 | T | 86 | LEU |
| 20 | T | 88 | ARG |
| 21 | U | 36 | VAL |
| 22 | V | 47 | ASP |
| 22 | V | 52 | CYS |
| 23 | W | 15 | GLU |
| 23 | W | 17 | VAL |
| 23 | W | 18 | GLN |
| 23 | W | 70 | THR |
| 25 | Y | 85 | LEU |
| 26 | Z | 3 | ILE |
| 26 | Z | 4 | LYS |
| 26 | Z | 5 | VAL |
| 26 | Z | 12 | ASP |
| 26 | Z | 15 | LEU |
| 26 | Z | 19 | LYS |
| 26 | Z | 20 | ARG |
| 26 | Z | 27 | VAL |
| 27 | b | 129 | LEU |
| 27 | b | 131 | MET |
| 27 | b | 132 | ARG |
| 27 | b | 203 | VAL |
| 29 | d | 14 | VAL |
| 29 | d | 118 | LEU |
| 29 | d | 198 | GLU |
| 30 | e | 39 | VAL |
| 30 | e | 174 | PHE |
| 30 | e | 177 | ARG |
| 31 | f | 9 | VAL |
| 31 | f | 131 | VAL |
| 32 | g | 4 | ILE |
| 32 | g | 5 | LEU |
| 32 | g | 9 | VAL |
| 33 | i | 22 | PRO |
| 36 | l | 85 | VAL |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 37 | m | 44 | ARG |
| 37 | m | 47 | GLU |
| 37 | m | 50 | ARG |
| 37 | m | 55 | ARG |
| 37 | m | 58 | LYS |
| 37 | m | 59 | ARG |
| 38 | n | 13 | ASN |
| 41 | q | 4 | LYS |
| 41 | q | 5 | ARG |
| 41 | q | 28 | SER |
| 42 | r | 53 | PHE |
| 42 | r | 55 | ASP |
| 43 | s | 3 | THR |
| 45 | u | 35 | VAL |
| 45 | u | 93 | ARG |
| 45 | u | 100 | GLU |
| 45 | u | 101 | THR |
| 46 | v | 72 | VAL |
| 50 | z | 16 | LEU |
| 50 | z | 40 | THR |
| 57 | A1 | 9 | LEU |
| 57 | A1 | 12 | ARG |
| 57 | A1 | 13 | LEU |
| 57 | A1 | 18 | GLN |
| 57 | A1 | 19 | VAL |
| 57 | A1 | 22 | THR |
| 57 | A1 | 27 | THR |
| 57 | A1 | 28 | LEU |
| 57 | A1 | 33 | ARG |
| 57 | A1 | 46 | ILE |
| 57 | A1 | 48 | LEU |
| 57 | A2 | 29 | GLU |
| 58 | B1 | 24 | LEU |
| 58 | B1 | 40 | LYS |
| 58 | B1 | 42 | GLU |
| 58 | B1 | 44 | ILE |
| 58 | B1 | 47 | ARG |
| 58 | B1 | 49 | PHE |
| 58 | B1 | 50 | LYS |
| 58 | B1 | 60 | ARG |
| 58 | B1 | 66 | LYS |
| 58 | B1 | 69 | GLU |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 58 | B1 | 71 | LEU |
| 58 | B1 | 74 | LYS |
| 58 | B1 | 76 | LYS |
| 58 | B1 | 78 | LEU |
| 58 | B1 | 80 | HIS |
| 58 | B1 | 81 | ARG |
| 58 | B1 | 87 | LYS |
| 58 | B1 | 91 | GLU |
| 58 | B1 | 93 | THR |
| 58 | B1 | 94 | GLN |
| 58 | B1 | 95 | THR |
| 58 | B1 | 96 | LYS |
| 58 | B1 | 99 | ARG |
| 58 | B1 | 100 | GLU |
| 58 | B1 | 114 | ILE |
| 58 | B1 | 117 | LEU |
| 58 | B1 | 120 | LEU |
| 58 | B1 | 126 | LEU |
| 58 | B1 | 132 | LEU |
| 58 | B1 | 135 | ILE |
| 58 | B1 | 142 | GLU |
| 58 | B1 | 144 | TYR |
| 58 | B1 | 145 | VAL |
| 58 | B1 | 146 | VAL |
| 58 | B1 | 147 | ILE |
| 58 | B1 | 152 | THR |
| 58 | B1 | 154 | LEU |
| 58 | B1 | 157 | GLN |
| 58 | B1 | 159 | ILE |
| 58 | B1 | 172 | PHE |
| 58 | B1 | 174 | ASP |
| 58 | B1 | 175 | GLU |
| 58 | B1 | 180 | MET |
| 58 | B1 | 190 | LYS |
| 58 | B1 | 193 | ASP |
| 58 | B1 | 196 | GLN |
| 58 | B1 | 210 | SER |
| 58 | B1 | 212 | THR |
| 58 | B1 | 216 | LYS |
| 58 | B1 | 222 | LYS |
| 58 | B1 | 223 | LEU |
| 58 | B1 | 227 | PHE |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 58 | B1 | 233 | LYS |
| 58 | B1 | 237 | MET |
| 58 | B1 | 238 | ILE |
| 58 | B1 | 239 | LEU |
| 58 | B1 | 240 | THR |
| 58 | B1 | 244 | VAL |
| 58 | B1 | 255 | LEU |
| 58 | B1 | 256 | ASP |
| 58 | B1 | 259 | ARG |
| 58 | B1 | 281 | ARG |
| 58 | B1 | 282 | LEU |
| 58 | B1 | 285 | LEU |
| 58 | B1 | 290 | ILE |
| 58 | B1 | 317 | THR |
| 58 | B1 | 322 | ARG |
| 58 | B1 | 324 | LEU |
| 58 | B1 | 363 | LEU |
| 58 | B1 | 385 | LEU |
| 58 | B1 | 386 | GLU |
| 58 | B1 | 387 | LEU |
| 58 | B1 | 390 | LEU |
| 58 | B1 | 393 | THR |
| 58 | B1 | 394 | ILE |
| 58 | B1 | 395 | LYS |
| 58 | B1 | 416 | ILE |
| 58 | B1 | 417 | ARG |
| 58 | B1 | 425 | ARG |
| 58 | B1 | 506 | VAL |
| 58 | B1 | 514 | THR |
| 58 | B1 | 800 | LEU |
| 58 | B1 | 807 | LEU |
| 58 | B1 | 839 | VAL |
| 58 | B1 | 901 | ARG |
| 58 | B1 | 903 | LEU |
| 58 | B1 | 1172 | LYS |
| 58 | B1 | 1181 | ASP |
| 58 | B1 | 1233 | ILE |
| 58 | B1 | 1327 | GLU |
| 58 | B1 | 1328 | THR |
| 58 | B1 | 1331 | VAL |
| 58 | B1 | 1332 | LEU |
| 59 | B2 | 44 | GLU |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 59 | B2 | 49 | LEU |
| 59 | B2 | 56 | VAL |
| 59 | B2 | 146 | VAL |
| 59 | B2 | 483 | ASP |
| 59 | B2 | 487 | LEU |
| 59 | B2 | 516 | ASP |
| 59 | B2 | 538 | LEU |
| 59 | B2 | 540 | ARG |
| 59 | B2 | 545 | PHE |
| 59 | B2 | 546 | GLU |
| 59 | B2 | 615 | VAL |
| 59 | B2 | 857 | VAL |
| 59 | B2 | 859 | GLU |
| 59 | B2 | 887 | VAL |
| 59 | B2 | 890 | LYS |
| 59 | B2 | 892 | GLU |
| 59 | B2 | 894 | GLN |
| 59 | B2 | 895 | LEU |
| 59 | B2 | 900 | LYS |
| 59 | B2 | 901 | LEU |
| 59 | B2 | 902 | LEU |
| 59 | B2 | 903 | ARG |
| 59 | B2 | 905 | ILE |
| 59 | B2 | 906 | PHE |
| 59 | B2 | 909 | LYS |
| 59 | B2 | 913 | VAL |
| 59 | B2 | 916 | SER |
| 59 | B2 | 918 | LEU |
| 59 | B2 | 920 | VAL |
| 59 | B2 | 922 | ASN |
| 59 | B2 | 1076 | ILE |
| 59 | B2 | 1151 | LEU |
| 60 | W0 | 63 | ILE |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (127) such sidechains are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | A | 20 | ASN |
| 1 | A | 61 | ASN |
| 2 | B | 4 | GLN |
| 3 | C | 25 | ASN |
| 3 | C | 44 | GLN |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 4 | D | 16 | HIS |
| 6 | F | 35 | GLN |
| 7 | G | 14 | HIS |
| 7 | G | 108 | GLN |
| 7 | G | 119 | GLN |
| 7 | G | 121 | GLN |
| 7 | G | 167 | HIS |
| 8 | H | 7 | ASN |
| 8 | H | 68 | HIS |
| 8 | H | 99 | GLN |
| 8 | H | 122 | GLN |
| 8 | H | 138 | GLN |
| 8 | H | 139 | ASN |
| 9 | I | 197 | HIS |
| 10 | J | 76 | ASN |
| 10 | J | 121 | ASN |
| 12 | L | 85 | GLN |
| 12 | L | 121 | ASN |
| 12 | L | 147 | ASN |
| 13 | M | 37 | ASN |
| 13 | M | 66 | GLN |
| 14 | N | 4 | GLN |
| 14 | N | 30 | ASN |
| 15 | O | 20 | GLN |
| 15 | O | 35 | GLN |
| 15 | O | 58 | ASN |
| 16 | P | 80 | ASN |
| 17 | Q | 4 | ASN |
| 17 | Q | 71 | HIS |
| 18 | R | 7 | ASN |
| 18 | R | 99 | GLN |
| 19 | S | 59 | GLN |
| 20 | T | 19 | ASN |
| 20 | T | 39 | GLN |
| 22 | V | 30 | HIS |
| 24 | X | 56 | HIS |
| 24 | X | 68 | HIS |
| 25 | Y | 2 | ASN |
| 25 | Y | 77 | ASN |
| 26 | Z | 8 | ASN |
| 27 | b | 24 | HIS |
| 27 | b | 69 | ASN |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 27 | b | 89 | ASN |
| 27 | b | 142 | ASN |
| 27 | b | 259 | ASN |
| 28 | c | 49 | GLN |
| 28 | c | 134 | HIS |
| 28 | c | 150 | GLN |
| 28 | c | 164 | GLN |
| 28 | c | 173 | GLN |
| 29 | d | 41 | GLN |
| 29 | d | 62 | GLN |
| 29 | d | 90 | GLN |
| 29 | d | 94 | GLN |
| 29 | d | 165 | HIS |
| 30 | e | 4 | HIS |
| 30 | e | 80 | GLN |
| 31 | f | 47 | ASN |
| 32 | g | 2 | GLN |
| 33 | i | 29 | GLN |
| 33 | i | 30 | GLN |
| 34 | j | 58 | ASN |
| 34 | j | 135 | GLN |
| 35 | k | 5 | GLN |
| 35 | k | 93 | GLN |
| 36 | l | 4 | ASN |
| 36 | l | 104 | GLN |
| 37 | m | 13 | HIS |
| 40 | p | 2 | ASN |
| 40 | p | 114 | ASN |
| 41 | q | 55 | GLN |
| 41 | q | 58 | GLN |
| 42 | r | 18 | GLN |
| 42 | r | 82 | HIS |
| 43 | s | 7 | HIS |
| 44 | t | 28 | ASN |
| 44 | t | 59 | ASN |
| 44 | t | 92 | ASN |
| 45 | u | 52 | ASN |
| 46 | v | 75 | GLN |
| 46 | v | 87 | GLN |
| 47 | w | 53 | HIS |
| 48 | x | 16 | ASN |
| 48 | x | 33 | HIS |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 49 | y | 31 | GLN |
| 49 | y | 38 | GLN |
| 49 | y | 41 | HIS |
| 49 | y | 45 | GLN |
| 50 | z | 8 | GLN |
| 57 | A1 | 37 | HIS |
| 57 | A1 | 66 | HIS |
| 57 | A1 | 84 | ASN |
| 57 | A1 | 117 | HIS |
| 57 | A1 | 128 | HIS |
| 57 | A1 | 227 | GLN |
| 57 | A2 | 227 | GLN |
| 58 | B1 | 45 | ASN |
| 58 | B1 | 196 | GLN |
| 58 | B1 | 364 | HIS |
| 58 | B1 | 424 | ASN |
| 58 | B1 | 450 | HIS |
| 58 | B1 | 469 | HIS |
| 58 | B1 | 805 | GLN |
| 58 | B1 | 865 | HIS |
| 58 | B1 | 1195 | GLN |
| 58 | B1 | 1238 | GLN |
| 58 | B1 | 1259 | GLN |
| 59 | B2 | 69 | GLN |
| 59 | B2 | 314 | ASN |
| 59 | B2 | 330 | HIS |
| 59 | B2 | 343 | HIS |
| 59 | B2 | 518 | ASN |
| 59 | B2 | 554 | HIS |
| 59 | B2 | 688 | GLN |
| 59 | B2 | 808 | ASN |
| 59 | B2 | 1080 | ASN |
| 59 | B2 | 1237 | HIS |
| 59 | B2 | 1268 | GLN |
| 59 | B2 | 1313 | HIS |
| 60 | W0 | 7 | GLN |
| 60 | W0 | 31 | GLN |
| 60 | W0 | 62 | GLN |

### 5.3.3 RNA (i)

| Mol | Chain | Analysed | Backbone Outliers | Pucker Outliers |
|---|---|---|---|---|
| 51 | 1 | 2902/2904 (99%) | 399 (13%) | 16 (0%) |
| 52 | 2 | 119/120 (99%) | 17 (14%) | 1 (0%) |
| 53 | 3 | 1538/1542 (99%) | 253 (16%) | 4 (0%) |
| 54 | 4 | 33/56 (58%) | 16 (48%) | 2 (6%) |
| 63 | 5 | 75/76 (98%) | 43 (57%) | 7 (9%) |
| 64 | 6 | 76/77 (98%) | 10 (13%) | 0 |
| 64 | 7 | 76/77 (98%) | 27 (35%) | 2 (2%) |
| All | All | 4819/4852 (99%) | 765 (15%) | 32 (0%) |

All (765) RNA backbone outliers are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 51 | 1 | 10 | A |
| 51 | 1 | 12 | U |
| 51 | 1 | 34 | U |
| 51 | 1 | 35 | G |
| 51 | 1 | 46 | G |
| 51 | 1 | 51 | G |
| 51 | 1 | 55 | G |
| 51 | 1 | 63 | A |
| 51 | 1 | 71 | A |
| 51 | 1 | 74 | A |
| 51 | 1 | 75 | G |
| 51 | 1 | 102 | U |
| 51 | 1 | 103 | A |
| 51 | 1 | 119 | A |
| 51 | 1 | 120 | U |
| 51 | 1 | 139 | U |
| 51 | 1 | 140 | C |
| 51 | 1 | 141 | G |
| 51 | 1 | 149 | A |
| 51 | 1 | 162 | U |
| 51 | 1 | 163 | C |
| 51 | 1 | 178 | G |
| 51 | 1 | 196 | A |
| 51 | 1 | 199 | A |
| 51 | 1 | 216 | A |
| 51 | 1 | 221 | A |
| 51 | 1 | 222 | A |
| 51 | 1 | 229 | C |
| 51 | 1 | 248 | G |
| 51 | 1 | 255 | A |
| 51 | 1 | 265 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 51 | 1 | 266 | G |
| 51 | 1 | 276 | U |
| 51 | 1 | 281 | C |
| 51 | 1 | 285 | G |
| 51 | 1 | 294 | A |
| 51 | 1 | 323 | C |
| 51 | 1 | 329 | G |
| 51 | 1 | 330 | A |
| 51 | 1 | 353 | C |
| 51 | 1 | 361 | G |
| 51 | 1 | 362 | A |
| 51 | 1 | 371 | A |
| 51 | 1 | 372 | G |
| 51 | 1 | 386 | G |
| 51 | 1 | 387 | U |
| 51 | 1 | 396 | G |
| 51 | 1 | 404 | A |
| 51 | 1 | 406 | G |
| 51 | 1 | 411 | G |
| 51 | 1 | 424 | G |
| 51 | 1 | 451 | U |
| 51 | 1 | 457 | A |
| 51 | 1 | 481 | G |
| 51 | 1 | 482 | A |
| 51 | 1 | 491 | G |
| 51 | 1 | 504 | A |
| 51 | 1 | 505 | A |
| 51 | 1 | 526 | A |
| 51 | 1 | 529 | A |
| 51 | 1 | 531 | C |
| 51 | 1 | 532 | A |
| 51 | 1 | 533 | G |
| 51 | 1 | 544 | C |
| 51 | 1 | 545 | U |
| 51 | 1 | 546 | U |
| 51 | 1 | 547 | A |
| 51 | 1 | 562 | U |
| 51 | 1 | 563 | A |
| 51 | 1 | 573 | U |
| 51 | 1 | 574 | A |
| 51 | 1 | 575 | A |
| 51 | 1 | 603 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 51 | 1 | 614 | A |
| 51 | 1 | 616 | A |
| 51 | 1 | 627 | A |
| 51 | 1 | 628 | G |
| 51 | 1 | 637 | A |
| 51 | 1 | 646 | U |
| 51 | 1 | 647 | G |
| 51 | 1 | 654 | A |
| 51 | 1 | 669 | G |
| 51 | 1 | 671 | C |
| 51 | 1 | 677 | A |
| 51 | 1 | 686 | U |
| 51 | 1 | 687 | C |
| 51 | 1 | 695 | G |
| 51 | 1 | 730 | A |
| 51 | 1 | 745 | G |
| 51 | 1 | 747 | C |
| 51 | 1 | 758 | C |
| 51 | 1 | 764 | A |
| 51 | 1 | 765 | C |
| 51 | 1 | 775 | G |
| 51 | 1 | 782 | A |
| 51 | 1 | 784 | G |
| 51 | 1 | 785 | G |
| 51 | 1 | 789 | A |
| 51 | 1 | 791 | C |
| 51 | 1 | 792 | A |
| 51 | 1 | 801 | G |
| 51 | 1 | 805 | G |
| 51 | 1 | 812 | C |
| 51 | 1 | 819 | A |
| 51 | 1 | 827 | U |
| 51 | 1 | 828 | U |
| 51 | 1 | 829 | A |
| 51 | 1 | 830 | G |
| 51 | 1 | 845 | A |
| 51 | 1 | 846 | U |
| 51 | 1 | 858 | G |
| 51 | 1 | 860 | U |
| 51 | 1 | 878 | A |
| 51 | 1 | 887 | U |
| 51 | 1 | 896 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 51 | 1 | 910 | A |
| 51 | 1 | 911 | A |
| 51 | 1 | 932 | U |
| 51 | 1 | 941 | A |
| 51 | 1 | 946 | C |
| 51 | 1 | 961 | C |
| 51 | 1 | 968 | C |
| 51 | 1 | 974 | G |
| 51 | 1 | 981 | A |
| 51 | 1 | 983 | A |
| 51 | 1 | 985 | C |
| 51 | 1 | 995 | C |
| 51 | 1 | 996 | A |
| 51 | 1 | 1005 | C |
| 51 | 1 | 1012 | U |
| 51 | 1 | 1013 | C |
| 51 | 1 | 1021 | A |
| 51 | 1 | 1022 | G |
| 51 | 1 | 1031 | G |
| 51 | 1 | 1033 | U |
| 51 | 1 | 1045 | C |
| 51 | 1 | 1046 | A |
| 51 | 1 | 1047 | G |
| 51 | 1 | 1057 | A |
| 51 | 1 | 1058 | U |
| 51 | 1 | 1060 | U |
| 51 | 1 | 1061 | U |
| 51 | 1 | 1063 | G |
| 51 | 1 | 1065 | U |
| 51 | 1 | 1066 | U |
| 51 | 1 | 1068 | G |
| 51 | 1 | 1069 | A |
| 51 | 1 | 1070 | A |
| 51 | 1 | 1071 | G |
| 51 | 1 | 1073 | A |
| 51 | 1 | 1075 | C |
| 51 | 1 | 1078 | U |
| 51 | 1 | 1083 | U |
| 51 | 1 | 1084 | A |
| 51 | 1 | 1086 | A |
| 51 | 1 | 1088 | A |
| 51 | 1 | 1104 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 51 | 1 | 1111 | A |
| 51 | 1 | 1131 | G |
| 51 | 1 | 1132 | U |
| 51 | 1 | 1133 | A |
| 51 | 1 | 1135 | C |
| 51 | 1 | 1139 | G |
| 51 | 1 | 1142 | A |
| 51 | 1 | 1143 | A |
| 51 | 1 | 1157 | G |
| 51 | 1 | 1175 | A |
| 51 | 1 | 1177 | G |
| 51 | 1 | 1178 | C |
| 51 | 1 | 1180 | U |
| 51 | 1 | 1186 | G |
| 51 | 1 | 1212 | G |
| 51 | 1 | 1225 | G |
| 51 | 1 | 1253 | A |
| 51 | 1 | 1256 | G |
| 51 | 1 | 1271 | G |
| 51 | 1 | 1272 | A |
| 51 | 1 | 1273 | U |
| 51 | 1 | 1289 | C |
| 51 | 1 | 1294 | U |
| 51 | 1 | 1300 | G |
| 51 | 1 | 1301 | A |
| 51 | 1 | 1345 | C |
| 51 | 1 | 1352 | U |
| 51 | 1 | 1365 | A |
| 51 | 1 | 1378 | A |
| 51 | 1 | 1379 | U |
| 51 | 1 | 1383 | A |
| 51 | 1 | 1406 | U |
| 51 | 1 | 1416 | G |
| 51 | 1 | 1419 | A |
| 51 | 1 | 1420 | A |
| 51 | 1 | 1427 | A |
| 51 | 1 | 1429 | G |
| 51 | 1 | 1452 | G |
| 51 | 1 | 1453 | A |
| 51 | 1 | 1461 | C |
| 51 | 1 | 1482 | G |
| 51 | 1 | 1490 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 51 | 1 | 1491 | G |
| 51 | 1 | 1497 | U |
| 51 | 1 | 1504 | A |
| 51 | 1 | 1515 | A |
| 51 | 1 | 1524 | G |
| 51 | 1 | 1533 | C |
| 51 | 1 | 1535 | A |
| 51 | 1 | 1536 | C |
| 51 | 1 | 1537 | G |
| 51 | 1 | 1555 | G |
| 51 | 1 | 1560 | G |
| 51 | 1 | 1565 | C |
| 51 | 1 | 1569 | A |
| 51 | 1 | 1578 | U |
| 51 | 1 | 1583 | A |
| 51 | 1 | 1608 | A |
| 51 | 1 | 1616 | A |
| 51 | 1 | 1634 | A |
| 51 | 1 | 1647 | U |
| 51 | 1 | 1648 | U |
| 51 | 1 | 1674 | G |
| 51 | 1 | 1698 | A |
| 51 | 1 | 1699 | G |
| 51 | 1 | 1703 | G |
| 51 | 1 | 1715 | G |
| 51 | 1 | 1716 | U |
| 51 | 1 | 1729 | U |
| 51 | 1 | 1730 | C |
| 51 | 1 | 1732 | C |
| 51 | 1 | 1738 | G |
| 51 | 1 | 1758 | U |
| 51 | 1 | 1764 | C |
| 51 | 1 | 1773 | A |
| 51 | 1 | 1783 | A |
| 51 | 1 | 1784 | A |
| 51 | 1 | 1786 | A |
| 51 | 1 | 1800 | C |
| 51 | 1 | 1801 | A |
| 51 | 1 | 1802 | A |
| 51 | 1 | 1808 | A |
| 51 | 1 | 1809 | A |
| 51 | 1 | 1816 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 51 | 1 | 1829 | A |
| 51 | 1 | 1833 | C |
| 51 | 1 | 1834 | U |
| 51 | 1 | 1870 | C |
| 51 | 1 | 1871 | A |
| 51 | 1 | 1901 | A |
| 51 | 1 | 1906 | G |
| 51 | 1 | 1913 | A |
| 51 | 1 | 1914 | C |
| 51 | 1 | 1929 | G |
| 51 | 1 | 1931 | U |
| 51 | 1 | 1936 | A |
| 51 | 1 | 1937 | A |
| 51 | 1 | 1938 | A |
| 51 | 1 | 1939 | U |
| 51 | 1 | 1943 | U |
| 51 | 1 | 1955 | U |
| 51 | 1 | 1967 | C |
| 51 | 1 | 1970 | A |
| 51 | 1 | 1971 | U |
| 51 | 1 | 1972 | G |
| 51 | 1 | 1990 | C |
| 51 | 1 | 1993 | U |
| 51 | 1 | 1997 | C |
| 51 | 1 | 2020 | A |
| 51 | 1 | 2022 | U |
| 51 | 1 | 2023 | C |
| 51 | 1 | 2024 | G |
| 51 | 1 | 2027 | G |
| 51 | 1 | 2030 | A |
| 51 | 1 | 2031 | A |
| 51 | 1 | 2033 | A |
| 51 | 1 | 2034 | U |
| 51 | 1 | 2043 | C |
| 51 | 1 | 2052 | A |
| 51 | 1 | 2055 | C |
| 51 | 1 | 2056 | G |
| 51 | 1 | 2060 | A |
| 51 | 1 | 2061 | G |
| 51 | 1 | 2069 | G |
| 51 | 1 | 2093 | G |
| 51 | 1 | 2096 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 51 | 1 | 2100 | G |
| 51 | 1 | 2110 | G |
| 51 | 1 | 2111 | U |
| 51 | 1 | 2118 | U |
| 51 | 1 | 2119 | A |
| 51 | 1 | 2123 | G |
| 51 | 1 | 2128 | G |
| 51 | 1 | 2131 | U |
| 51 | 1 | 2132 | U |
| 51 | 1 | 2133 | G |
| 51 | 1 | 2134 | A |
| 51 | 1 | 2137 | U |
| 51 | 1 | 2141 | G |
| 51 | 1 | 2145 | C |
| 51 | 1 | 2149 | U |
| 51 | 1 | 2162 | G |
| 51 | 1 | 2164 | C |
| 51 | 1 | 2166 | U |
| 51 | 1 | 2172 | U |
| 51 | 1 | 2173 | A |
| 51 | 1 | 2174 | C |
| 51 | 1 | 2189 | U |
| 51 | 1 | 2192 | U |
| 51 | 1 | 2198 | A |
| 51 | 1 | 2204 | G |
| 51 | 1 | 2211 | A |
| 51 | 1 | 2213 | U |
| 51 | 1 | 2225 | A |
| 51 | 1 | 2238 | G |
| 51 | 1 | 2239 | G |
| 51 | 1 | 2243 | U |
| 51 | 1 | 2268 | A |
| 51 | 1 | 2275 | C |
| 51 | 1 | 2279 | G |
| 51 | 1 | 2283 | C |
| 51 | 1 | 2287 | A |
| 51 | 1 | 2288 | A |
| 51 | 1 | 2305 | U |
| 51 | 1 | 2309 | A |
| 51 | 1 | 2325 | G |
| 51 | 1 | 2326 | C |
| 51 | 1 | 2327 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 51 | 1 | 2333 | A |
| 51 | 1 | 2334 | U |
| 51 | 1 | 2345 | G |
| 51 | 1 | 2350 | C |
| 51 | 1 | 2382 | G |
| 51 | 1 | 2383 | G |
| 51 | 1 | 2385 | C |
| 51 | 1 | 2392 | A |
| 51 | 1 | 2402 | U |
| 51 | 1 | 2406 | A |
| 51 | 1 | 2407 | A |
| 51 | 1 | 2423 | U |
| 51 | 1 | 2426 | A |
| 51 | 1 | 2427 | C |
| 51 | 1 | 2429 | G |
| 51 | 1 | 2430 | A |
| 51 | 1 | 2435 | A |
| 51 | 1 | 2436 | G |
| 51 | 1 | 2440 | C |
| 51 | 1 | 2441 | U |
| 51 | 1 | 2445 | G |
| 51 | 1 | 2447 | G |
| 51 | 1 | 2448 | A |
| 51 | 1 | 2476 | A |
| 51 | 1 | 2482 | A |
| 51 | 1 | 2491 | U |
| 51 | 1 | 2492 | U |
| 51 | 1 | 2498 | C |
| 51 | 1 | 2502 | G |
| 51 | 1 | 2505 | G |
| 51 | 1 | 2506 | U |
| 51 | 1 | 2507 | C |
| 51 | 1 | 2518 | A |
| 51 | 1 | 2547 | A |
| 51 | 1 | 2554 | U |
| 51 | 1 | 2566 | A |
| 51 | 1 | 2567 | G |
| 51 | 1 | 2572 | A |
| 51 | 1 | 2573 | C |
| 51 | 1 | 2582 | G |
| 51 | 1 | 2602 | A |
| 51 | 1 | 2609 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 51 | 1 | 2613 | U |
| 51 | 1 | 2629 | U |
| 51 | 1 | 2630 | G |
| 51 | 1 | 2642 | G |
| 51 | 1 | 2646 | C |
| 51 | 1 | 2689 | U |
| 51 | 1 | 2690 | U |
| 51 | 1 | 2714 | G |
| 51 | 1 | 2726 | A |
| 51 | 1 | 2732 | G |
| 51 | 1 | 2744 | G |
| 51 | 1 | 2748 | A |
| 51 | 1 | 2751 | G |
| 51 | 1 | 2758 | A |
| 51 | 1 | 2764 | A |
| 51 | 1 | 2765 | A |
| 51 | 1 | 2778 | A |
| 51 | 1 | 2779 | U |
| 51 | 1 | 2793 | C |
| 51 | 1 | 2798 | U |
| 51 | 1 | 2799 | A |
| 51 | 1 | 2800 | A |
| 51 | 1 | 2801 | G |
| 51 | 1 | 2820 | A |
| 51 | 1 | 2861 | U |
| 51 | 1 | 2867 | G |
| 51 | 1 | 2868 | A |
| 51 | 1 | 2872 | A |
| 51 | 1 | 2879 | A |
| 51 | 1 | 2880 | C |
| 51 | 1 | 2884 | U |
| 51 | 1 | 2901 | C |
| 52 | 2 | 9 | G |
| 52 | 2 | 13 | G |
| 52 | 2 | 25 | U |
| 52 | 2 | 30 | C |
| 52 | 2 | 35 | C |
| 52 | 2 | 36 | C |
| 52 | 2 | 44 | G |
| 52 | 2 | 45 | A |
| 52 | 2 | 53 | A |
| 52 | 2 | 67 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 52 | 2 | 87 | U |
| 52 | 2 | 88 | C |
| 52 | 2 | 89 | U |
| 52 | 2 | 90 | C |
| 52 | 2 | 108 | A |
| 52 | 2 | 109 | A |
| 52 | 2 | 120 | A |
| 53 | 3 | 4 | U |
| 53 | 3 | 5 | U |
| 53 | 3 | 6 | G |
| 53 | 3 | 7 | A |
| 53 | 3 | 9 | G |
| 53 | 3 | 22 | G |
| 53 | 3 | 32 | A |
| 53 | 3 | 39 | G |
| 53 | 3 | 47 | C |
| 53 | 3 | 48 | C |
| 53 | 3 | 51 | A |
| 53 | 3 | 71 | A |
| 53 | 3 | 75 | G |
| 53 | 3 | 77 | A |
| 53 | 3 | 78 | A |
| 53 | 3 | 80 | A |
| 53 | 3 | 83 | C |
| 53 | 3 | 84 | U |
| 53 | 3 | 87 | C |
| 53 | 3 | 88 | U |
| 53 | 3 | 94 | G |
| 53 | 3 | 95 | C |
| 53 | 3 | 100 | G |
| 53 | 3 | 108 | G |
| 53 | 3 | 116 | A |
| 53 | 3 | 121 | U |
| 53 | 3 | 127 | G |
| 53 | 3 | 130 | A |
| 53 | 3 | 144 | G |
| 53 | 3 | 163 | C |
| 53 | 3 | 183 | C |
| 53 | 3 | 197 | A |
| 53 | 3 | 206 | C |
| 53 | 3 | 208 | U |
| 53 | 3 | 210 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 53 | 3 | 211 | G |
| 53 | 3 | 212 | G |
| 53 | 3 | 222 | C |
| 53 | 3 | 226 | G |
| 53 | 3 | 240 | G |
| 53 | 3 | 245 | U |
| 53 | 3 | 247 | G |
| 53 | 3 | 251 | G |
| 53 | 3 | 263 | A |
| 53 | 3 | 264 | C |
| 53 | 3 | 266 | G |
| 53 | 3 | 267 | C |
| 53 | 3 | 279 | A |
| 53 | 3 | 280 | C |
| 53 | 3 | 281 | G |
| 53 | 3 | 289 | G |
| 53 | 3 | 293 | G |
| 53 | 3 | 321 | A |
| 53 | 3 | 328 | C |
| 53 | 3 | 329 | A |
| 53 | 3 | 330 | C |
| 53 | 3 | 345 | C |
| 53 | 3 | 347 | G |
| 53 | 3 | 348 | G |
| 53 | 3 | 352 | C |
| 53 | 3 | 353 | A |
| 53 | 3 | 354 | G |
| 53 | 3 | 363 | A |
| 53 | 3 | 367 | U |
| 53 | 3 | 372 | C |
| 53 | 3 | 374 | A |
| 53 | 3 | 388 | G |
| 53 | 3 | 397 | A |
| 53 | 3 | 398 | U |
| 53 | 3 | 405 | U |
| 53 | 3 | 406 | G |
| 53 | 3 | 412 | A |
| 53 | 3 | 413 | G |
| 53 | 3 | 422 | C |
| 53 | 3 | 423 | G |
| 53 | 3 | 428 | G |
| 53 | 3 | 429 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 53 | 3 | 446 | G |
| 53 | 3 | 453 | G |
| 53 | 3 | 467 | U |
| 53 | 3 | 468 | A |
| 53 | 3 | 472 | U |
| 53 | 3 | 479 | U |
| 53 | 3 | 480 | U |
| 53 | 3 | 481 | G |
| 53 | 3 | 484 | G |
| 53 | 3 | 485 | U |
| 53 | 3 | 486 | U |
| 53 | 3 | 487 | A |
| 53 | 3 | 496 | A |
| 53 | 3 | 497 | G |
| 53 | 3 | 505 | G |
| 53 | 3 | 508 | U |
| 53 | 3 | 509 | A |
| 53 | 3 | 511 | C |
| 53 | 3 | 518 | C |
| 53 | 3 | 521 | G |
| 53 | 3 | 522 | C |
| 53 | 3 | 531 | U |
| 53 | 3 | 532 | A |
| 53 | 3 | 533 | A |
| 53 | 3 | 536 | C |
| 53 | 3 | 547 | A |
| 53 | 3 | 561 | U |
| 53 | 3 | 562 | U |
| 53 | 3 | 564 | C |
| 53 | 3 | 566 | G |
| 53 | 3 | 572 | A |
| 53 | 3 | 573 | A |
| 53 | 3 | 575 | G |
| 53 | 3 | 576 | C |
| 53 | 3 | 577 | G |
| 53 | 3 | 607 | A |
| 53 | 3 | 615 | G |
| 53 | 3 | 633 | G |
| 53 | 3 | 639 | G |
| 53 | 3 | 642 | A |
| 53 | 3 | 653 | U |
| 53 | 3 | 655 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 53 | 3 | 660 | C |
| 53 | 3 | 665 | A |
| 53 | 3 | 682 | G |
| 53 | 3 | 688 | G |
| 53 | 3 | 702 | A |
| 53 | 3 | 703 | G |
| 53 | 3 | 718 | A |
| 53 | 3 | 721 | G |
| 53 | 3 | 723 | U |
| 53 | 3 | 724 | G |
| 53 | 3 | 731 | G |
| 53 | 3 | 734 | G |
| 53 | 3 | 755 | G |
| 53 | 3 | 777 | A |
| 53 | 3 | 793 | U |
| 53 | 3 | 799 | G |
| 53 | 3 | 809 | G |
| 53 | 3 | 815 | A |
| 53 | 3 | 817 | C |
| 53 | 3 | 818 | G |
| 53 | 3 | 819 | A |
| 53 | 3 | 820 | U |
| 53 | 3 | 821 | G |
| 53 | 3 | 829 | G |
| 53 | 3 | 836 | G |
| 53 | 3 | 843 | U |
| 53 | 3 | 844 | G |
| 53 | 3 | 845 | A |
| 53 | 3 | 846 | G |
| 53 | 3 | 849 | G |
| 53 | 3 | 851 | G |
| 53 | 3 | 868 | C |
| 53 | 3 | 902 | G |
| 53 | 3 | 914 | A |
| 53 | 3 | 934 | C |
| 53 | 3 | 935 | A |
| 53 | 3 | 960 | U |
| 53 | 3 | 961 | U |
| 53 | 3 | 966 | G |
| 53 | 3 | 969 | A |
| 53 | 3 | 971 | G |
| 53 | 3 | 975 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 53 | 3 | 976 | G |
| 53 | 3 | 977 | A |
| 53 | 3 | 991 | U |
| 53 | 3 | 992 | U |
| 53 | 3 | 993 | G |
| 53 | 3 | 1004 | A |
| 53 | 3 | 1020 | G |
| 53 | 3 | 1028 | C |
| 53 | 3 | 1031 | C |
| 53 | 3 | 1032 | G |
| 53 | 3 | 1033 | G |
| 53 | 3 | 1034 | G |
| 53 | 3 | 1036 | A |
| 53 | 3 | 1053 | G |
| 53 | 3 | 1054 | C |
| 53 | 3 | 1055 | A |
| 53 | 3 | 1085 | U |
| 53 | 3 | 1094 | G |
| 53 | 3 | 1095 | U |
| 53 | 3 | 1099 | G |
| 53 | 3 | 1101 | A |
| 53 | 3 | 1108 | G |
| 53 | 3 | 1133 | G |
| 53 | 3 | 1136 | C |
| 53 | 3 | 1137 | C |
| 53 | 3 | 1139 | G |
| 53 | 3 | 1158 | C |
| 53 | 3 | 1159 | U |
| 53 | 3 | 1168 | U |
| 53 | 3 | 1171 | A |
| 53 | 3 | 1182 | G |
| 53 | 3 | 1183 | U |
| 53 | 3 | 1184 | G |
| 53 | 3 | 1195 | C |
| 53 | 3 | 1196 | A |
| 53 | 3 | 1197 | A |
| 53 | 3 | 1202 | U |
| 53 | 3 | 1206 | G |
| 53 | 3 | 1224 | U |
| 53 | 3 | 1225 | A |
| 53 | 3 | 1226 | C |
| 53 | 3 | 1227 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 53 | 3 | 1237 | C |
| 53 | 3 | 1238 | A |
| 53 | 3 | 1240 | U |
| 53 | 3 | 1241 | G |
| 53 | 3 | 1250 | A |
| 53 | 3 | 1256 | A |
| 53 | 3 | 1260 | G |
| 53 | 3 | 1261 | A |
| 53 | 3 | 1275 | A |
| 53 | 3 | 1278 | G |
| 53 | 3 | 1280 | A |
| 53 | 3 | 1281 | C |
| 53 | 3 | 1282 | C |
| 53 | 3 | 1286 | U |
| 53 | 3 | 1287 | A |
| 53 | 3 | 1290 | G |
| 53 | 3 | 1300 | G |
| 53 | 3 | 1302 | C |
| 53 | 3 | 1305 | G |
| 53 | 3 | 1312 | G |
| 53 | 3 | 1317 | C |
| 53 | 3 | 1322 | C |
| 53 | 3 | 1331 | G |
| 53 | 3 | 1335 | U |
| 53 | 3 | 1336 | C |
| 53 | 3 | 1340 | A |
| 53 | 3 | 1363 | A |
| 53 | 3 | 1370 | G |
| 53 | 3 | 1379 | G |
| 53 | 3 | 1394 | A |
| 53 | 3 | 1400 | C |
| 53 | 3 | 1404 | C |
| 53 | 3 | 1419 | G |
| 53 | 3 | 1429 | A |
| 53 | 3 | 1446 | A |
| 53 | 3 | 1448 | C |
| 53 | 3 | 1452 | C |
| 53 | 3 | 1453 | G |
| 53 | 3 | 1487 | G |
| 53 | 3 | 1492 | A |
| 53 | 3 | 1497 | G |
| 53 | 3 | 1499 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 53 | 3 | 1503 | A |
| 53 | 3 | 1506 | U |
| 53 | 3 | 1507 | A |
| 53 | 3 | 1517 | G |
| 53 | 3 | 1518 | A |
| 53 | 3 | 1519 | A |
| 53 | 3 | 1529 | G |
| 53 | 3 | 1530 | G |
| 54 | 4 | 4 | U |
| 54 | 4 | 7 | C |
| 54 | 4 | 8 | U |
| 54 | 4 | 9 | U |
| 54 | 4 | 11 | U |
| 54 | 4 | 12 | U |
| 54 | 4 | 15 | U |
| 54 | 4 | 16 | U |
| 54 | 4 | 17 | U |
| 54 | 4 | 18 | U |
| 54 | 4 | 19 | U |
| 54 | 4 | 21 | U |
| 54 | 4 | 22 | U |
| 54 | 4 | 45 | U |
| 54 | 4 | 46 | U |
| 54 | 4 | 47 | U |
| 63 | 5 | 2 | C |
| 63 | 5 | 7 | A |
| 63 | 5 | 8 | U |
| 63 | 5 | 9 | A |
| 63 | 5 | 11 | C |
| 63 | 5 | 13 | C |
| 63 | 5 | 15 | G |
| 63 | 5 | 17 | C |
| 63 | 5 | 18 | G |
| 63 | 5 | 19 | G |
| 63 | 5 | 20 | U |
| 63 | 5 | 21 | A |
| 63 | 5 | 26 | A |
| 63 | 5 | 28 | G |
| 63 | 5 | 29 | G |
| 63 | 5 | 30 | G |
| 63 | 5 | 32 | U |
| 63 | 5 | 33 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 63 | 5 | 34 | G |
| 63 | 5 | 35 | A |
| 63 | 5 | 36 | A |
| 63 | 5 | 37 | A |
| 63 | 5 | 39 | U |
| 63 | 5 | 40 | C |
| 63 | 5 | 41 | C |
| 63 | 5 | 43 | C |
| 63 | 5 | 44 | G |
| 63 | 5 | 46 | G |
| 63 | 5 | 47 | U |
| 63 | 5 | 48 | C |
| 63 | 5 | 49 | C |
| 63 | 5 | 52 | G |
| 63 | 5 | 53 | G |
| 63 | 5 | 55 | U |
| 63 | 5 | 57 | G |
| 63 | 5 | 58 | A |
| 63 | 5 | 59 | U |
| 63 | 5 | 60 | U |
| 63 | 5 | 61 | C |
| 63 | 5 | 66 | U |
| 63 | 5 | 73 | A |
| 63 | 5 | 74 | C |
| 63 | 5 | 76 | A |
| 64 | 6 | 2 | G |
| 64 | 6 | 9 | G |
| 64 | 6 | 18 | G |
| 64 | 6 | 19 | G |
| 64 | 6 | 20 | U |
| 64 | 6 | 46 | G |
| 64 | 6 | 47 | U |
| 64 | 6 | 59 | A |
| 64 | 6 | 74 | C |
| 64 | 6 | 76 | A |
| 64 | 7 | 2 | G |
| 64 | 7 | 7 | G |
| 64 | 7 | 8 | U |
| 64 | 7 | 9 | G |
| 64 | 7 | 19 | G |
| 64 | 7 | 20 | U |
| 64 | 7 | 21 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 64 | 7 | 22 | G |
| 64 | 7 | 30 | G |
| 64 | 7 | 33 | U |
| 64 | 7 | 34 | C |
| 64 | 7 | 35 | A |
| 64 | 7 | 36 | U |
| 64 | 7 | 42 | G |
| 64 | 7 | 45 | G |
| 64 | 7 | 54 | U |
| 64 | 7 | 55 | U |
| 64 | 7 | 56 | C |
| 64 | 7 | 57 | A |
| 64 | 7 | 64 | G |
| 64 | 7 | 67 | C |
| 64 | 7 | 68 | C |
| 64 | 7 | 70 | G |
| 64 | 7 | 73 | A |
| 64 | 7 | 74 | C |
| 64 | 7 | 75 | C |
| 64 | 7 | 76 | A |

All (32) RNA pucker outliers are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 51 | 1 | 481 | G |
| 51 | 1 | 490 | C |
| 51 | 1 | 685 | A |
| 51 | 1 | 764 | A |
| 51 | 1 | 784 | G |
| 51 | 1 | 827 | U |
| 51 | 1 | 859 | G |
| 51 | 1 | 1020 | A |
| 51 | 1 | 1130 | U |
| 51 | 1 | 1715 | G |
| 51 | 1 | 1783 | A |
| 51 | 1 | 1801 | A |
| 51 | 1 | 1930 | G |
| 51 | 1 | 2275 | C |
| 51 | 1 | 2326 | C |
| 51 | 1 | 2732 | G |
| 52 | 2 | 88 | C |
| 53 | 3 | 4 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 53 | 3 | 1035 | A |
| 53 | 3 | 1139 | G |
| 53 | 3 | 1224 | U |
| 54 | 4 | 11 | U |
| 54 | 4 | 16 | U |
| 63 | 5 | 7 | A |
| 63 | 5 | 29 | G |
| 63 | 5 | 32 | U |
| 63 | 5 | 39 | U |
| 63 | 5 | 48 | C |
| 63 | 5 | 57 | G |
| 63 | 5 | 60 | U |
| 64 | 7 | 33 | U |
| 64 | 7 | 56 | C |

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

4 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 | $\#\|Z\| > 2$ |
| 65 | DPP | h | 2 | 65 | 3,5,6 | 0.56 | 0 | 1,5,7 | 0.09 | 0 |
| 65 | KBE | h | 1 | 65 | 8,8,9 | 0.61 | 0 | 7,8,10 | 1.21 | 1 (14%) |
| 65 | 5OH | h | 6 | 65 | 8,12,13 | 0.76 | 0 | 3,16,18 | 1.52 | 1 (33%) |
| 65 | UAL | h | 5 | 65 | 7,8,9 | 2.31 | 3 (42%) | 5,9,11 | 2.91 | 2 (40%) |

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 |
|---|---|---|---|---|---|---|---|
| 65 | DPP | h | 2 | 65 | - | 0/2/4/6 | - |
| 65 | KBE | h | 1 | 65 | - | 0/7/7/8 | - |

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| Mol | Type | Chain | Res | Link | Chirals | Torsions | Rings |
|---|---|---|---|---|---|---|---|
| 65 | 5OH | h | 6 | 65 | - | 0/2/18/20 | 0/1/1/1 |
| 65 | UAL | h | 5 | 65 | - | 0/3/7/9 | - |

All (3) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 65 | h | 5 | UAL | C1-N1 | -4.88 | 1.32 | 1.40 |
| 65 | h | 5 | UAL | C-CA | -2.90 | 1.40 | 1.45 |
| 65 | h | 5 | UAL | CA-N | 2.03 | 1.40 | 1.35 |

All (4) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 65 | h | 5 | UAL | CA-CB-N1 | -5.28 | 115.63 | 125.60 |
| 65 | h | 5 | UAL | O-C-CA | -3.23 | 121.28 | 125.39 |
| 65 | h | 6 | 5OH | CR-CB-CA | -2.38 | 110.04 | 112.61 |
| 65 | h | 1 | KBE | CB-CA-C | -2.07 | 109.22 | 112.25 |

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

3 monomers are involved in 9 short contacts:

| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|---|---|---|---|---|---|
| 65 | h | 2 | DPP | 2 | 0 |
| 65 | h | 6 | 5OH | 6 | 0 |
| 65 | h | 5 | UAL | 1 | 0 |

## 5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

## 5.6 Ligand geometry (i)

Of 1 ligands modelled in this entry, 1 is monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

## 5.7 Other polymers (i)

There are no such residues in this entry.

## 5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

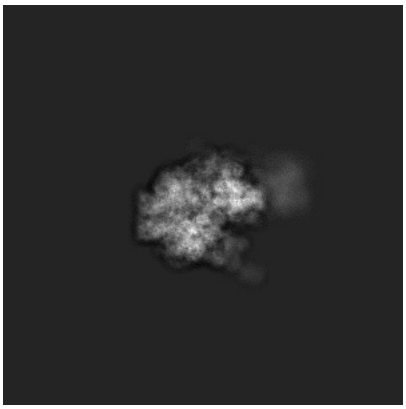
# 6 Map visualisation

This section contains visualisations of the EMDB entry EMD-39168. These allow visual inspection of the internal detail of the map and identification of artifacts.

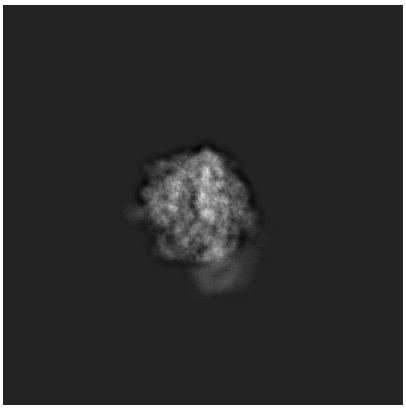
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

## 6.1 Orthogonal projections

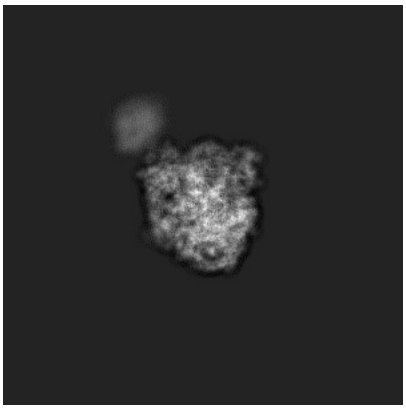
### 6.1.1 Primary map



X

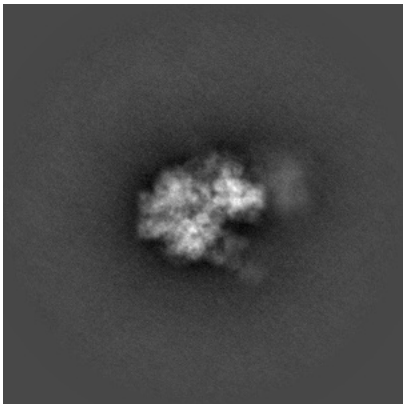


Y

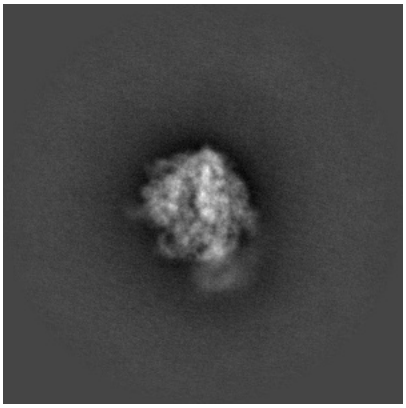


Z

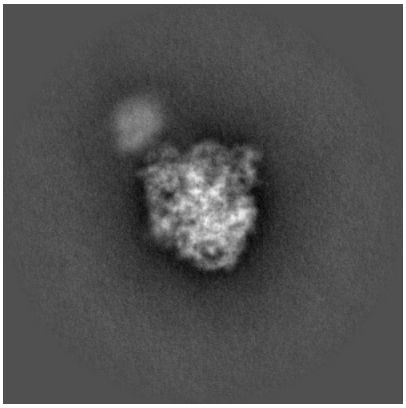
### 6.1.2 Raw map



X



Y

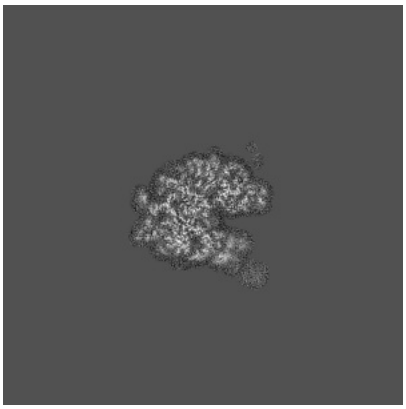


Z

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

## 6.2 Central slices (i)

### 6.2.1 Primary map



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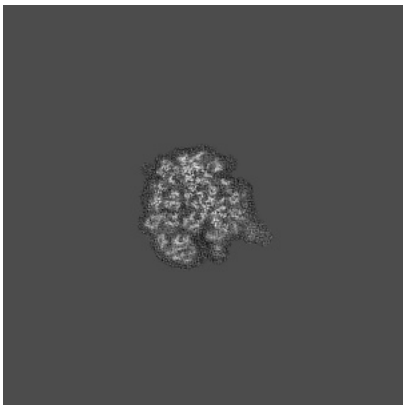
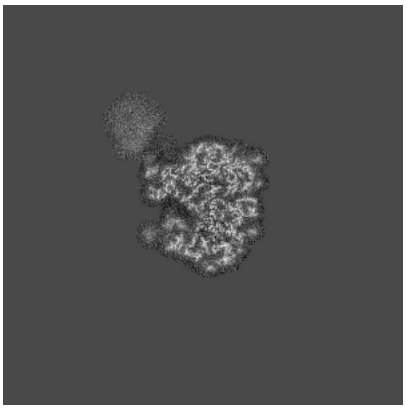
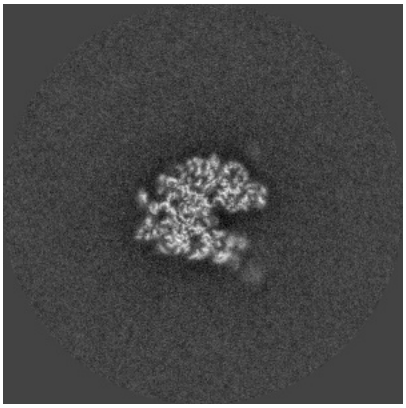


Y Index: 240

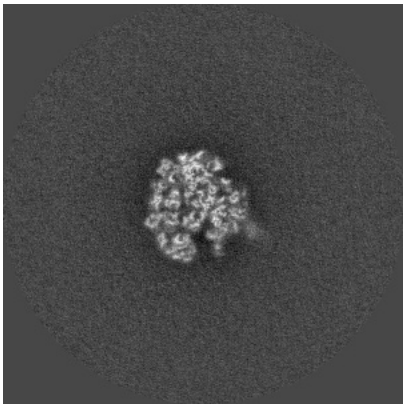


Z Index: 240

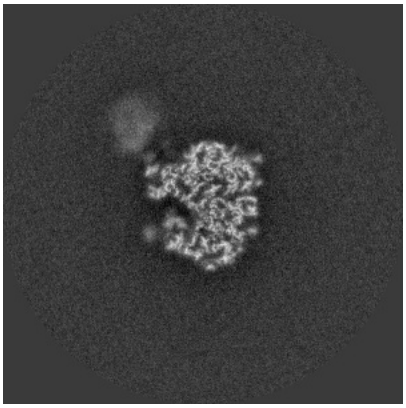
### 6.2.2 Raw map



X Index: 240



Y Index: 240

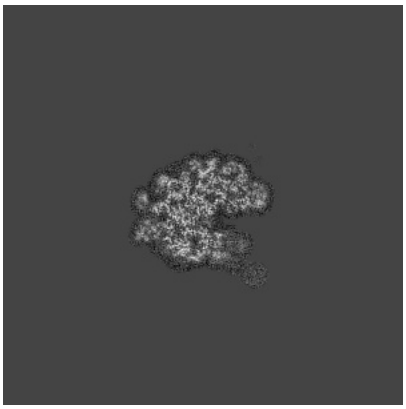


Z Index: 240

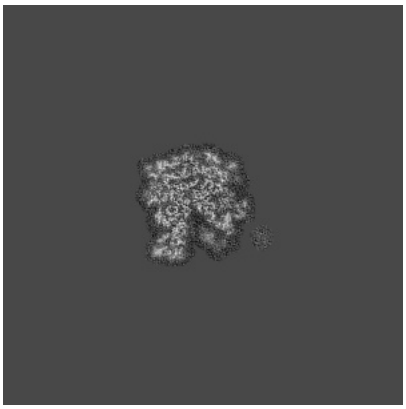
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices (i)

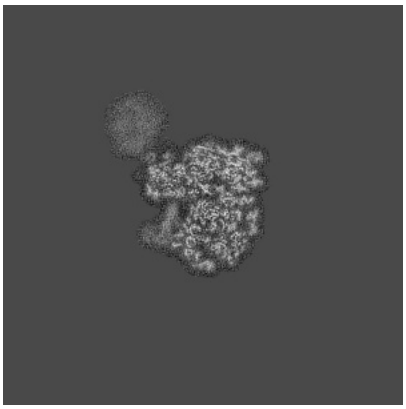
### 6.3.1 Primary map



X Index: 243

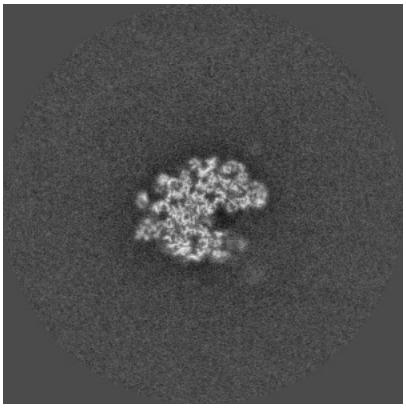


Y Index: 224

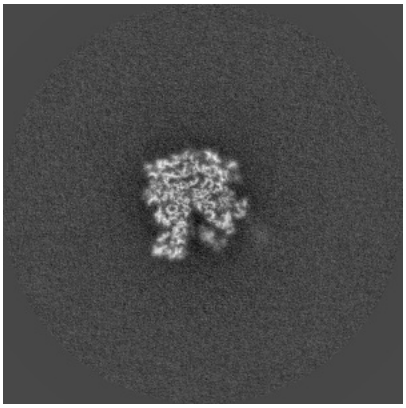


Z Index: 245

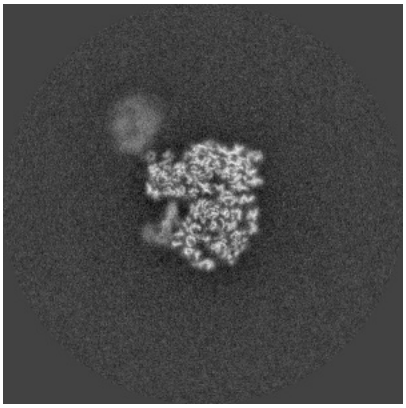
### 6.3.2 Raw map



X Index: 243



Y Index: 224

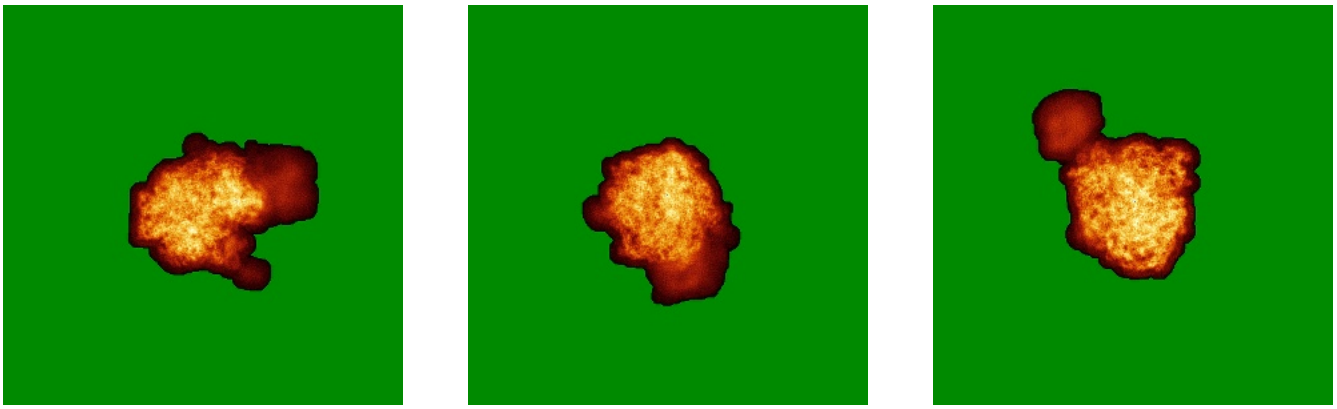


Z Index: 245

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

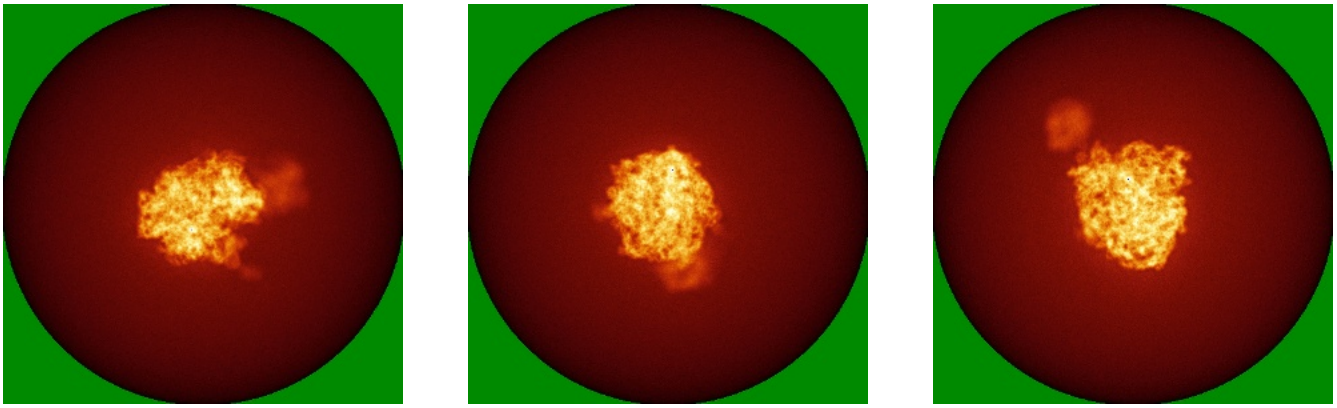
## 6.4 Orthogonal standard-deviation projections (False-color) (i)

### 6.4.1 Primary map



X Y Z

### 6.4.2 Raw map

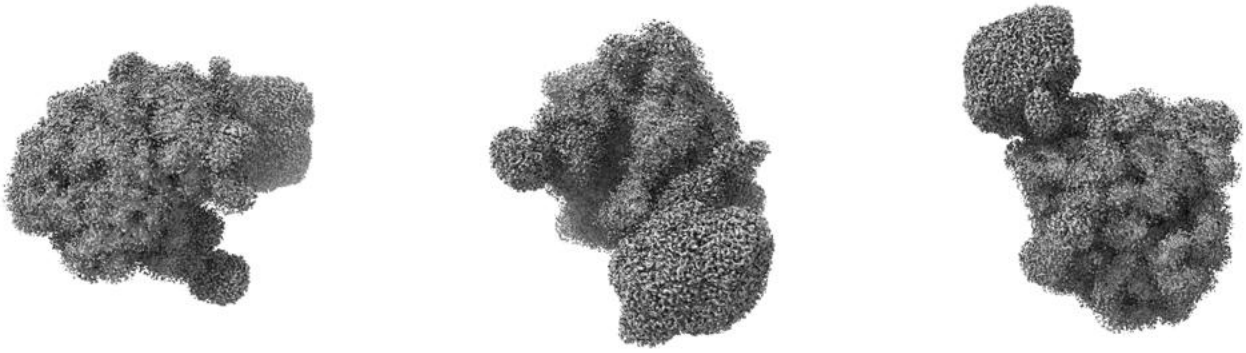


X Y Z

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

## 6.5 Orthogonal surface views (i)

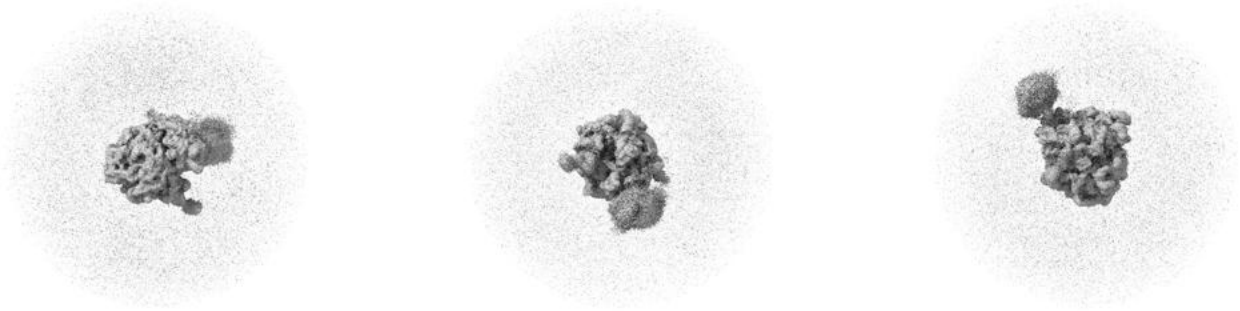
### 6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.011. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

### 6.5.2 Raw map



X Y Z

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

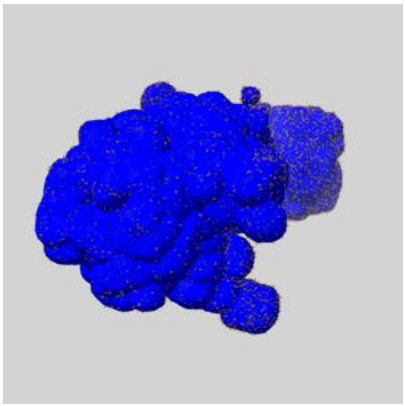
## 6.6 Mask visualisation (i)

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

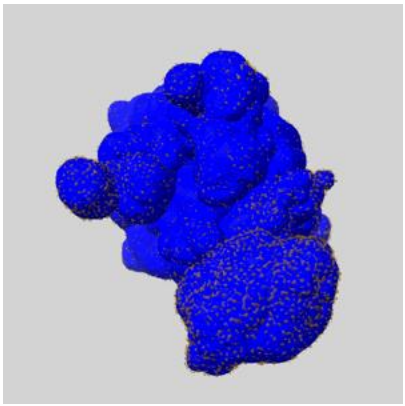
A mask typically either:

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

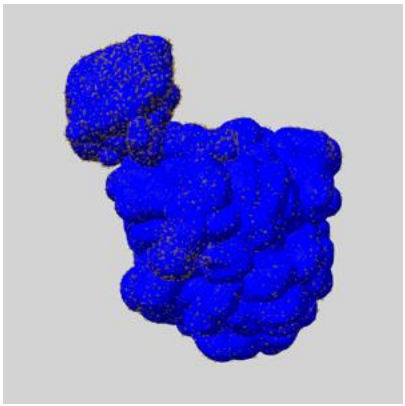
### 6.6.1 emd_39168_msk_1.map (i)



X



Y

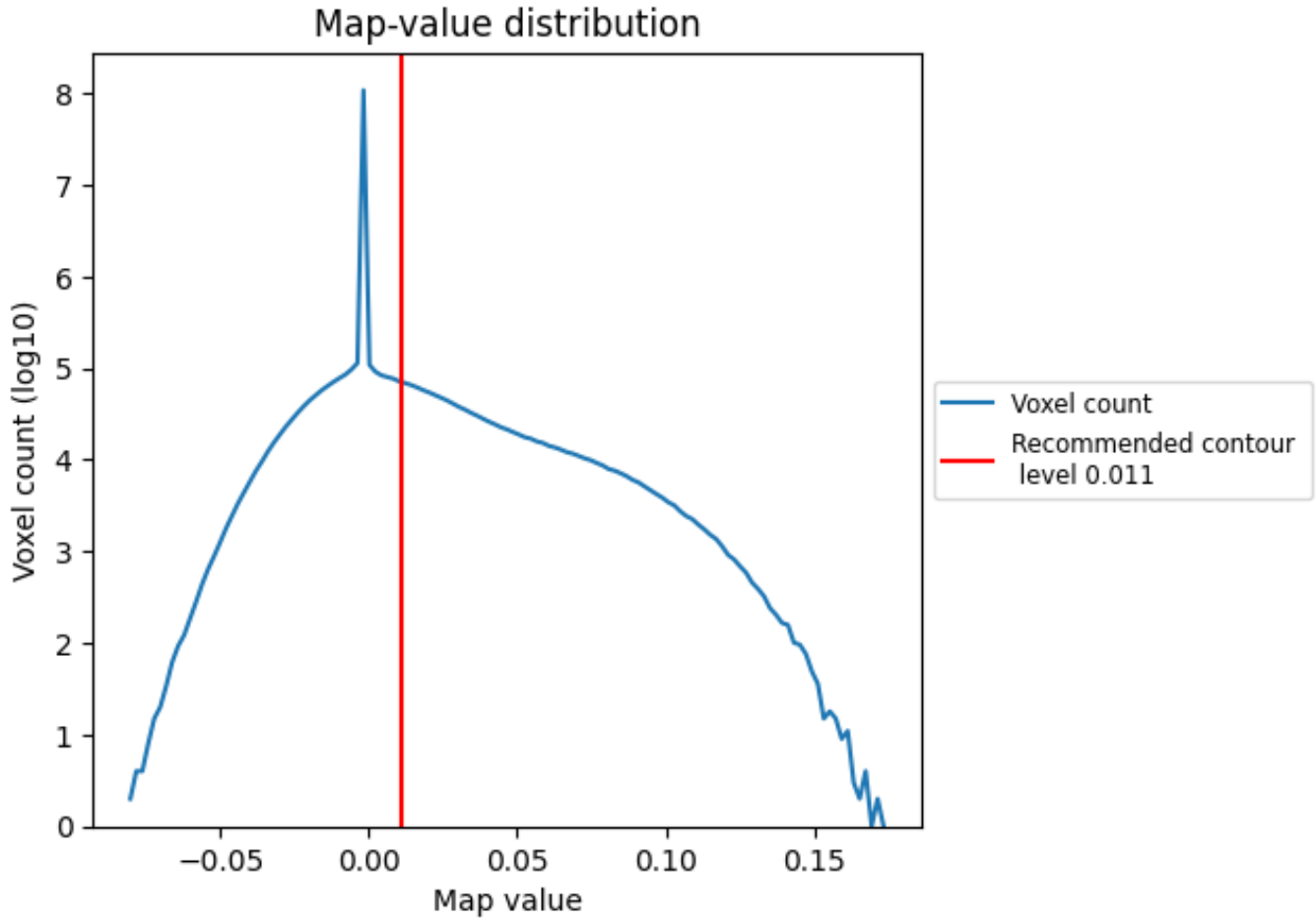


Z

# 7 Map analysis

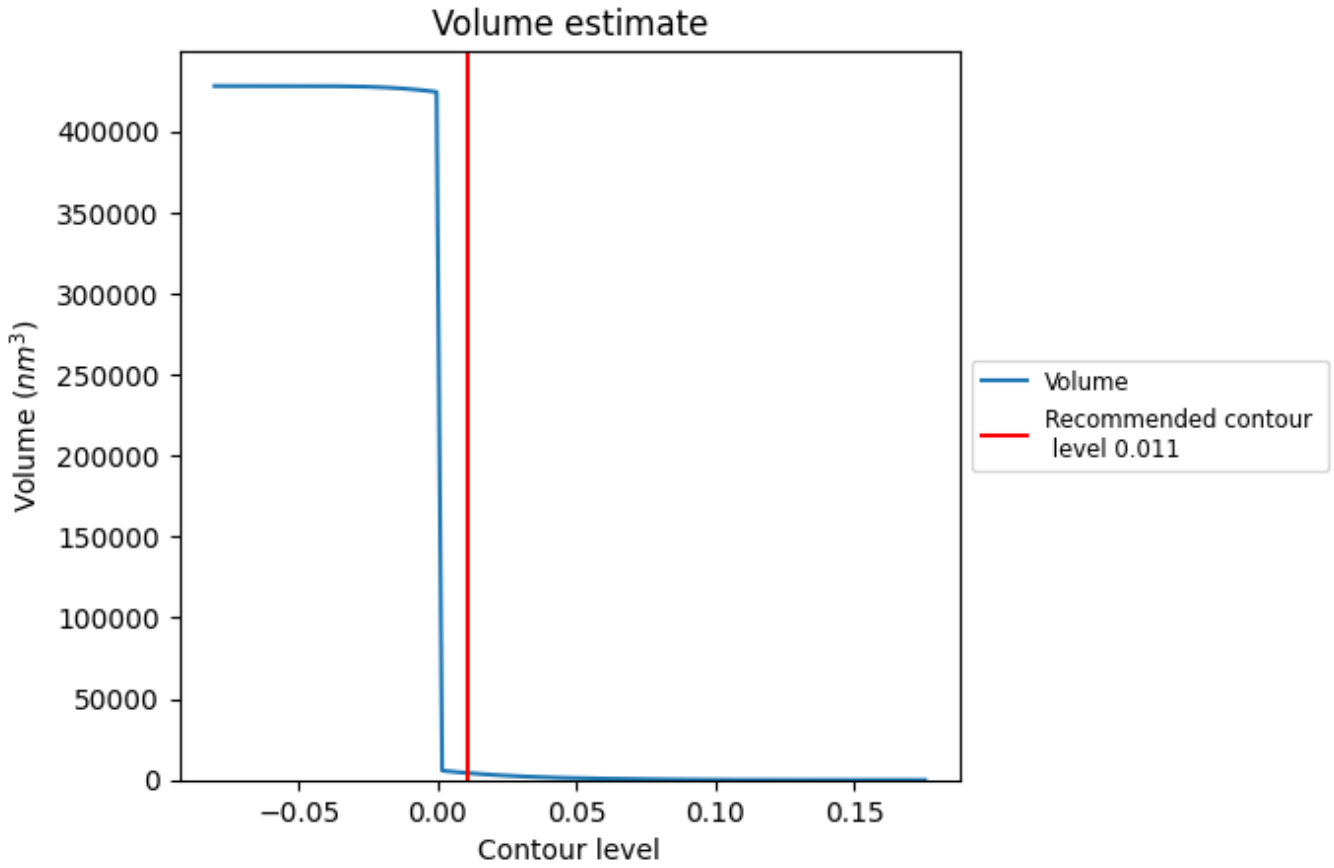
This section contains the results of statistical analysis of the map.

## 7.1 Map-value distribution




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

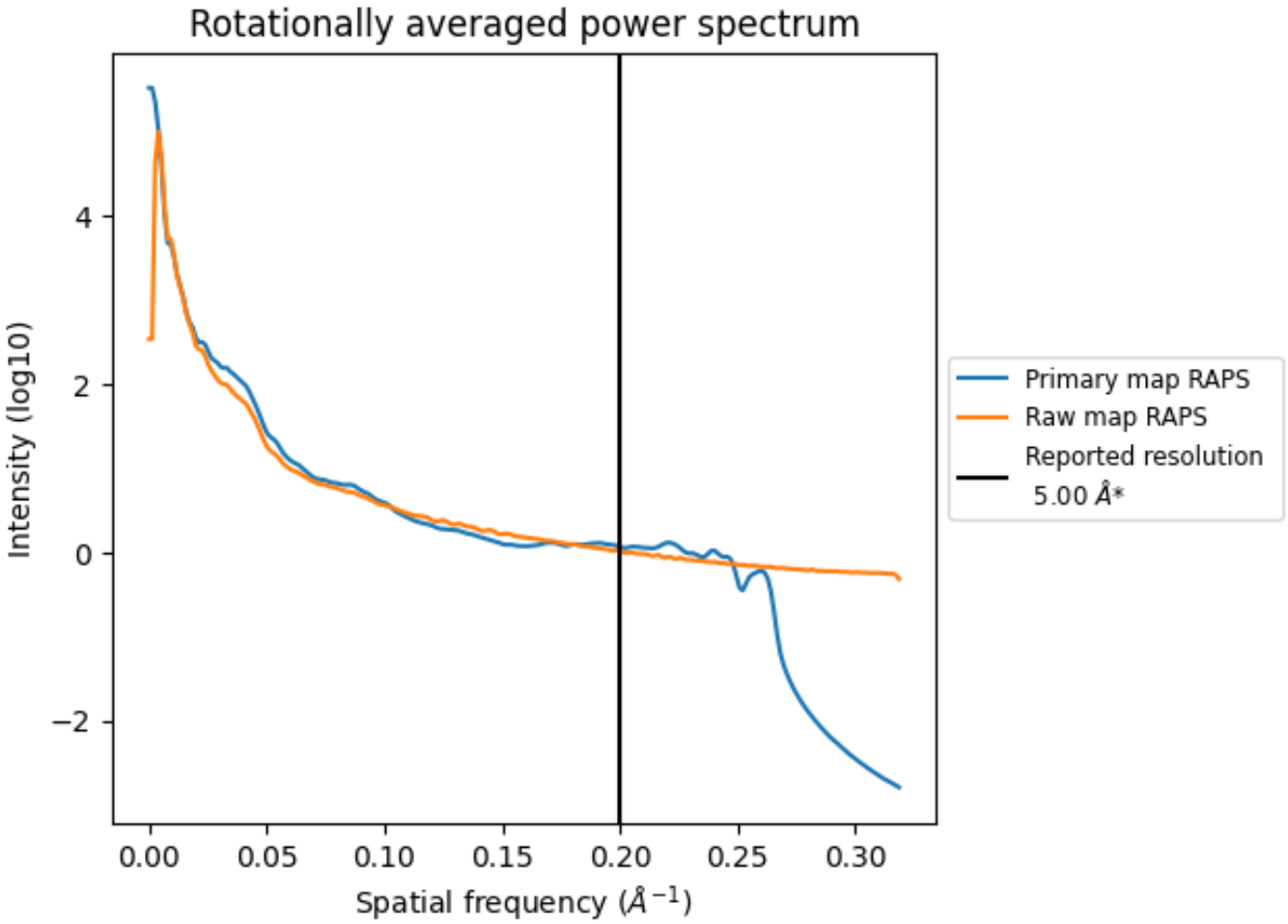
## 7.2 Volume estimate




The volume at the recommended contour level is 4264 $nm^3$; this corresponds to an approximate mass of 3852 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)

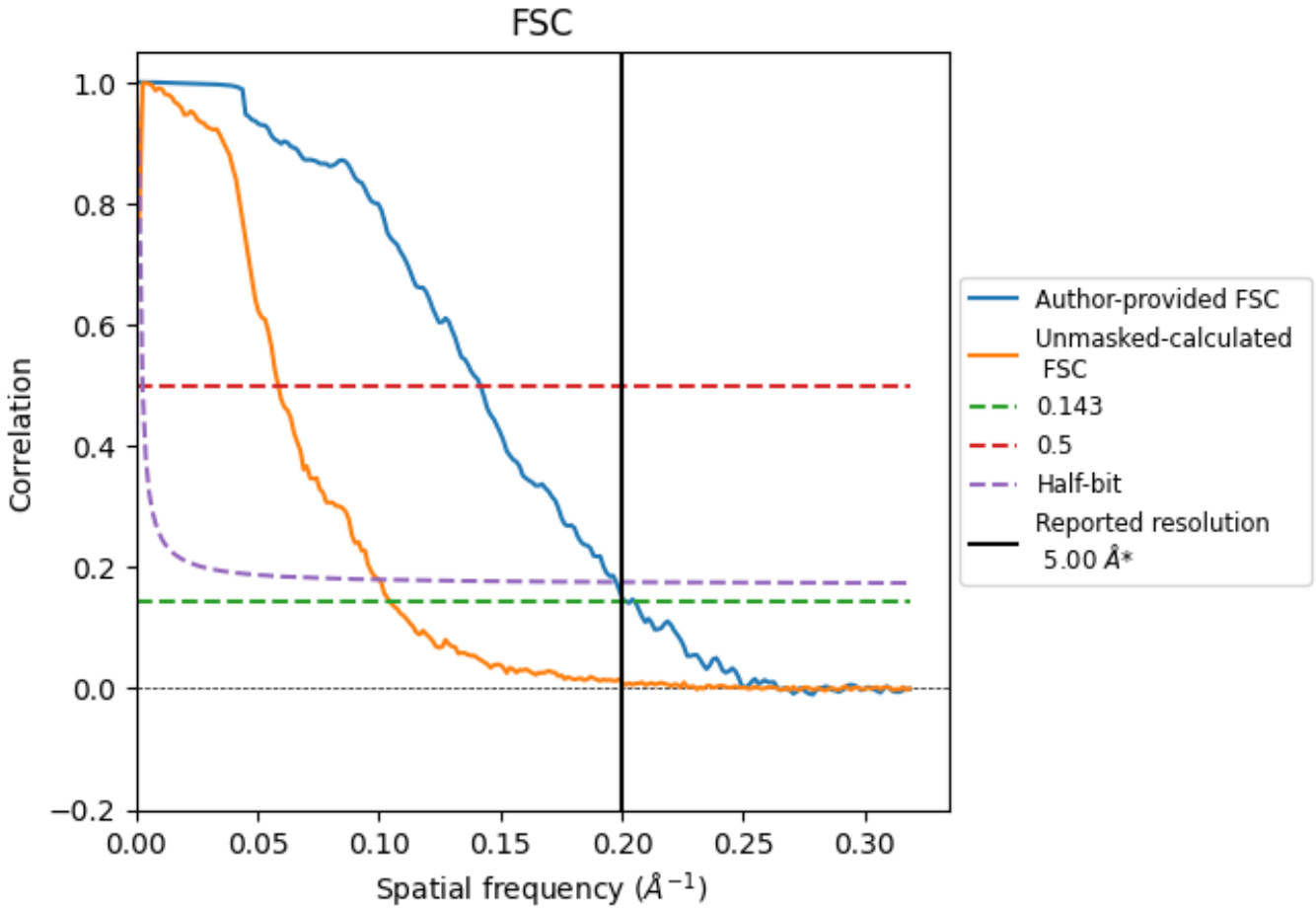



*Reported resolution corresponds to spatial frequency of 0.200 Å$^{-1}$

# 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 0.200 Å$^{-1}$

## 8.2 Resolution estimates (i)

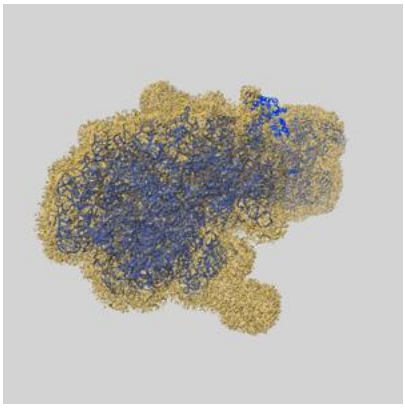
| Resolution estimate (Å) | Estimation criterion (FSC cut-off) | | |
|---|---|---|---|
| | 0.143 | 0.5 | Half-bit |
| Reported by author | 5.00 | - | - |
| Author-provided FSC curve | 4.95 | 7.06 | 5.06 |
| Unmasked-calculated* | 9.57 | 17.09 | 666.67 |

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 9.57 differs from the reported value 5.0 by more than 10 %

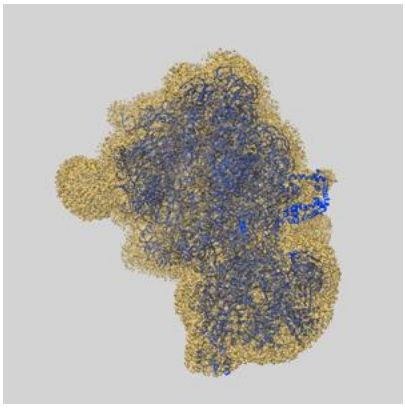
# 9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-39168 and PDB model 8YDE. Per-residue inclusion information can be found in section 3 on page 16.

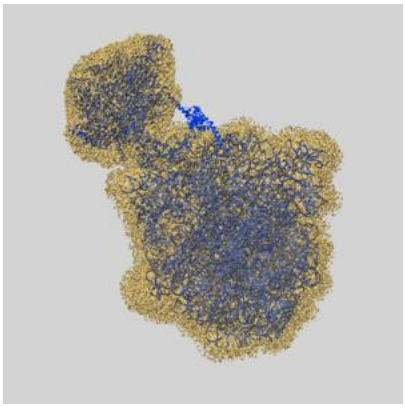
## 9.1 Map-model overlay



X



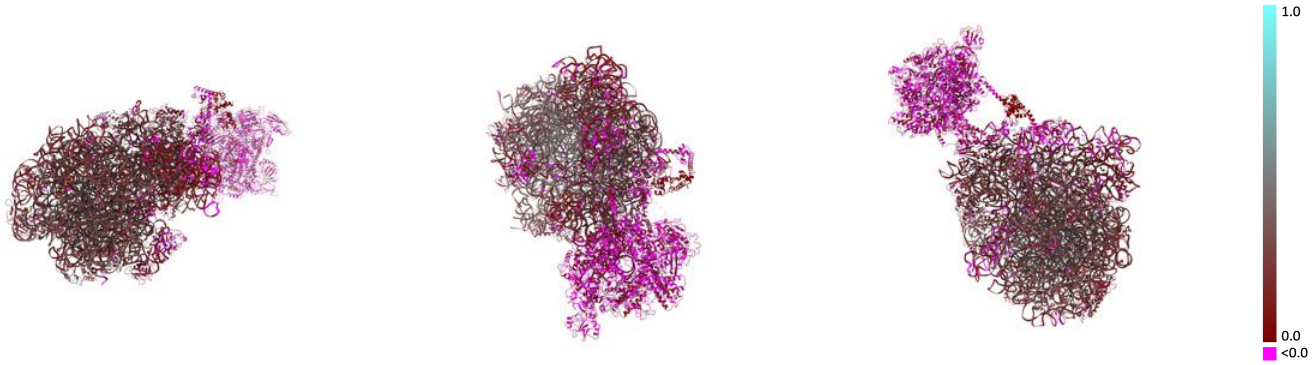
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.011 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.

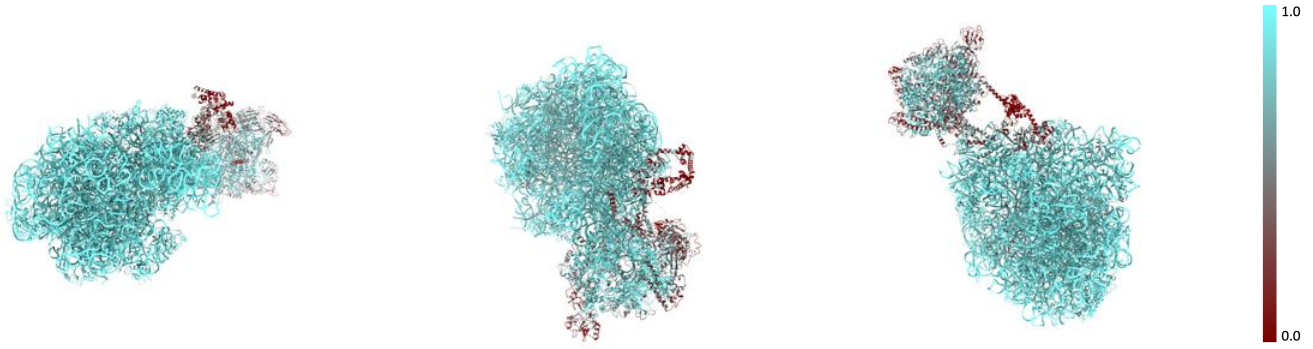
## 9.2 Q-score mapped to coordinate model




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.

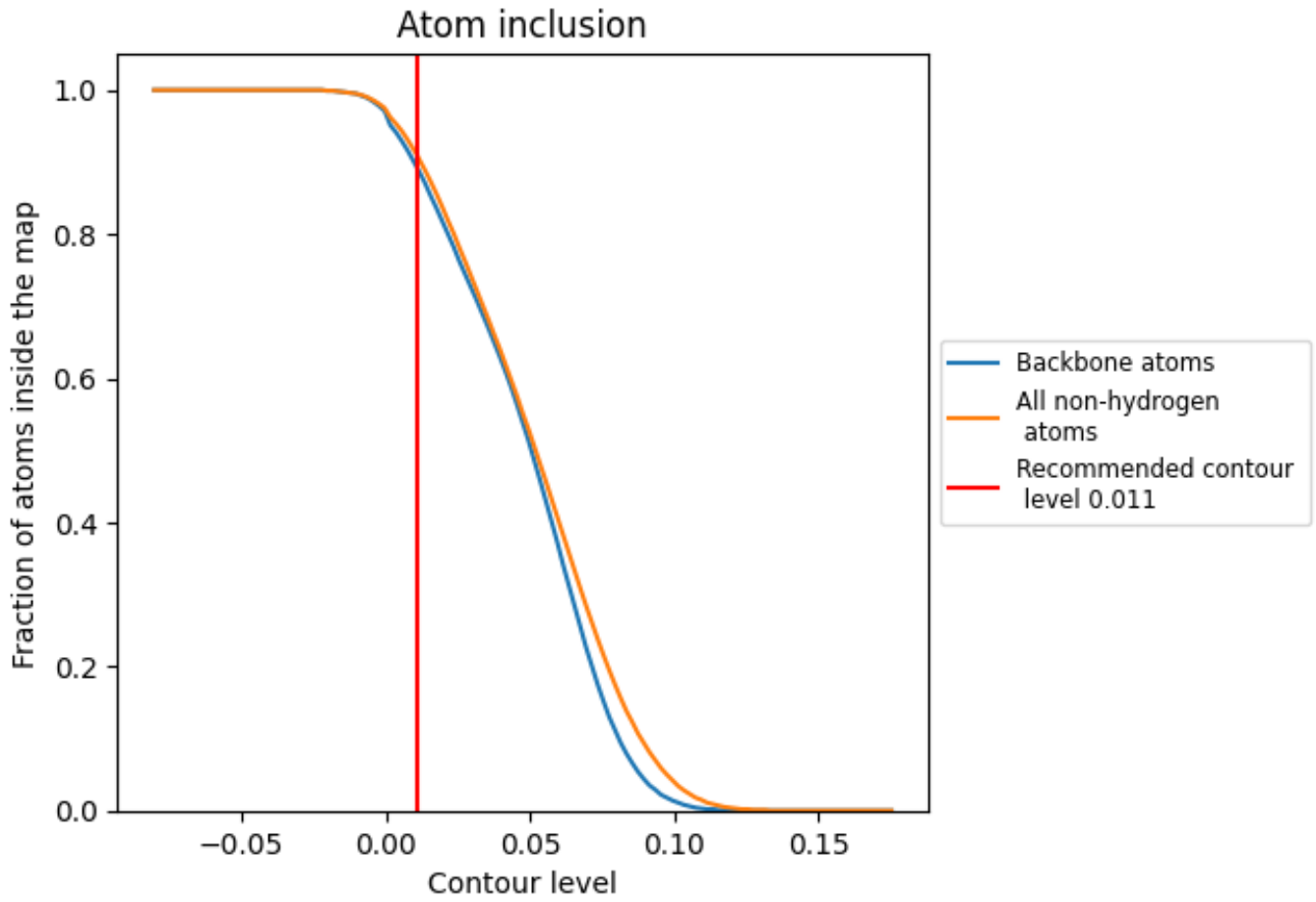
## 9.3 Atom inclusion mapped to coordinate model




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 (0.011).

## 9.4 Atom inclusion (i)




At the recommended contour level, 89% of all backbone atoms, 91% 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 (0.011) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion | Q-score |
|---|---|---|
| All | 0.9090 | 0.2050 |
| 1 | 0.9900 | 0.2870 |
| 2 | 0.9940 | 0.2410 |
| 3 | 0.9850 | 0.2310 |
| 4 | 0.7830 | 0.0350 |
| 5 | 0.9180 | 0.0970 |
| 6 | 0.9840 | 0.2870 |
| 7 | 0.7850 | 0.0720 |
| 8 | 0.8050 | 0.0210 |
| 9 | 0.7840 | 0.0180 |
| A | 0.8920 | 0.1370 |
| A1 | 0.3580 | 0.0100 |
| A2 | 0.3940 | 0.0010 |
| B | 0.9490 | 0.2720 |
| B1 | 0.7120 | 0.0000 |
| B2 | 0.6820 | -0.0070 |
| C | 0.9350 | 0.2470 |
| D | 0.9410 | 0.3120 |
| E | 0.9450 | 0.3080 |
| F | 0.9490 | 0.2430 |
| G | 0.9190 | 0.1650 |
| H | 0.9080 | 0.2190 |
| I | 0.8090 | 0.0590 |
| J | 0.9300 | 0.2570 |
| K | 0.9350 | 0.1620 |
| L | 0.9340 | 0.1930 |
| M | 0.9450 | 0.2460 |
| N | 0.9640 | 0.1760 |
| NA | 0.3260 | 0.0200 |
| NG | 0.7490 | 0.0140 |
| O | 0.8940 | 0.1390 |
| P | 0.9390 | 0.2150 |
| Q | 0.8870 | 0.1910 |
| R | 0.9360 | 0.1580 |
| S | 0.9350 | 0.2000 |


*Continued on next page...*

*Continued from previous page...*

| Chain | Atom inclusion | Q-score |
|---|---|---|
| T | 0.9380 | 0.2080 |
| U | 0.8260 | 0.0950 |
| V | 0.8960 | 0.1270 |
| W | 0.9420 | 0.1980 |
| W0 | 0.4180 | -0.0170 |
| X | 0.9320 | 0.1540 |
| Y | 0.9030 | 0.1380 |
| Z | 0.8470 | 0.1280 |
| b | 0.9520 | 0.3240 |
| c | 0.9510 | 0.2750 |
| d | 0.9590 | 0.2500 |
| e | 0.9510 | 0.2170 |
| f | 0.9450 | 0.1520 |
| g | 0.9470 | 0.1660 |
| h | 0.9580 | 0.2930 |
| i | 0.8450 | 0.0000 |
| j | 0.9490 | 0.2820 |
| k | 0.8920 | 0.2490 |
| l | 0.9580 | 0.2790 |
| m | 0.9320 | 0.2880 |
| n | 0.9490 | 0.2520 |
| o | 0.9710 | 0.2180 |
| p | 0.9110 | 0.1910 |
| q | 0.9580 | 0.2990 |
| r | 0.9690 | 0.2980 |
| s | 0.9320 | 0.2810 |
| t | 0.9210 | 0.1940 |
| u | 0.9670 | 0.2250 |
| v | 0.9500 | 0.2270 |
| w | 0.9460 | 0.2820 |
| x | 0.9500 | 0.3090 |
| y | 0.9520 | 0.1600 |
| z | 0.9660 | 0.2910 |