# Full wwPDB EM Validation Report ⓘ

Nov 7, 2026 – 10:05 am GMT

| | | |
|---|---|---|
| PDB ID | : | 9TCR / pdb_00009tcr |
| EMDB ID | : | EMD-55797 |
| Title | : | Structural characterization of hibernating ribosomes in the Gram-negative pathogen Klebsiella quasipneumoniae with bS21 and no E-site tRNA |
| Authors | : | Vasanthakrishnan, R.K.B.S.; Olivier, D.; Sophie, C.; Yann, L.C.; Sylvie, G.D.; Sassi, M.; Emmanuel, G.; Reynald, G. |
| Deposited on | : | 2025-11-21 |
| Resolution | : | 2.70 Å(reported) |
| Based on initial model | : | 8B0X |

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

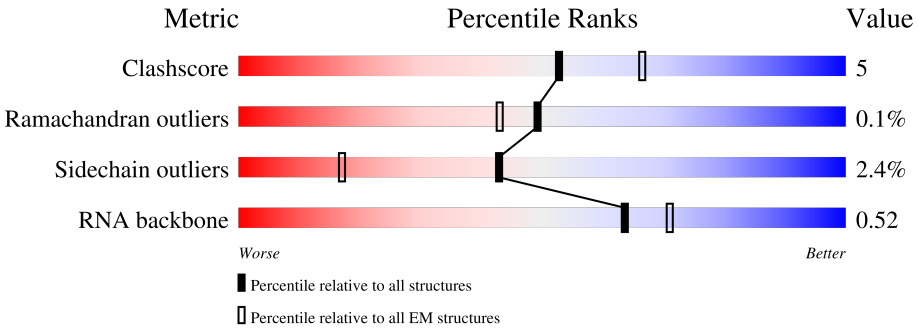
| | | |
|---|---|---|
| EMDB validation analysis | : | 0.0.1.dev133 |
| Mogul | : | 1.8.4, CSD as541be (2020) |
| MolProbity | : | 4-5-2 with Phenix2.2 |
| Percentile statistics | : | 20250101.v01 (using entries in the PDB archive January 1st 2025) |
| EM percentile statistics | : | 202505.v01 (Using data in the EMDB archive up until May 2025) |
| MapQ | : | 1.9.13 |
| Ideal geometry (proteins) | : | Engh & Huber (2001) |
| Ideal geometry (DNA, RNA) | : | Parkinson et al. (1996) |
| Validation Pipeline (wwPDB-VP) | : | 2.51 |

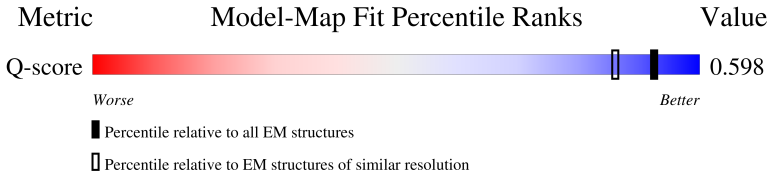
# 1 Overall quality at a glance

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

The reported resolution of this entry is 2.70 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.



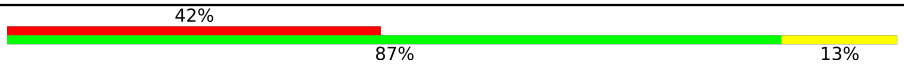
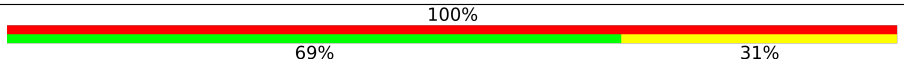
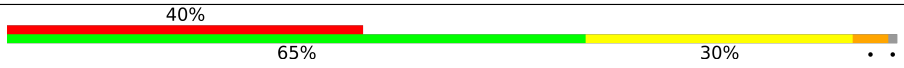
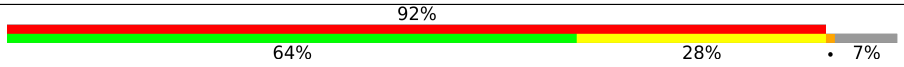
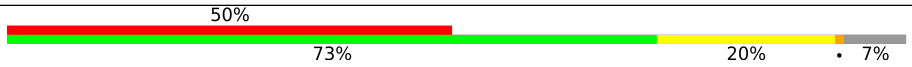
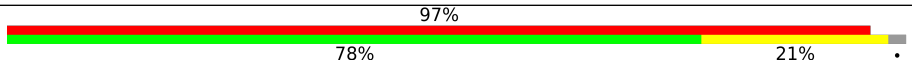
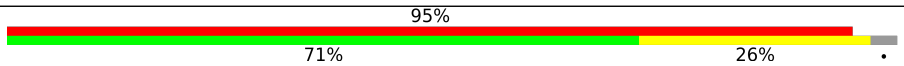
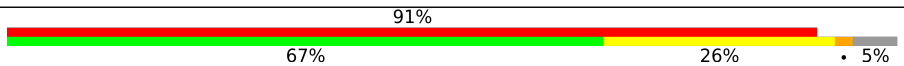
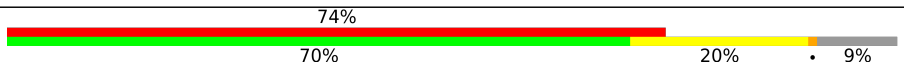
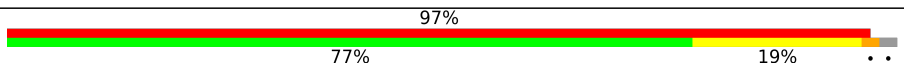
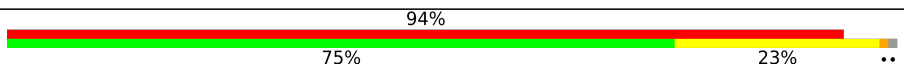
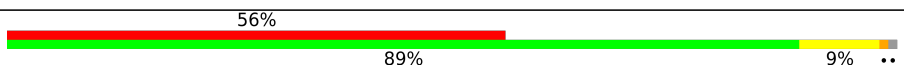
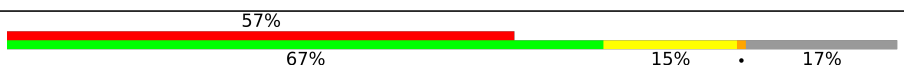
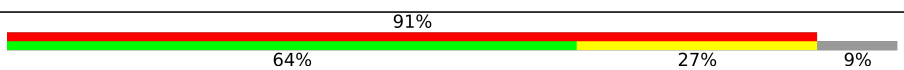
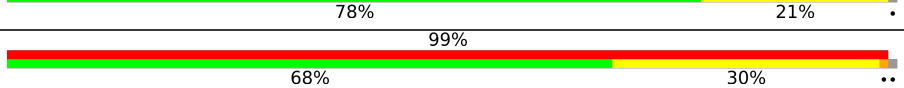
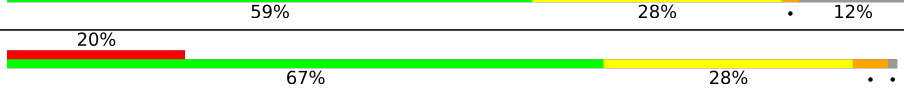

| Metric | Whole archive (#Entries) | EM structures (#Entries) | Similar EM resolution (#Entries, resolution range(Å)) |
|---|---|---|---|
| Clashscore | 229148 | 23984 | - |
| Ramachandran outliers | 224038 | 23583 | - |
| Sidechain outliers | 223484 | 23102 | - |
| RNA backbone | 8273 | 3508 | - |
| Q-score | - | 25397 | 10327 ( 2.20 - 3.20 ) |

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 | 0 | 55 | 64% 85% 7% 7% |
| 2 | 1 | 46 | 11% 93% 7% |
| 3 | 2 | 65 | 12% 92% 6% • |

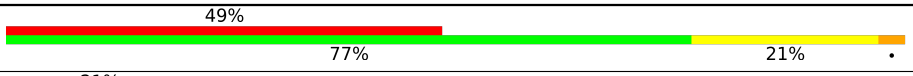
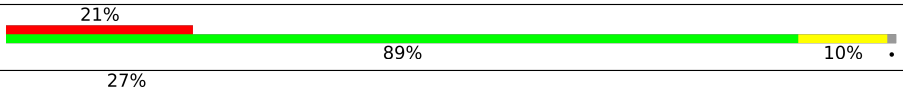
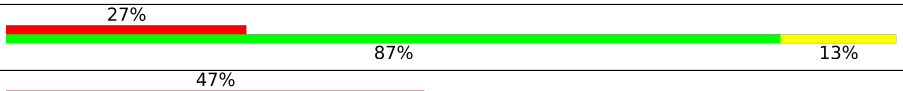
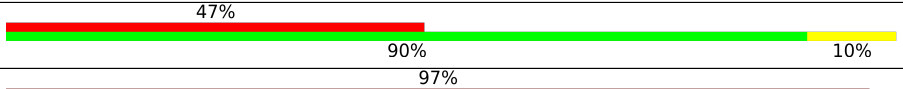
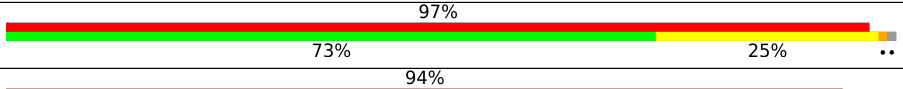
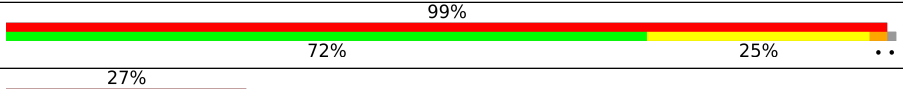
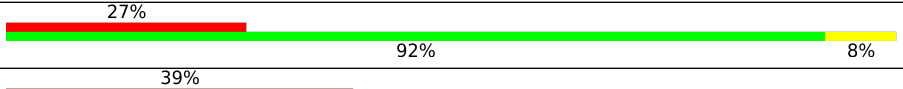
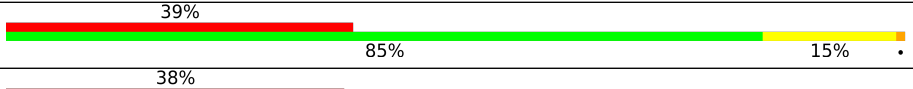
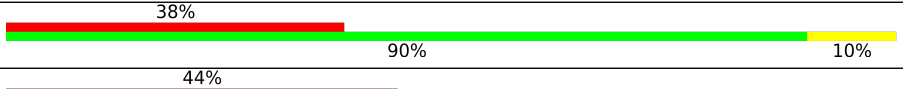
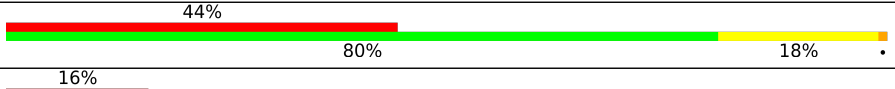
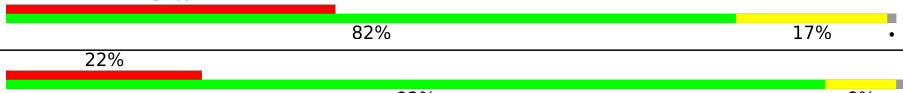
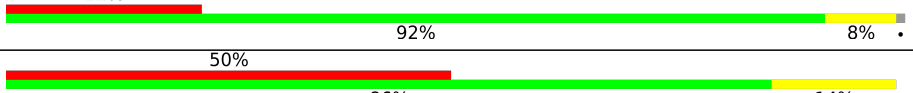
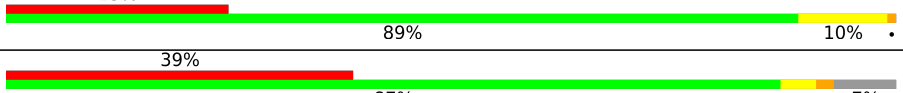
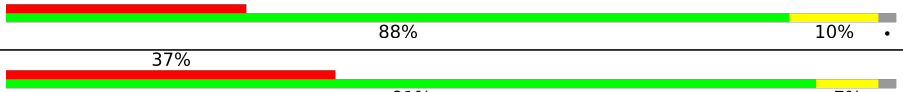
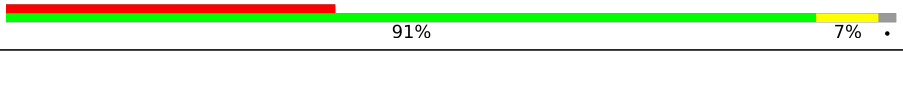
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| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 4 | 3 | 38 |   |
| 5 | 4 | 70 |   |
| 6 | A | 1550 |   |
| 7 | B | 241 |   |
| 8 | C | 232 |   |
| 9 | D | 206 |   |
| 10 | E | 167 |   |
| 11 | F | 131 |   |
| 12 | G | 156 |   |
| 13 | H | 130 |   |
| 14 | I | 130 |   |
| 15 | J | 103 |   |
| 16 | K | 129 |   |
| 17 | L | 124 |   |
| 18 | M | 118 |   |
| 19 | N | 101 |   |
| 20 | O | 89 |   |
| 21 | P | 82 |   |
| 22 | Q | 84 |   |
| 23 | R | 75 |   |
| 24 | S | 92 |   |
| 25 | T | 87 |   |
| 26 | U | 71 |   |
| 27 | X | 111 |   |
| 28 | a | 2923 |   |

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| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 29 | b | 116 |   |
| 30 | c | 273 |   |
| 31 | d | 209 |   |
| 32 | e | 201 |   |
| 33 | f | 179 |   |
| 34 | g | 177 |   |
| 35 | h | 149 |   |
| 36 | i | 142 |   |
| 37 | j | 123 |   |
| 38 | k | 144 |   |
| 39 | l | 136 |   |
| 40 | m | 128 |   |
| 41 | n | 117 |   |
| 42 | o | 115 |   |
| 43 | p | 118 |   |
| 44 | q | 103 |   |
| 45 | r | 110 |   |
| 46 | s | 100 |   |
| 47 | t | 104 |   |
| 48 | u | 94 |   |
| 49 | v | 85 |   |
| 50 | w | 78 |   |
| 51 | x | 63 |   |
| 52 | y | 59 |   |
| 53 | z | 57 |   |

# 2 Entry composition

There are 56 unique types of molecules in this entry. The entry contains 143507 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 Large ribosomal subunit protein bL33.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 51 | Total | C | N | O | S | 0 | 0 |
| | | | 418 | 268 | 76 | 73 | 1 | | |

- Molecule 2 is a protein called Large ribosomal subunit protein bL34.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 2 | 1 | 46 | Total | C | N | O | S | 0 | 0 |
| | | | 377 | 228 | 90 | 57 | 2 | | |

- Molecule 3 is a protein called Large ribosomal subunit protein bL35.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 3 | 2 | 64 | Total | C | N | O | S | 0 | 0 |
| | | | 504 | 323 | 105 | 74 | 2 | | |

- Molecule 4 is a protein called Large ribosomal subunit protein bL36.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 4 | 3 | 38 | Total | C | N | O | S | 0 | 0 |
| | | | 302 | 185 | 65 | 48 | 4 | | |

- Molecule 5 is a protein called Large ribosomal subunit protein bL31.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 5 | 4 | 70 | Total | C | N | O | S | 0 | 0 |
| | | | 540 | 333 | 103 | 98 | 6 | | |

- Molecule 6 is a RNA chain called 16s rRNA (1530-MER).

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 6 | A | 1530 | Total | C | N | O | P | 0 | 0 |
| | | | 32847 | 14657 | 6028 | 10632 | 1530 | | |

- Molecule 7 is a protein called Small ribosomal subunit protein uS2.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 7 | B | 224 | Total | C | N | O | S | 0 | 0 |
| | | | 1749 | 1106 | 315 | 320 | 8 | | |

- Molecule 8 is a protein called Small ribosomal subunit protein uS3.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 8 | C | 206 | Total | C | N | O | S | 0 | 0 |
| | | | 1623 | 1028 | 305 | 287 | 3 | | |

- Molecule 9 is a protein called Small ribosomal subunit protein uS4.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 9 | D | 205 | Total | C | N | O | S | 0 | 0 |
| | | | 1644 | 1025 | 316 | 298 | 5 | | |

- Molecule 10 is a protein called Small ribosomal subunit protein uS5.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 10 | E | 156 | Total | C | N | O | S | 0 | 0 |
| | | | 1155 | 719 | 219 | 211 | 6 | | |

- Molecule 11 is a protein called Small ribosomal subunit protein bS6.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 11 | F | 103 | Total | C | N | O | S | 0 | 0 |
| | | | 832 | 524 | 151 | 150 | 7 | | |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| F | 62 | MET | LEU | variant | UNP A0A2N4W582 |

- Molecule 12 is a protein called Small ribosomal subunit protein uS7.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 12 | G | 153 | Total | C | N | O | S | 0 | 0 |
| | | | 1204 | 751 | 231 | 218 | 4 | | |

- Molecule 13 is a protein called Small ribosomal subunit protein uS8.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 13 | H | 129 | Total | C | N | O | S | 0 | 0 |
| | | | 977 | 616 | 171 | 184 | 6 | | |

- Molecule 14 is a protein called Small ribosomal subunit protein uS9.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 14 | I | 126 | Total | C | N | O | S | 0 | 0 |
| | | | 1010 | 628 | 202 | 177 | 3 | | |

- Molecule 15 is a protein called Small ribosomal subunit protein uS10.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 15 | J | 98 | Total | C | N | O | S | 0 | 0 |
| | | | 788 | 493 | 151 | 143 | 1 | | |

- Molecule 16 is a protein called Small ribosomal subunit protein uS11.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 16 | K | 117 | Total | C | N | O | S | 0 | 0 |
| | | | 878 | 541 | 173 | 161 | 3 | | |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| K | 119 | IAS | ASN | modified residue | UNP A0A1C1EGM1 |

- Molecule 17 is a protein called Small ribosomal subunit protein uS12.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 17 | L | 123 | Total | C | N | O | S | 0 | 0 |
| | | | 958 | 592 | 196 | 165 | 5 | | |

- Molecule 18 is a protein called Small ribosomal subunit protein uS13.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 18 | M | 116 | Total | C | N | O | S | 0 | 0 |
| | | | 907 | 564 | 181 | 158 | 4 | | |

- Molecule 19 is a protein called Small ribosomal subunit protein uS14.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 19 | N | 100 | Total | C | N | O | S | 0 | 0 |
| | | | 805 | 500 | 164 | 138 | 3 | | |

- Molecule 20 is a protein called Small ribosomal subunit protein uS15.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 20 | O | 88 | Total | C | N | O | S | 0 | 0 |
| | | | 710 | 438 | 144 | 127 | 1 | | |

- Molecule 21 is a protein called Small ribosomal subunit protein bS16.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 21 | P | 81 | Total | C | N | O | S | 0 | 0 |
| | | | 636 | 397 | 127 | 111 | 1 | | |

- Molecule 22 is a protein called Small ribosomal subunit protein uS17.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 22 | Q | 79 | Total | C | N | O | S | 0 | 0 |
| | | | 639 | 402 | 121 | 112 | 4 | | |

- Molecule 23 is a protein called Small ribosomal subunit protein bS18.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 23 | R | 62 | Total | C | N | O | 0 | 0 |
| | | | 507 | 321 | 94 | 92 | | |

- Molecule 24 is a protein called Small ribosomal subunit protein uS19.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 24 | S | 84 | Total | C | N | O | S | 0 | 0 |
| | | | 667 | 426 | 127 | 112 | 2 | | |

- Molecule 25 is a protein called Small ribosomal subunit protein bS20.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 25 | T | 86 | Total | C | N | O | S | 0 | 0 |
| | | | 669 | 413 | 138 | 115 | 3 | | |

- Molecule 26 is a protein called Small ribosomal subunit protein bS21.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 26 | U | 70 | Total | C | N | O | S | 0 | 0 |
| | | | 589 | 366 | 125 | 97 | 1 | | |

- Molecule 27 is a protein called Ribosomal subunit interface protein.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 27 | X | 98 | Total | C | N | O | S | 0 | 0 |
| | | | 778 | 484 | 149 | 142 | 3 | | |

- Molecule 28 is a RNA chain called 23S rRNA (2901-MER).

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 28 | a | 2901 | Total | C | N | O | P | 0 | 0 |
| | | | 62284 | 27795 | 11452 | 20136 | 2901 | | |

- Molecule 29 is a RNA chain called 5S rRNA (119-MER).

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 29 | b | 116 | Total | C | N | O | P | 0 | 0 |
| | | | 2483 | 1106 | 453 | 808 | 116 | | |

- Molecule 30 is a protein called Large ribosomal subunit protein uL2.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 30 | c | 271 | Total | C | N | O | S | 0 | 0 |
| | | | 2080 | 1286 | 423 | 364 | 7 | | |

- Molecule 31 is a protein called Large ribosomal subunit protein uL3.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 31 | d | 209 | Total | C | N | O | S | 0 | 0 |
| | | | 1567 | 981 | 289 | 294 | 3 | | |

- Molecule 32 is a protein called Large ribosomal subunit protein uL4.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 32 | e | 201 | Total | C | N | O | S | 0 | 0 |
| | | | 1554 | 975 | 284 | 290 | 5 | | |

- Molecule 33 is a protein called Large ribosomal subunit protein uL5.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 33 | f | 177 | Total | C | N | O | S | 0 | 0 |
| | | | 1410 | 899 | 249 | 256 | 6 | | |

- Molecule 34 is a protein called Large ribosomal subunit protein uL6.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 34 | g | 176 | Total | C | N | O | S | 0 | 0 |
| | | | 1319 | 830 | 243 | 244 | 2 | | |

- Molecule 35 is a protein called Large ribosomal subunit protein bL9.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 35 | h | 148 | Total | C | N | O | S | 0 | 0 |
| | | | 1099 | 693 | 197 | 208 | 1 | | |

- Molecule 36 is a protein called Large ribosomal subunit protein uL13.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 36 | i | 142 | Total | C | N | O | S | 0 | 0 |
| | | | 1134 | 716 | 211 | 202 | 5 | | |

- Molecule 37 is a protein called Large ribosomal subunit protein uL14.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 37 | j | 123 | Total | C | N | O | S | 0 | 0 |
| | | | 947 | 594 | 181 | 166 | 6 | | |

- Molecule 38 is a protein called Large ribosomal subunit protein uL15.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 38 | k | 144 | Total | C | N | O | S | 0 | 0 |
| | | | 1063 | 658 | 211 | 191 | 3 | | |

- Molecule 39 is a protein called Large ribosomal subunit protein uL16.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 39 | l | 136 | Total | C | N | O | S | 0 | 0 |
| | | | 1074 | 685 | 204 | 179 | 6 | | |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| l | 82 | MS6 | MET | modified residue | UNP A0A1C1EGZ5 |

- Molecule 40 is a protein called Large ribosomal subunit protein bL17.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 40 | m | 119 | Total | C | N | O | S | 0 | 0 |
| | | | 950 | 588 | 195 | 162 | 5 | | |

- Molecule 41 is a protein called Large ribosomal subunit protein uL18.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 41 | n | 116 | Total | C | N | O | 0 | 0 |
| | | | 892 | 552 | 178 | 162 | | |

- Molecule 42 is a protein called Large ribosomal subunit protein bL19.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 42 | o | 114 | Total | C | N | O | S | 0 | 0 |
| | | | 917 | 574 | 179 | 163 | 1 | | |

- Molecule 43 is a protein called Large ribosomal subunit protein bL20.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 43 | p | 117 | Total | C | N | O | 0 | 0 |
| | | | 947 | 604 | 192 | 151 | | |

- Molecule 44 is a protein called Large ribosomal subunit protein bL21.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 44 | q | 103 | Total | C | N | O | S | 0 | 0 |
| | | | 816 | 517 | 153 | 144 | 2 | | |

- Molecule 45 is a protein called Large ribosomal subunit protein uL22.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 45 | r | 110 | Total | C | N | O | S | 0 | 0 |
| | | | 855 | 530 | 166 | 156 | 3 | | |

- Molecule 46 is a protein called Large ribosomal subunit protein uL23.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 46 | s | 93 | Total | C | N | O | S | 0 | 0 |
| | | | 739 | 467 | 139 | 131 | 2 | | |

- Molecule 47 is a protein called Large ribosomal subunit protein uL24.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 47 | t | 102 | Total | C | N | O | 0 | 0 |
| | | | 779 | 492 | 146 | 141 | | |

- Molecule 48 is a protein called Large ribosomal subunit protein bL25.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 48 | u | 94 | Total | C | N | O | S | 0 | 0 |
| | | | 749 | 477 | 136 | 134 | 2 | | |

- Molecule 49 is a protein called Large ribosomal subunit protein bL27.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 49 | v | 78 | Total | C | N | O | S | 0 | 0 |
| | | | 592 | 367 | 118 | 106 | 1 | | |

- Molecule 50 is a protein called Large ribosomal subunit protein bL28.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 50 | w | 77 | Total | C | N | O | S | 0 | 0 |
| | | | 625 | 388 | 129 | 106 | 2 | | |

- Molecule 51 is a protein called Large ribosomal subunit protein uL29.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 51 | x | 62 | Total | C | N | O | S | 0 | 0 |
| | | | 499 | 308 | 98 | 92 | 1 | | |

- Molecule 52 is a protein called Large ribosomal subunit protein uL30.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 52 | y | 58 | Total | C | N | O | S | 0 | 0 |
| | | | 447 | 279 | 87 | 79 | 2 | | |

- Molecule 53 is a protein called Large ribosomal subunit protein bL32.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 53 | z | 56 | Total | C | N | O | S | 0 | 0 |
| | | | 443 | 269 | 94 | 79 | 1 | | |

- Molecule 54 is ZINC ION (CCD ID: ZN) (formula: Zn).

| Mol | Chain | Residues | Atoms | | AltConf |
|---|---|---|---|---|---|
| 54 | 3 | 1 | Total | Zn | 0 |
| | | | 1 | 1 | |
| 54 | 4 | 1 | Total | Zn | 0 |
| | | | 1 | 1 | |

- Molecule 55 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

| Mol | Chain | Residues | Atoms | | AltConf |
|---|---|---|---|---|---|
| 55 | A | 93 | Total | Mg | 0 |
| | | | 93 | 93 | |
| 55 | K | 1 | Total | Mg | 0 |
| | | | 1 | 1 | |
| 55 | N | 1 | Total | Mg | 0 |
| | | | 1 | 1 | |
| 55 | Q | 1 | Total | Mg | 0 |
| | | | 1 | 1 | |
| 55 | a | 252 | Total | Mg | 0 |
| | | | 252 | 252 | |
| 55 | b | 5 | Total | Mg | 0 |
| | | | 5 | 5 | |
| 55 | c | 1 | Total | Mg | 0 |
| | | | 1 | 1 | |
| 55 | d | 1 | Total | Mg | 0 |
| | | | 1 | 1 | |
| 55 | p | 1 | Total | Mg | 0 |
| | | | 1 | 1 | |
| 55 | w | 1 | Total | Mg | 0 |
| | | | 1 | 1 | |
| 55 | z | 2 | Total | Mg | 0 |
| | | | 2 | 2 | |

- Molecule 56 is POTASSIUM ION (CCD ID: K) (formula: K).

| Mol | Chain | Residues | Atoms | | AltConf |
|---|---|---|---|---|---|
| 56 | A | 46 | Total | K | 0 |
| | | | 46 | 46 | |

*Continued on next page...*

*Continued from previous page...*

| Mol | Chain | Residues | Atoms | AltConf |
|---|---|---|---|---|
| 56 | L | 1 | Total K<br>1 1 | 0 |
| 56 | a | 113 | Total K<br>113 113 | 0 |
| 56 | b | 1 | Total K<br>1 1 | 0 |
| 56 | c | 5 | Total K<br>5 5 | 0 |
| 56 | d | 1 | Total K<br>1 1 | 0 |
| 56 | e | 1 | Total K<br>1 1 | 0 |
| 56 | f | 1 | Total K<br>1 1 | 0 |

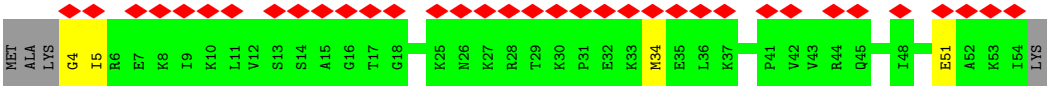
# 3 Residue-property plots (i)

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: Large ribosomal subunit protein bL33

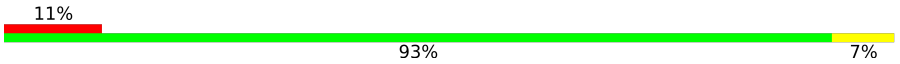
Chain 0:

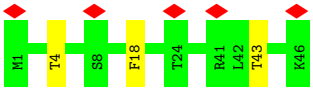



• Molecule 2: Large ribosomal subunit protein bL34

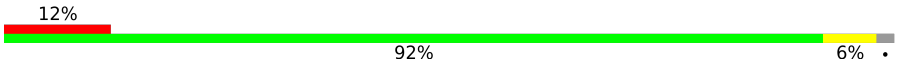
Chain 1:

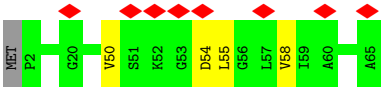



• Molecule 3: Large ribosomal subunit protein bL35

Chain 2:

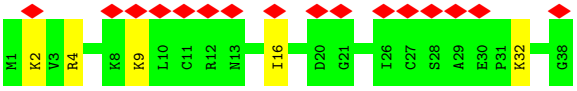



• Molecule 4: Large ribosomal subunit protein bL36

Chain 3:

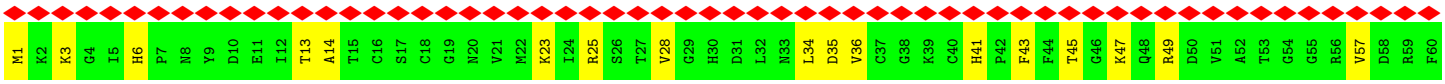



• Molecule 5: Large ribosomal subunit protein bL31

Chain 4:



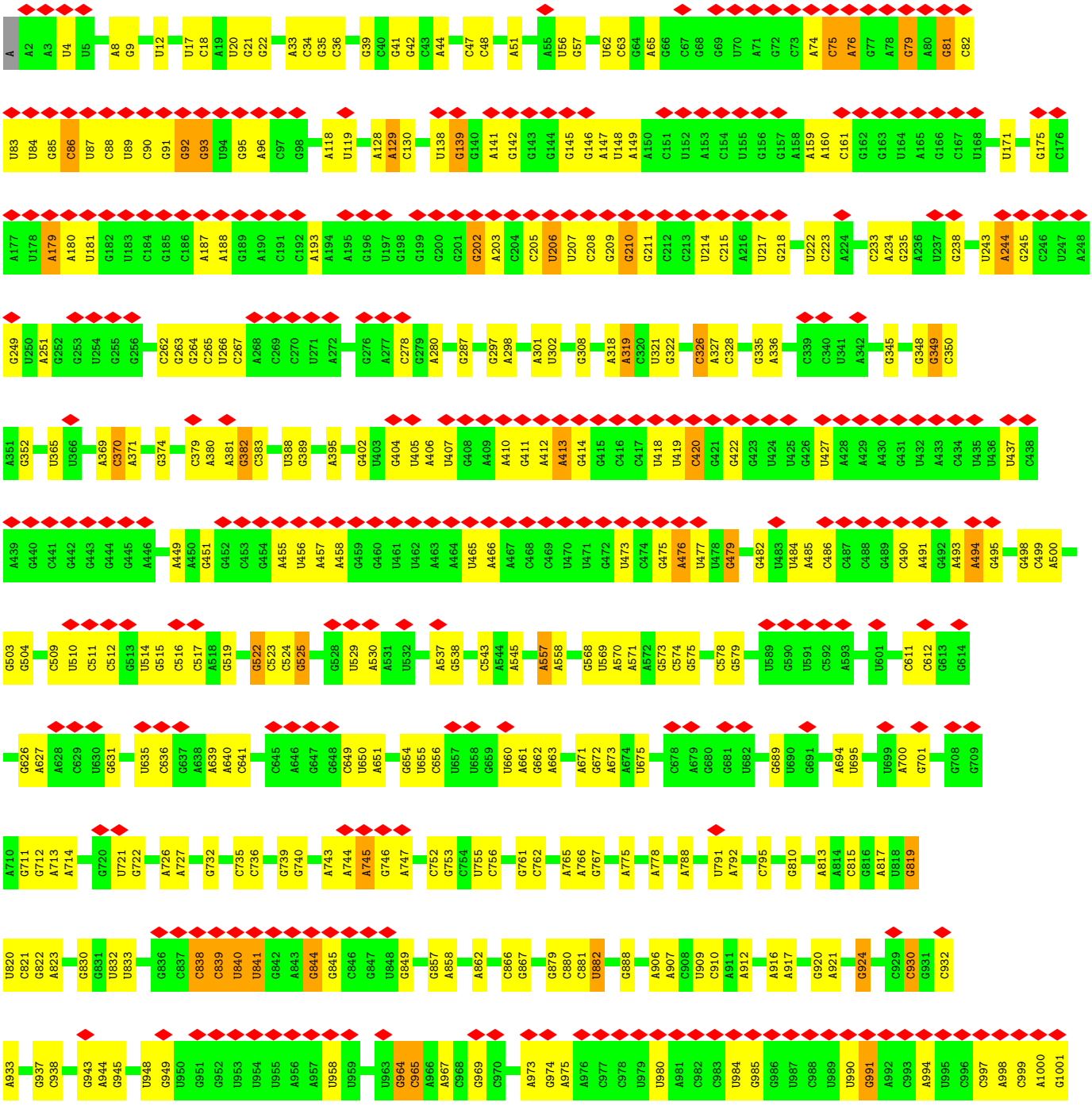



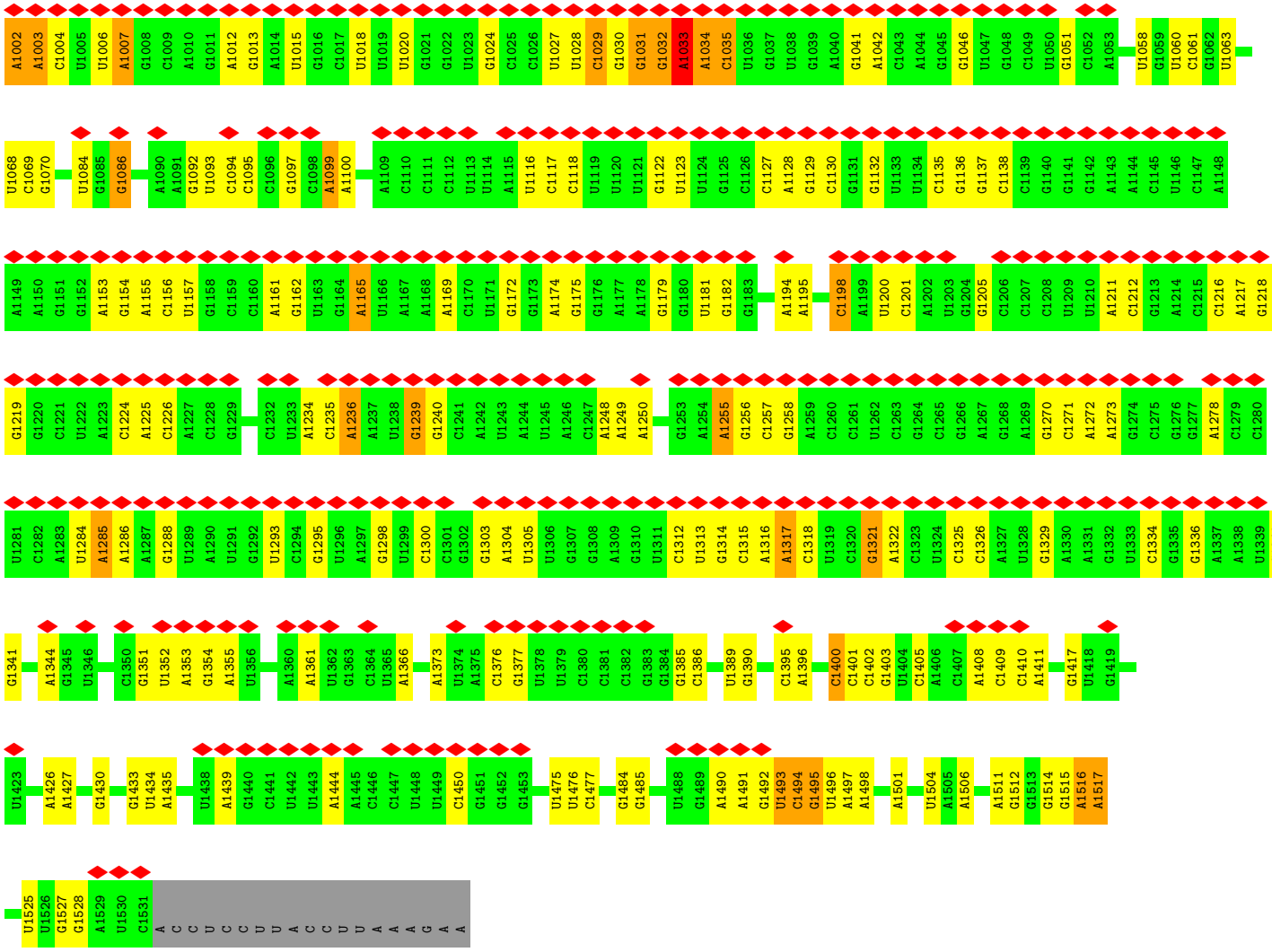



• Molecule 6: 16s rRNA (1530-MER)

Chain A:

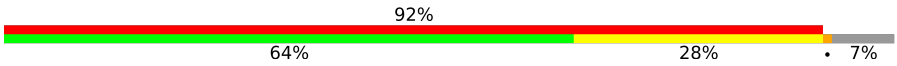


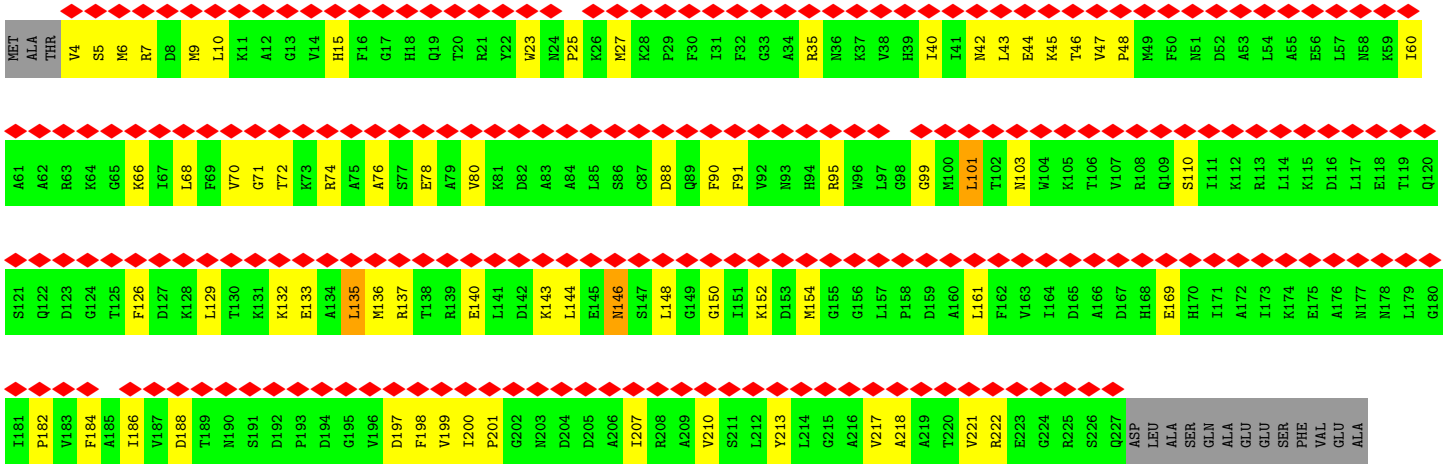





• Molecule 7: Small ribosomal subunit protein uS2

Chain B:



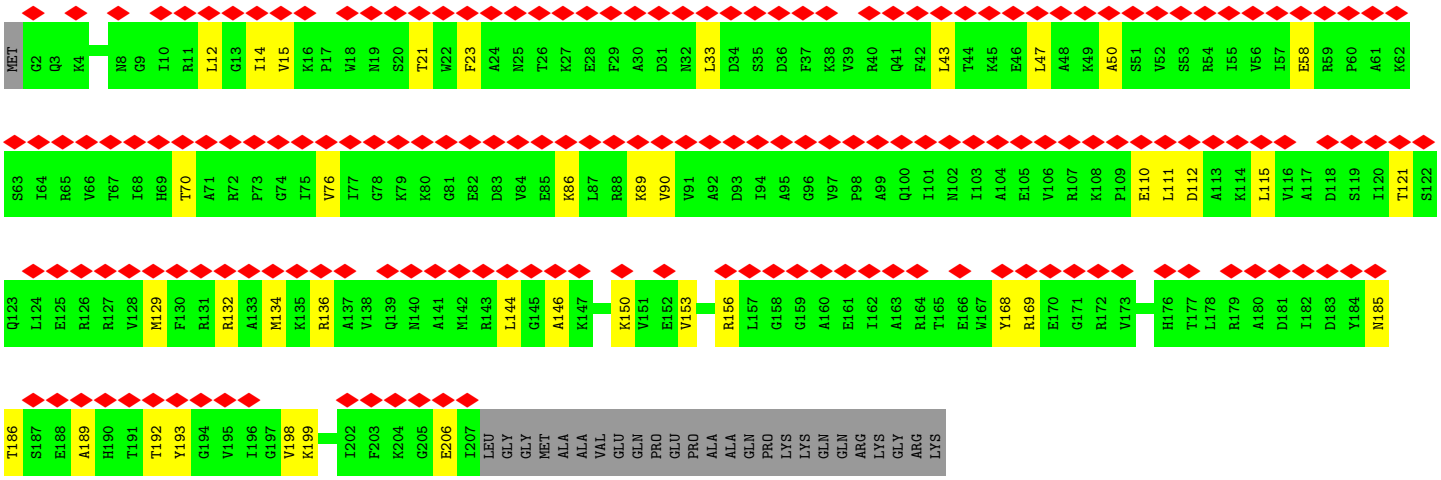






• Molecule 8: Small ribosomal subunit protein uS3

Chain C:




• Molecule 9: Small ribosomal subunit protein uS4

Chain D:



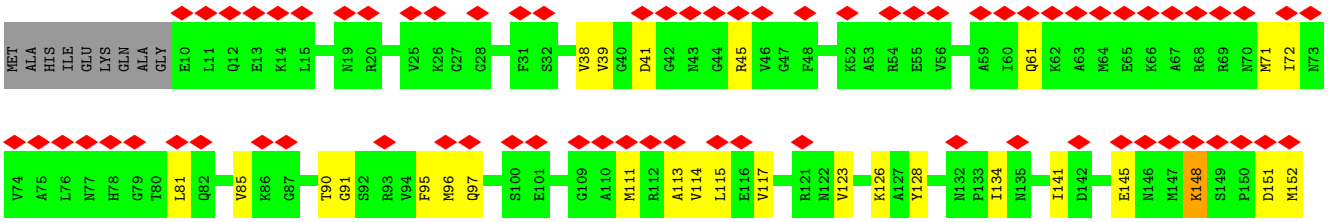


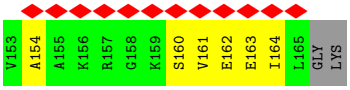


• Molecule 10: Small ribosomal subunit protein uS5

Chain E:



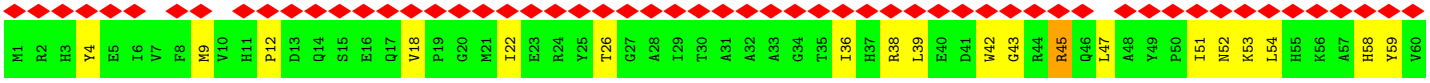



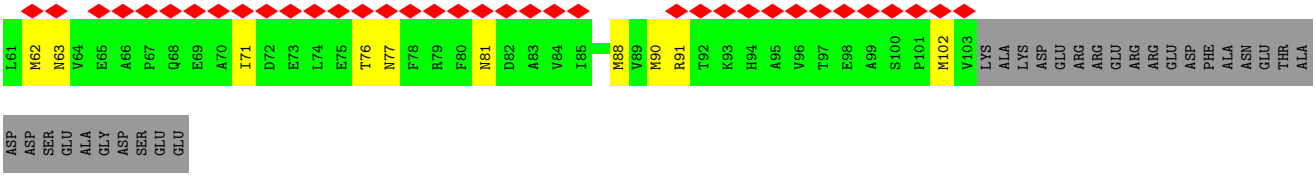



• Molecule 11: Small ribosomal subunit protein bS6

Chain F:



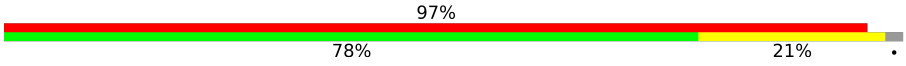



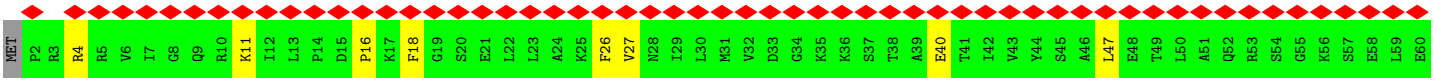


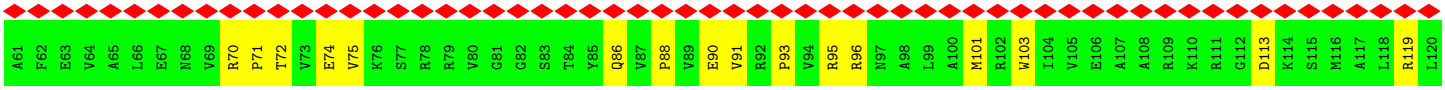


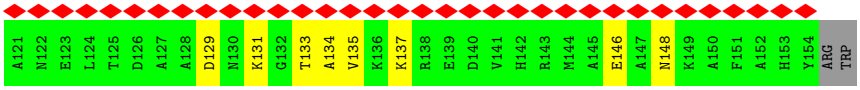
• Molecule 12: Small ribosomal subunit protein uS7

Chain G:



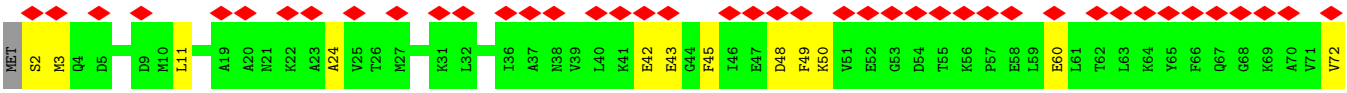



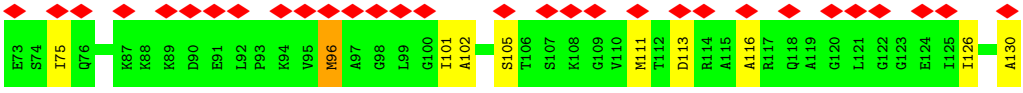




• Molecule 13: Small ribosomal subunit protein uS8

Chain H:

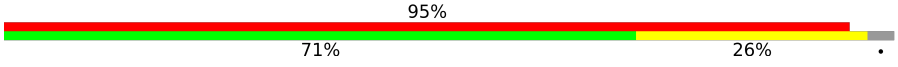


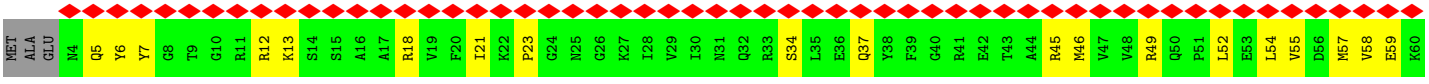



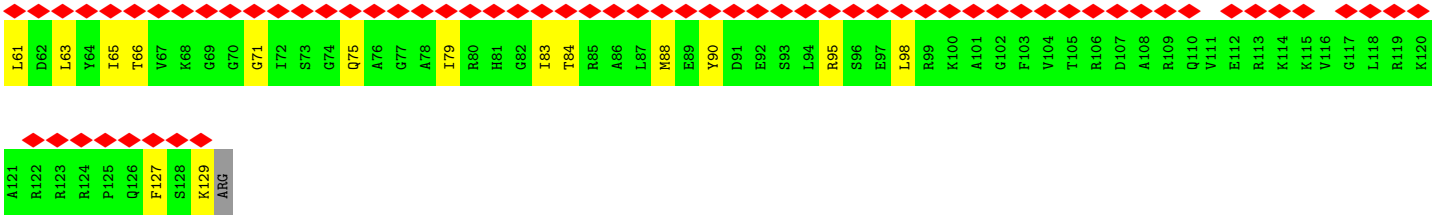




• Molecule 14: Small ribosomal subunit protein uS9

Chain I:

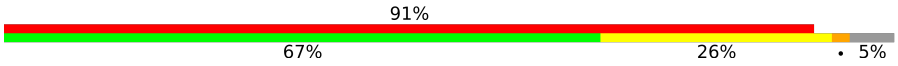


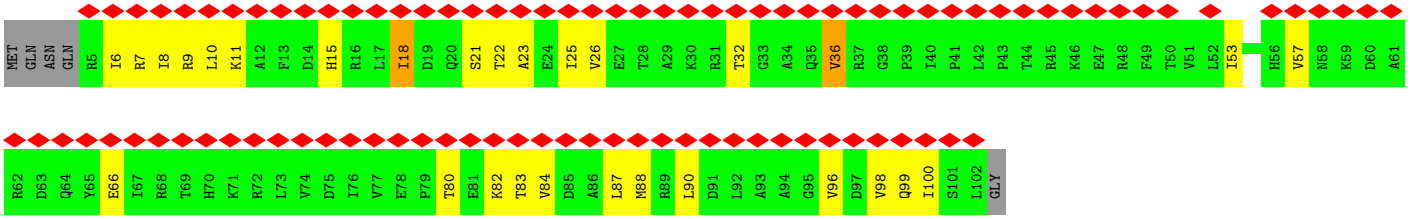






• Molecule 15: Small ribosomal subunit protein uS10

Chain J:

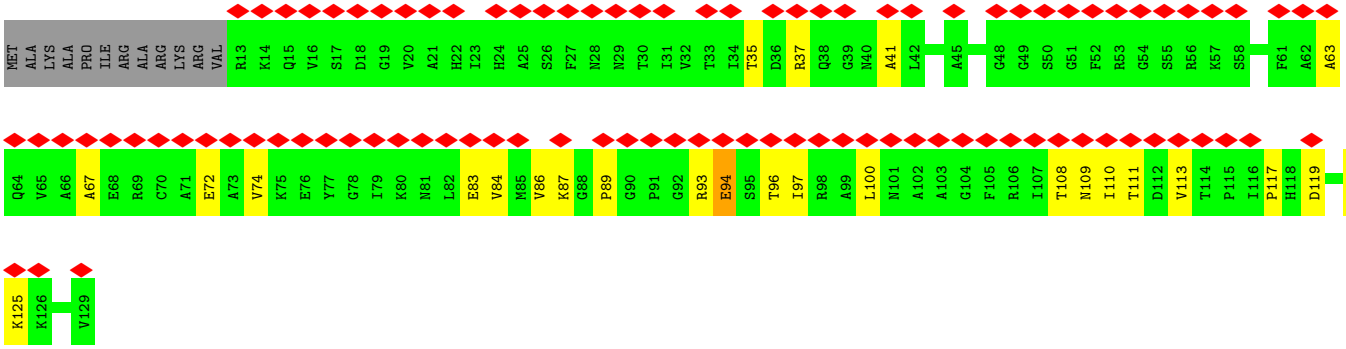



• Molecule 16: Small ribosomal subunit protein uS11

Chain K:

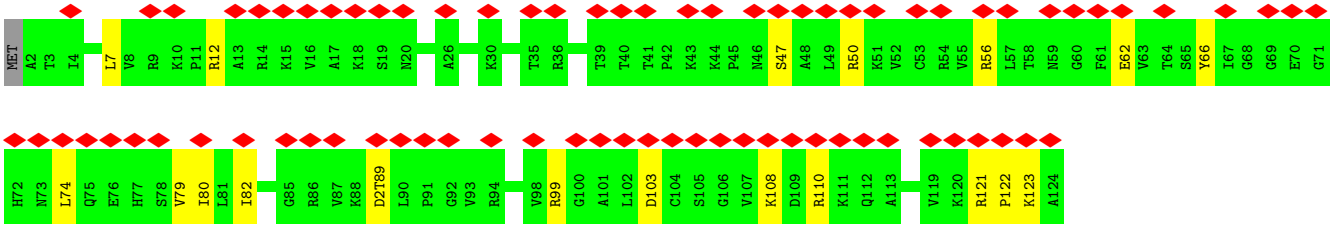



• Molecule 17: Small ribosomal subunit protein uS12

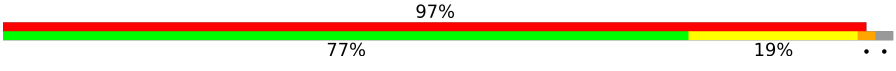
Chain L:

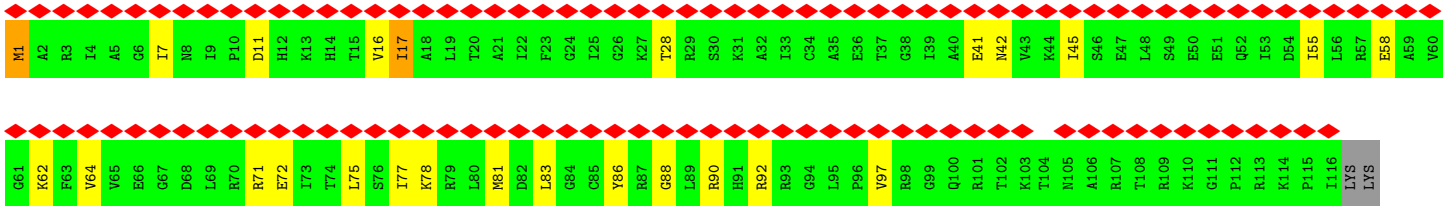


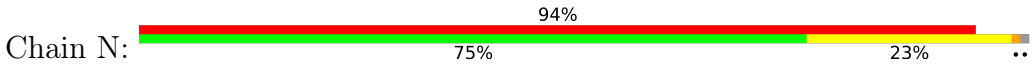

• Molecule 18: Small ribosomal subunit protein uS13

Chain M:

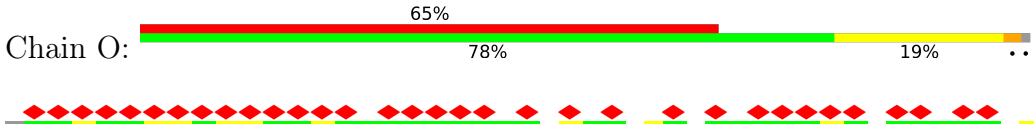




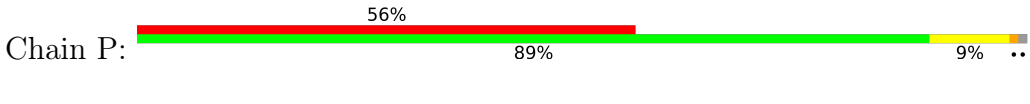

• Molecule 19: Small ribosomal subunit protein uS14



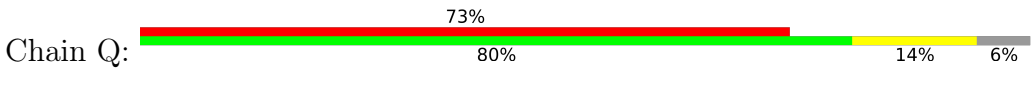

• Molecule 20: Small ribosomal subunit protein uS15




• Molecule 21: Small ribosomal subunit protein bS16

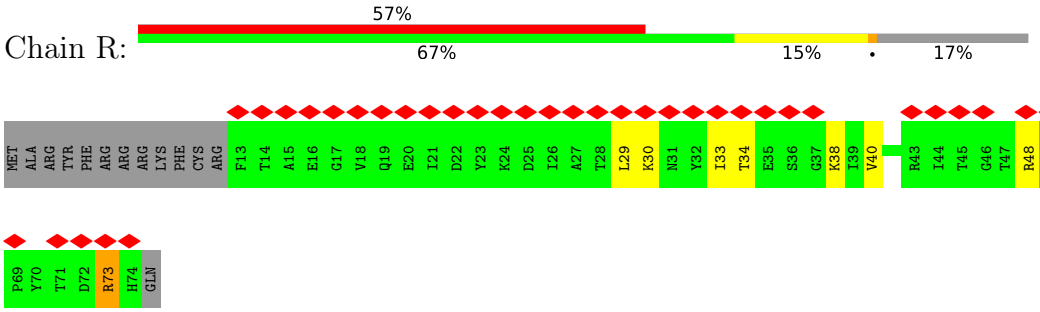



• Molecule 22: Small ribosomal subunit protein uS17



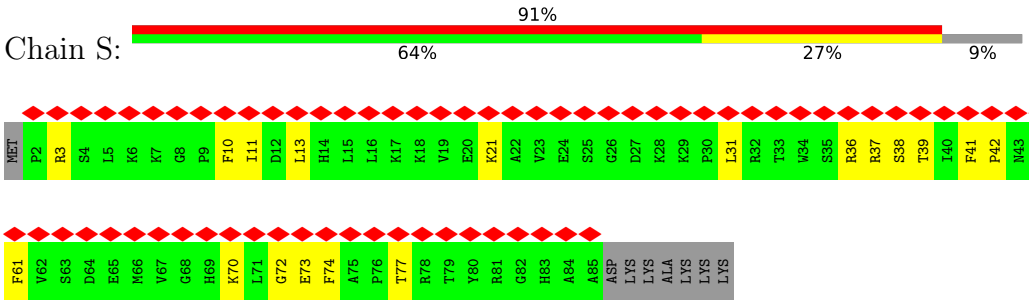
• Molecule 23: Small ribosomal subunit protein bS18

Chain R:



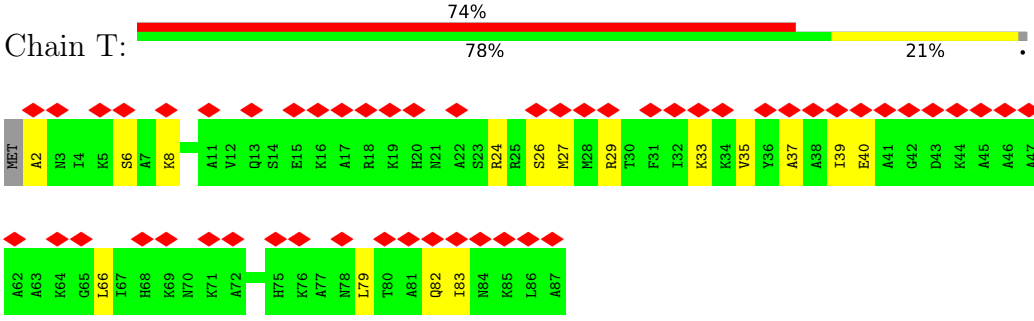

• Molecule 24: Small ribosomal subunit protein uS19

Chain S:



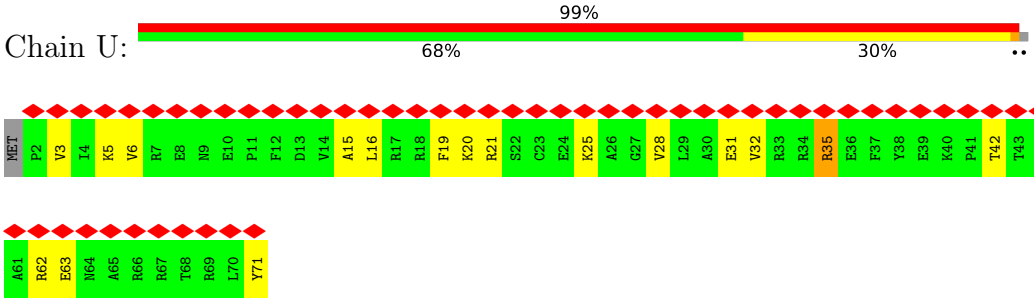

• Molecule 25: Small ribosomal subunit protein bS20

Chain T:



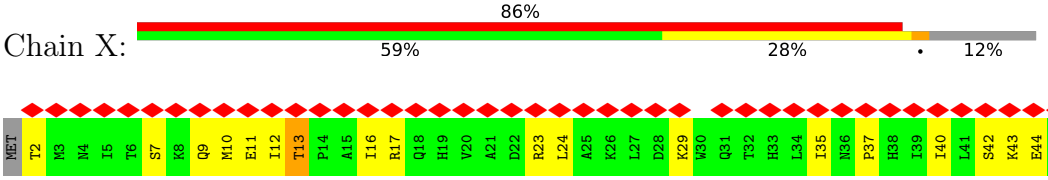

• Molecule 26: Small ribosomal subunit protein bS21

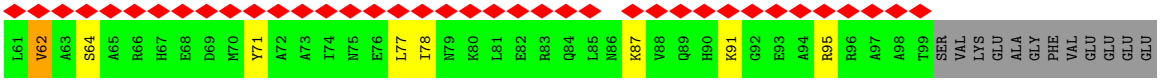
Chain U:




• Molecule 27: Ribosomal subunit interface protein

Chain X:

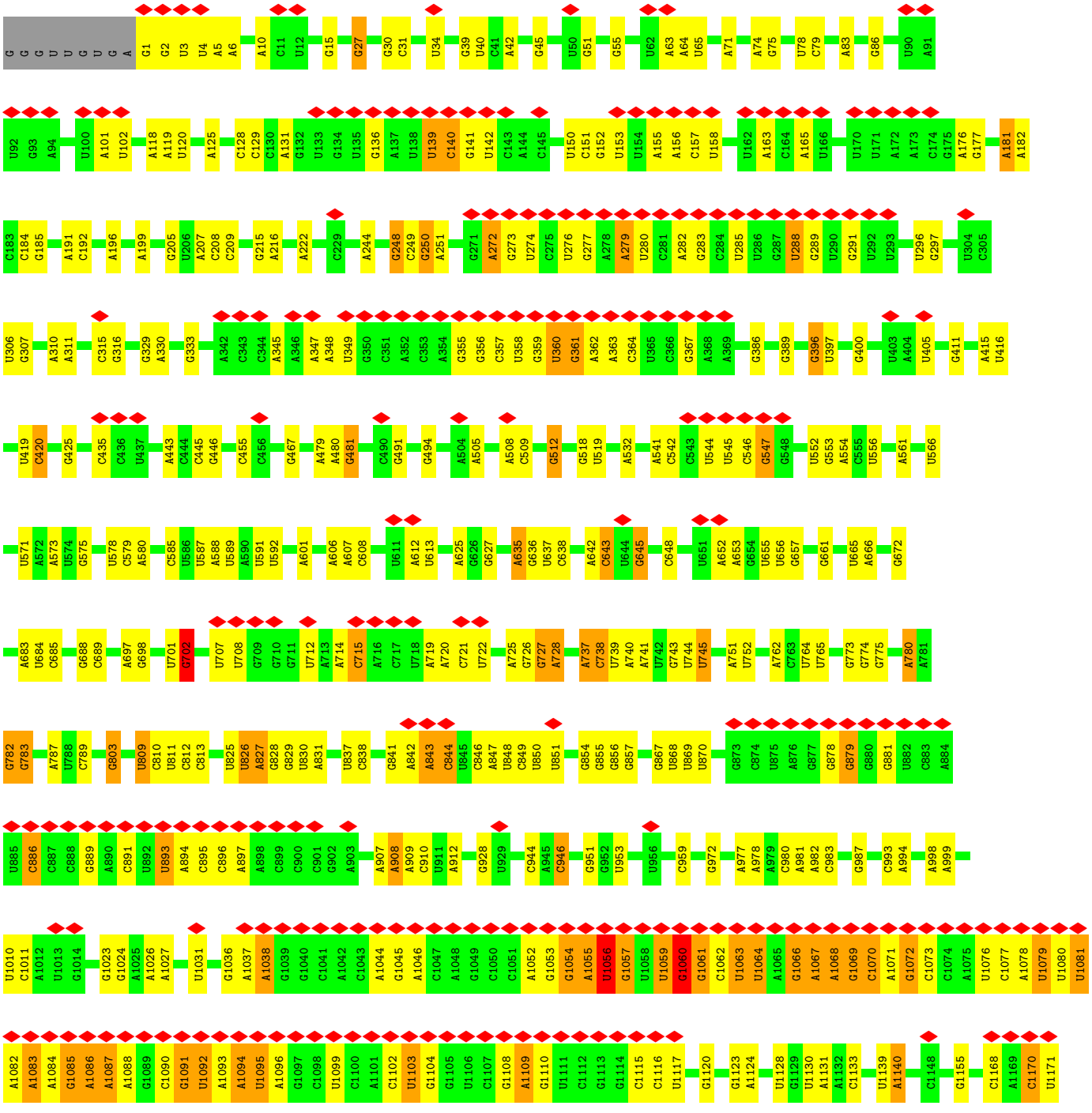


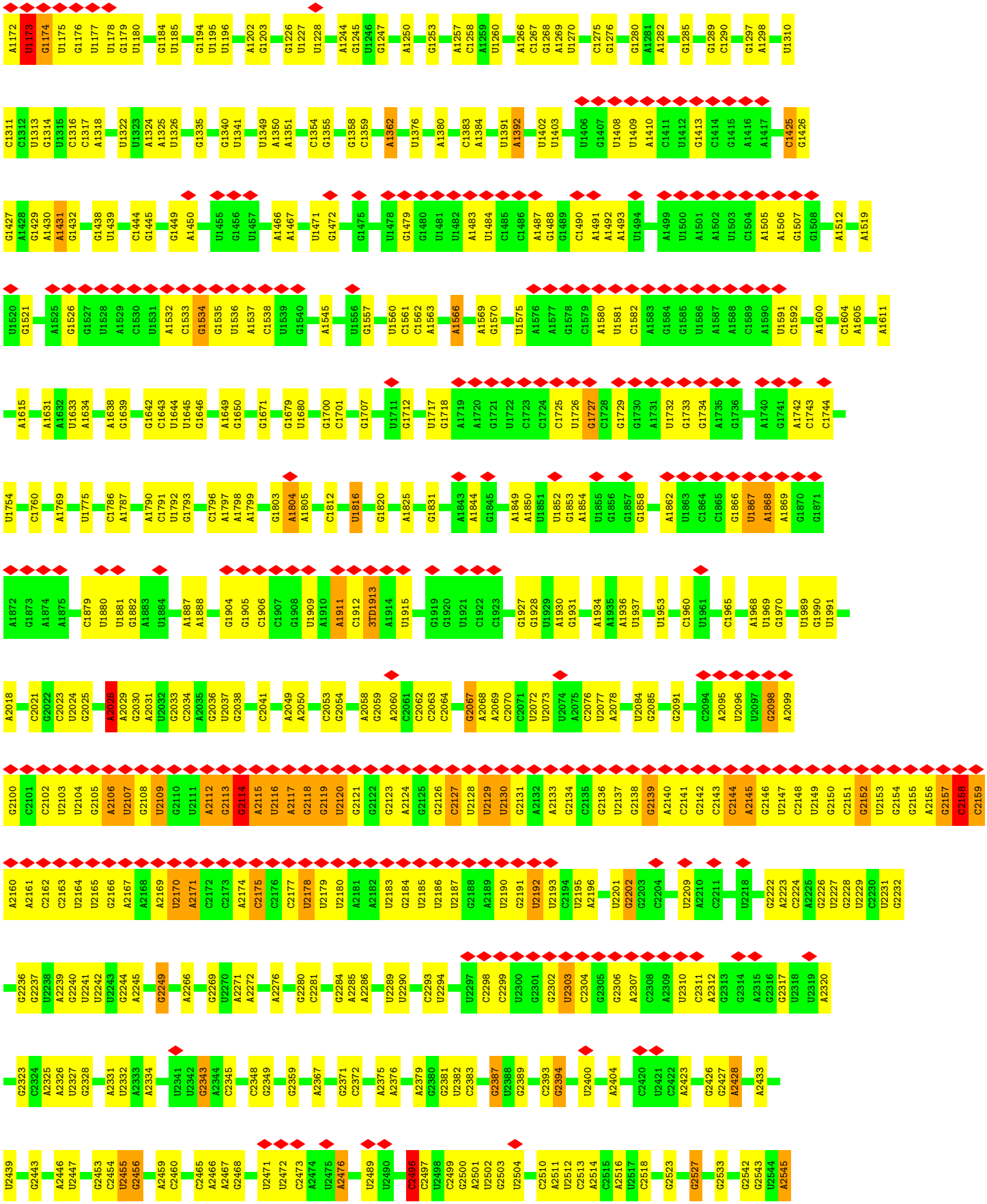


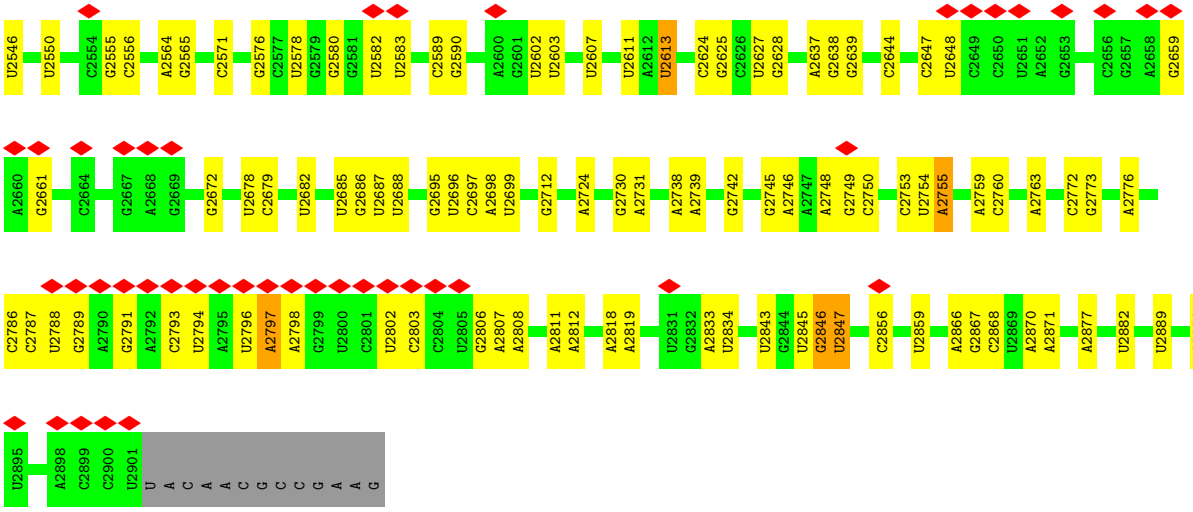

• Molecule 28: 23S rRNA (2901-MER)

Chain a:



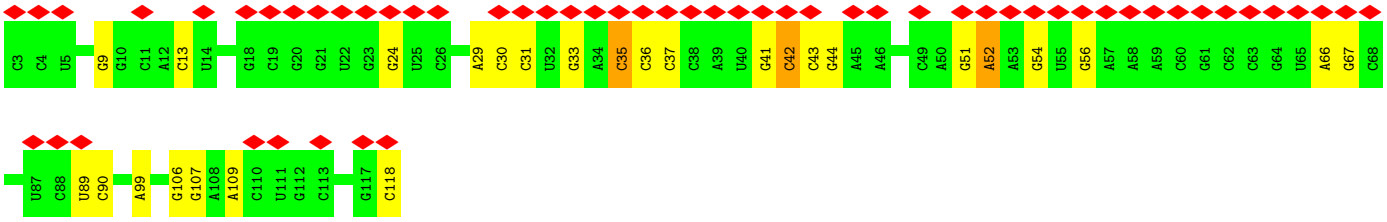

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C1311 G1312 U1313 G1314 U1315 C1316 C1317 A1318 U1322 U1323 A1324 A1325 U1326 G1335 G1340 U1341 U1349 A1350 A1351 C1354 G1355 G1358 C1359 A1362 U1376 A1380 C1383 A1384 U1391 A1392 U1402 U1403 U1406 G1407 U1408 U1409 A1410 C1411 U1412 G1413 C1414 G1415 A1416 A1417 C1425 G1426
G1427 A1428 G1429 A1430 A1431 G1432 G1438 U1439 C1444 G1445 G1449 A1450 U1455 G1456 U1457 A1466 A1467 U1471 G1472 G1475 U1478 G1479 G1480 U1481 U1482 A1483 U1484 C1485 C1486 A1487 G1488 G1489 C1490 A1491 A1492 A1493 U1494 A1499 U1500 A1501 A1502 U1503 C1504 A1505 A1506 G1507 G1508 A1512 A1519
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A1615 A1631 A1632 U1633 A1634 A1638 G1639 G1642 C1643 U1644 U1645 G1646 A1649 G1650 G1671 G1679 U1680 G1700 C1701 G1707 U1711 G1712 U1717 G1718 A1719 A1720 G1721 U1722 C1723 C1724 C1725 U1726 G1727 C1728 G1729 G1730 A1731 U1732 G1733 G1734 A1735 G1736 A1740 G1741 A1742 C1743 C1744
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A1872 G1873 A1874 A1875 C1879 U1880 U1881 G1882 A1883 U1884 A1887 A1888 G1904 G1905 C1906 C1907 G1908 U1909 A1910 A1911 C1912 3TD1913 A1914 U1915 G1919 G1920 U1921 C1922 C1923 G1927 G1928 U1929 A1930 G1931 A1934 A1935 A1936 U1937 U1953 C1960 U1961 C1965 A1968 U1969 G1970 U1989 G1990 U1991
A2018 C2021 G2022 C2023 U2024 G2025 A2028 A2029 G2030 A2031 U2032 G2033 C2034 A2035 G2036 U2037 G2038 C2041 A2049 A2050 C2053 G2054 A2058 G2059 A2060 C2061 C2062 C2063 C2064 G2067 A2068 A2069 C2070 C2071 U2072 U2073 U2074 A2075 C2076 U2077 A2078 U2084 G2085 G2091 C2094 A2095 U2096 U2097 G2098 A2099
G2100 C2101 C2102 U2103 U2104 U2105 A2106 U2107 G2108 U2109 C2110 U2111 A2112 C2113 G2114 A2115 U2116 A2117 G2118 G2119 U2120 G2121 G2122 G2123 A2124 G2125 G2126 C2127 U2128 U2129 U2130 G2131 A2132 A2133 G2134 C2135 G2136 U2137 G2138 G2139 A2140 C2141 G2142 C2143 C2144 A2145 G2146 U2147 C2148 U2149 G2150 C2151 G2152 U2153 G2154 G2155 A2156 G2157 C2158 C2159
A2160 A2161 C2162 C2163 U2164 U2165 G2166 A2167 A2168 A2169 U2170 A2171 C2172 C2173 A2174 C2175 C2176 C2177 U2178 U2179 U2180 A2181 A2182 U2183 G2184 U2185 U2186 U2187 G2188 A2189 U2190 G2191 U2192 U2193 C2194 U2195 A2196 U2201 G2202 G2203 C2204 U2209 A2210 C2211 U2218 G2222 A2223 C2224 A2225 G2226 U2227 G2228 U2229 C2230 U2231 G2232
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U2439 G2443 A2446 U2447 G2453 C2454 U2455 G2456 A2459 C2460 C2465 A2466 A2467 G2468 U2471 U2472 C2473 A2474 U2475 A2476 U2489 U2490 C2496 C2497 U2498 C2499 G2500 A2501 U2502 G2503 U2504 C2510 A2511 U2512 C2513 A2514 G2515 A2516 U2517 C2518 G2523 G2527 G2533 G2542 G2543 U2544 A2545




• Molecule 29: 5S rRNA (119-MER)

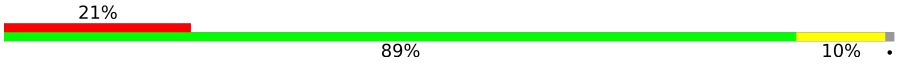
Chain b:

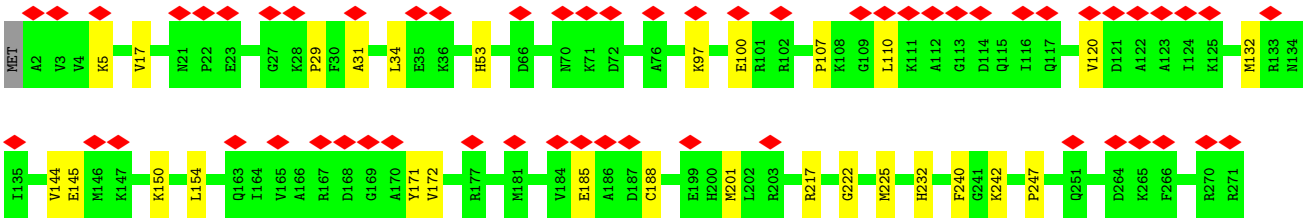



• Molecule 30: Large ribosomal subunit protein uL2

Chain c:

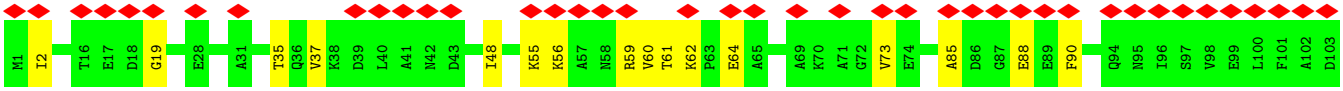


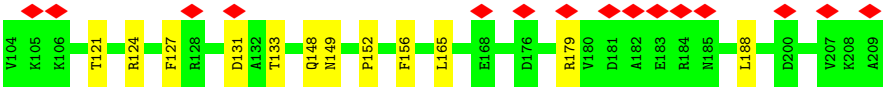




• Molecule 31: Large ribosomal subunit protein uL3

Chain d:

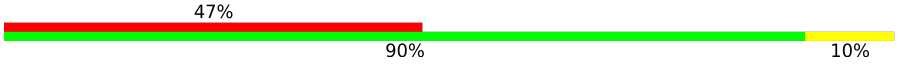


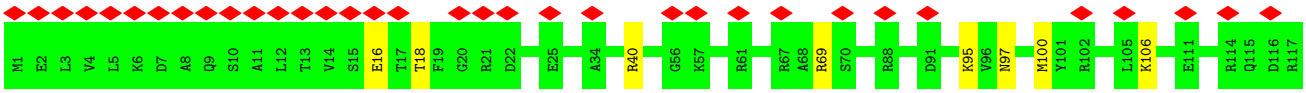



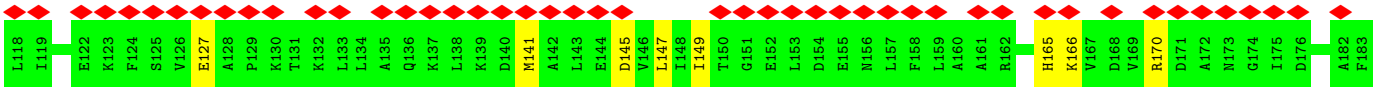


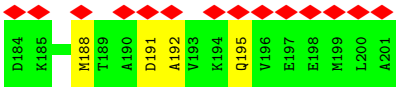

• Molecule 32: Large ribosomal subunit protein uL4

Chain e:



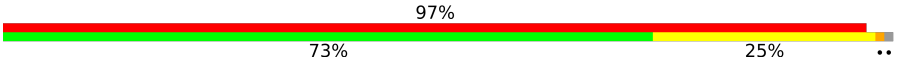



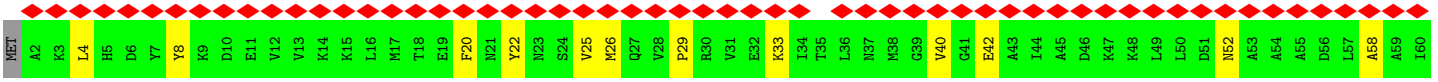



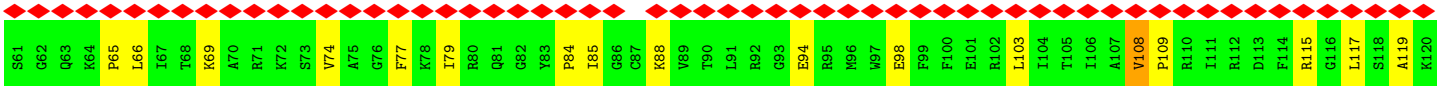




• Molecule 33: Large ribosomal subunit protein uL5

Chain f:



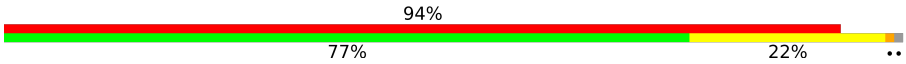



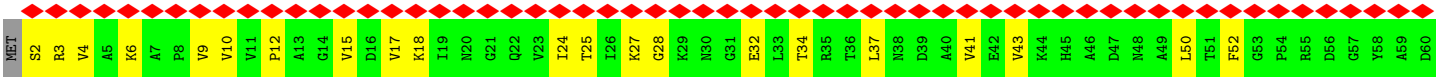


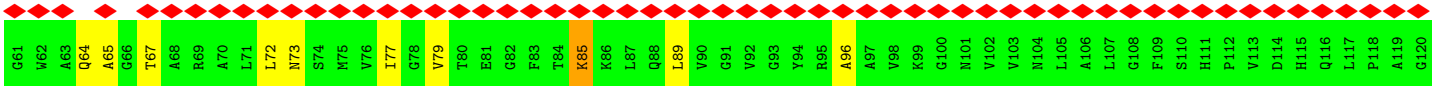


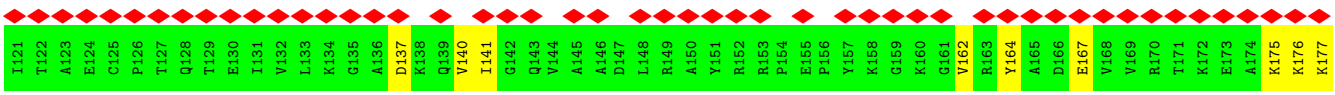
• Molecule 34: Large ribosomal subunit protein uL6

Chain g:



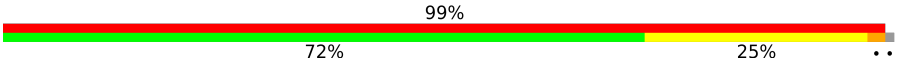



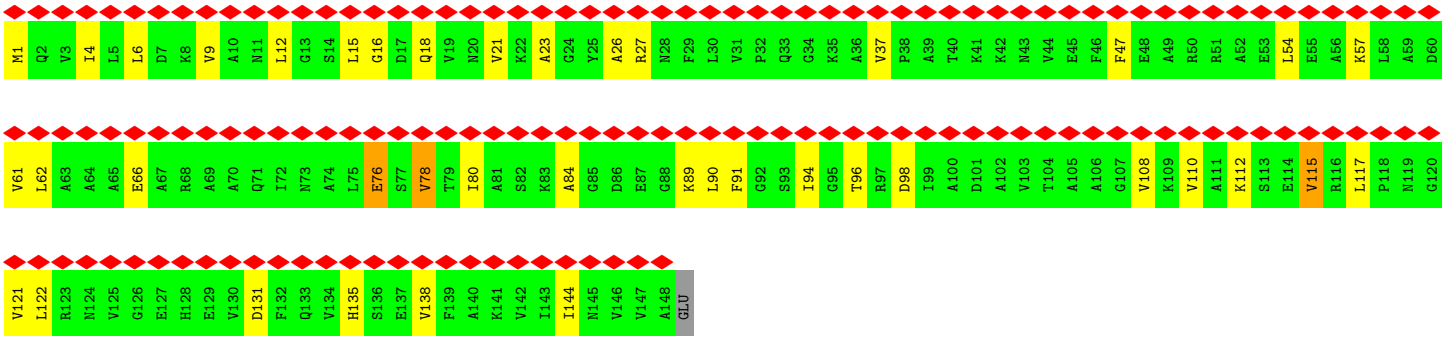




• Molecule 35: Large ribosomal subunit protein bL9

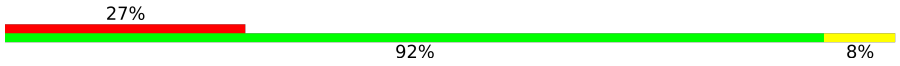
Chain h:

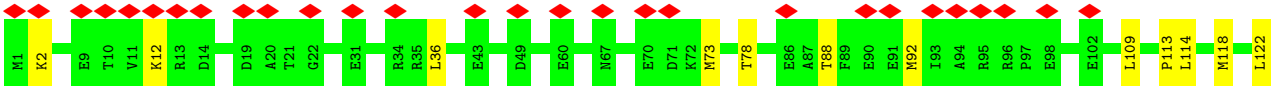


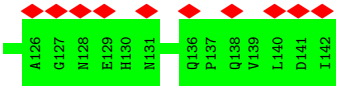




• Molecule 36: Large ribosomal subunit protein uL13

Chain i:



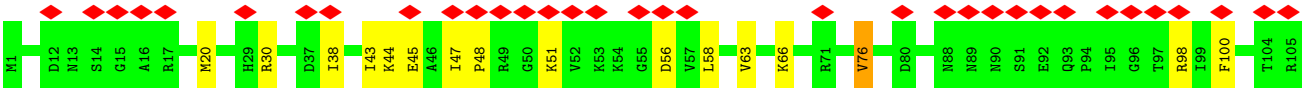



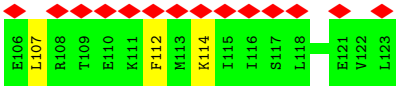




• Molecule 37: Large ribosomal subunit protein uL14

Chain j:



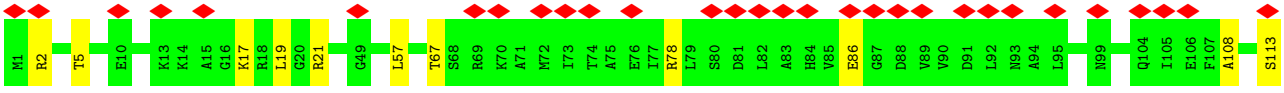



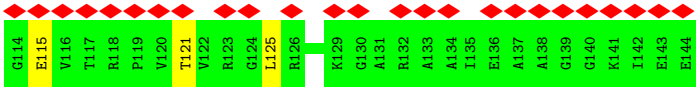




• Molecule 38: Large ribosomal subunit protein uL15

Chain k:



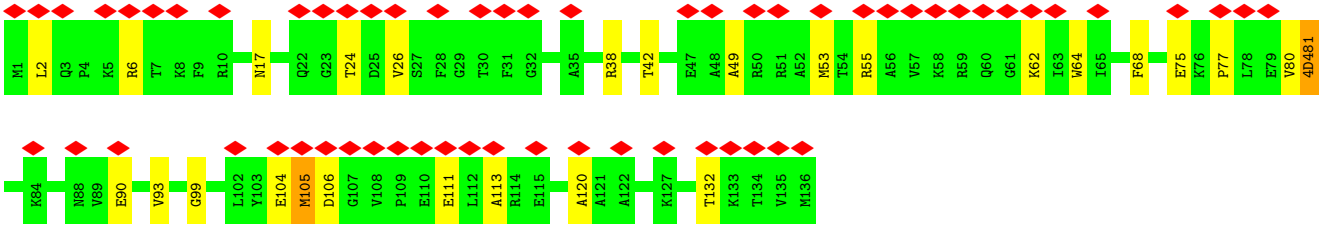



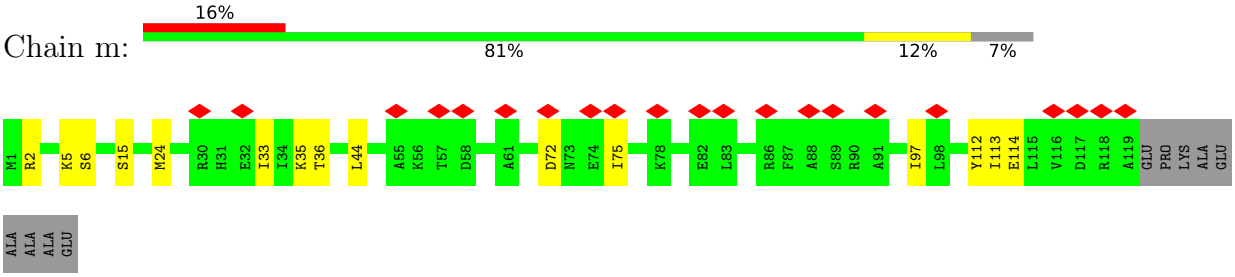

• Molecule 39: Large ribosomal subunit protein uL16

Chain l:

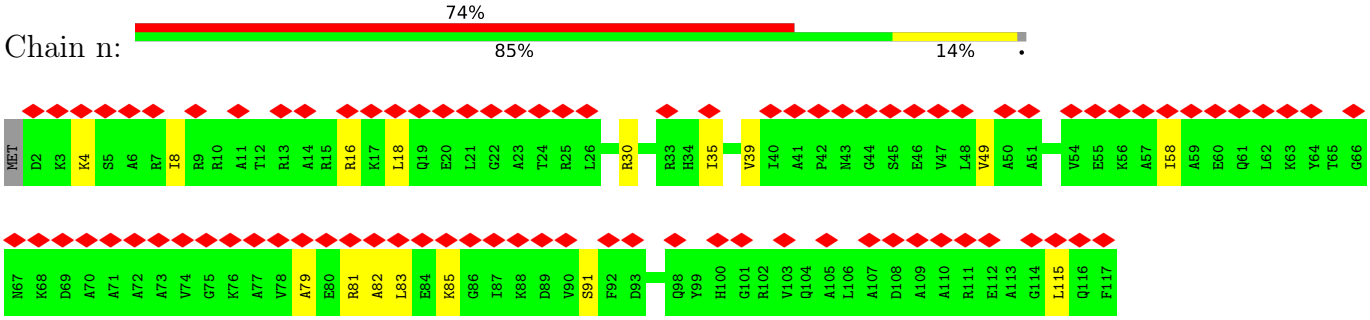




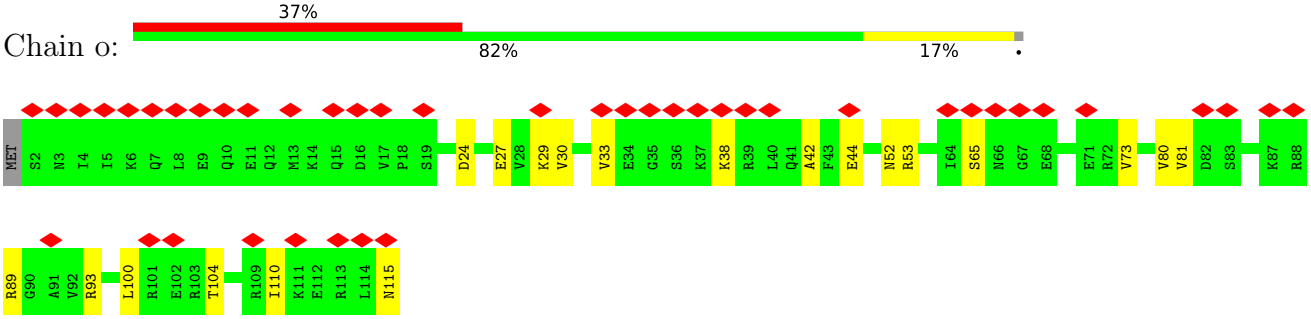

• Molecule 40: Large ribosomal subunit protein bL17



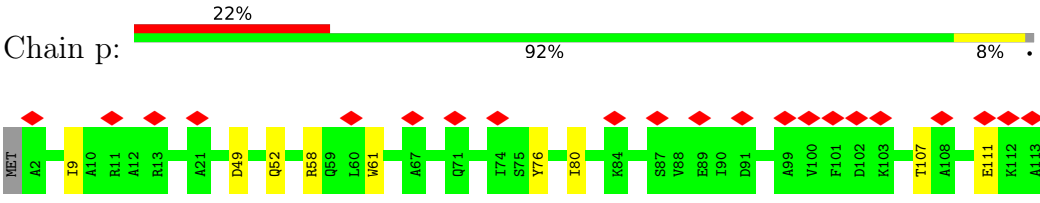

• Molecule 41: Large ribosomal subunit protein uL18




• Molecule 42: Large ribosomal subunit protein bL19

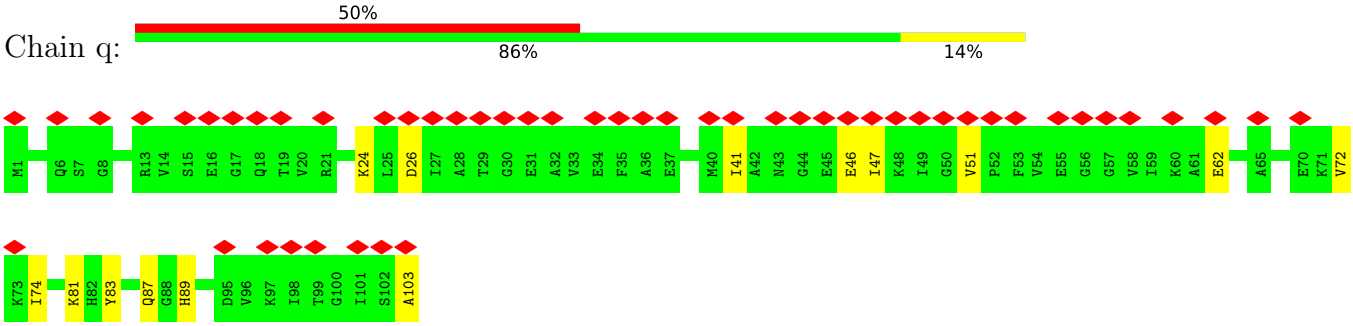



• Molecule 43: Large ribosomal subunit protein bL20



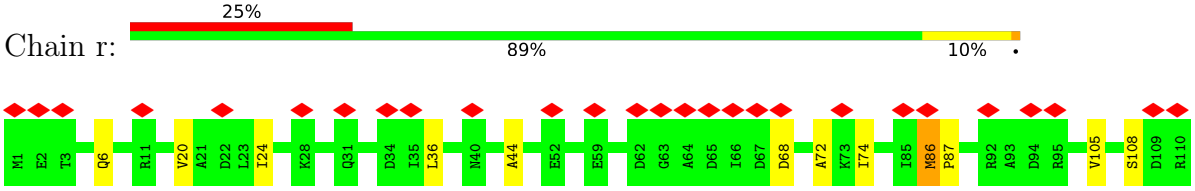

• Molecule 44: Large ribosomal subunit protein bL21

Chain q:



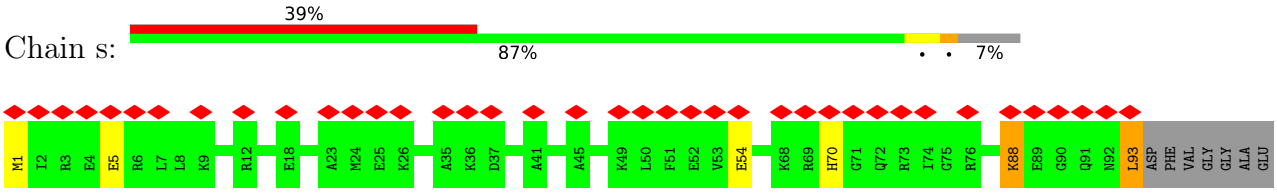

• Molecule 45: Large ribosomal subunit protein uL22

Chain r:



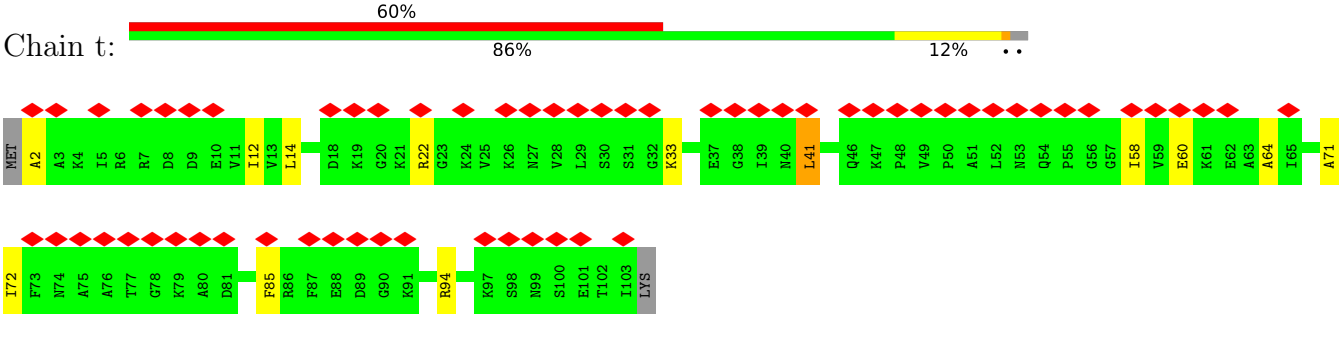

• Molecule 46: Large ribosomal subunit protein uL23

Chain s:



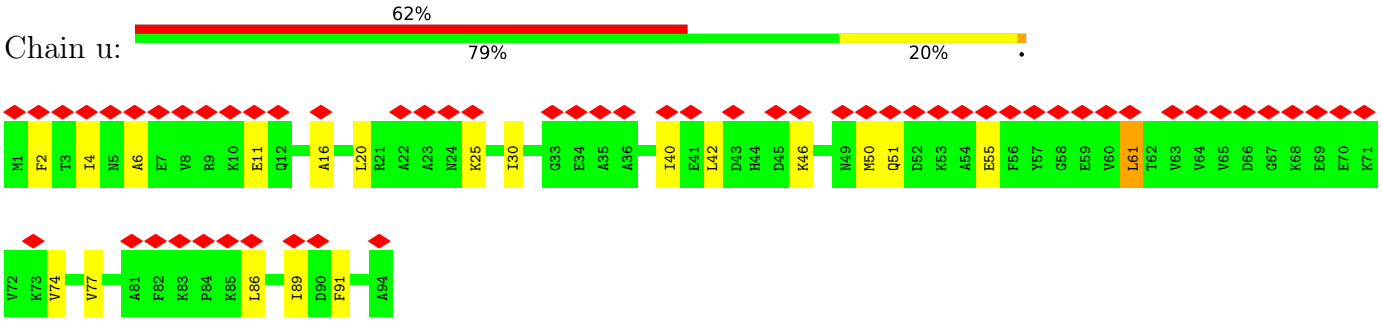

• Molecule 47: Large ribosomal subunit protein uL24

Chain t:



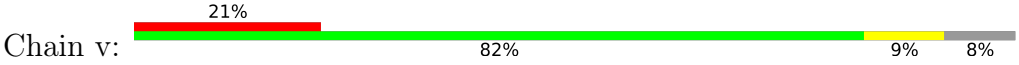

• Molecule 48: Large ribosomal subunit protein bL25

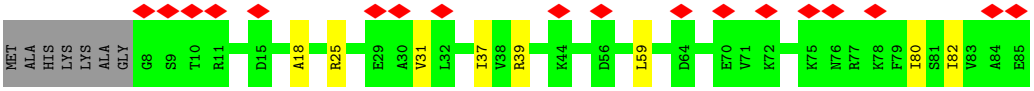
Chain u:



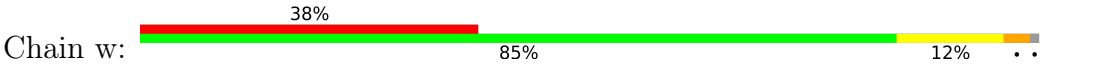

• Molecule 49: Large ribosomal subunit protein bL27

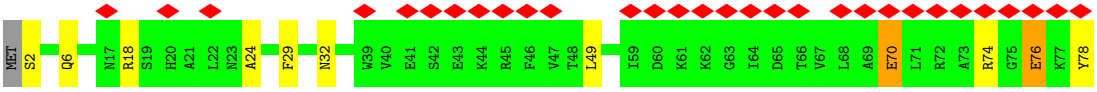
Chain v:



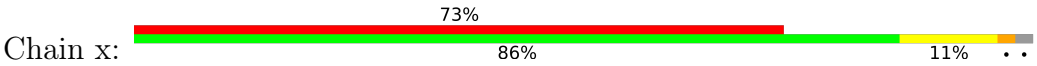


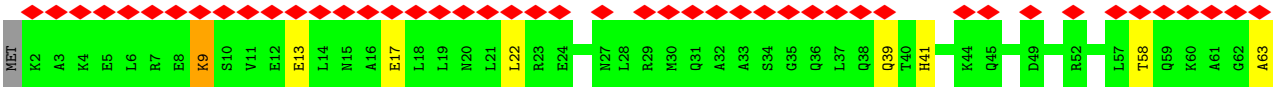

• Molecule 50: Large ribosomal subunit protein bL28



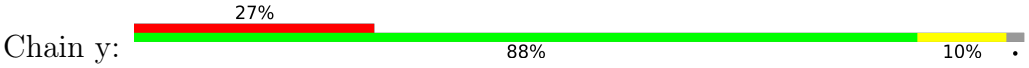



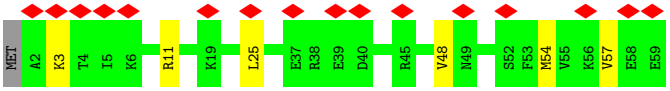

• Molecule 51: Large ribosomal subunit protein uL29



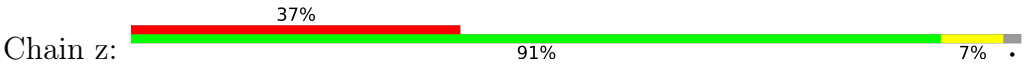



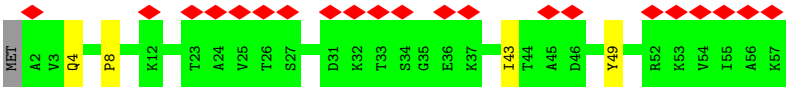

• Molecule 52: Large ribosomal subunit protein uL30




• Molecule 53: Large ribosomal subunit protein bL32



# 4 Experimental information (i)

| Property | Value | Source |
|---|---|---|
| EM reconstruction method | SINGLE PARTICLE | Depositor |
| Imposed symmetry | POINT, Not provided | |
| Number of particles used | 48868 | Depositor |
| Resolution determination method | FSC 0.143 CUT-OFF | Depositor |
| CTF correction method | PHASE FLIPPING AND AMPLITUDE CORRECTION | Depositor |
| Microscope | TFS KRIOS | Depositor |
| Voltage (kV) | 300 | Depositor |
| Electron dose ($e^-/Å^2$) | 35 | Depositor |
| Minimum defocus (nm) | 800 | Depositor |
| Maximum defocus (nm) | 2500 | Depositor |
| Magnification | 81000 | Depositor |
| Image detector | GATAN K3 (6k x 4k) | Depositor |
| Maximum map value | 2.184 | Depositor |
| Minimum map value | -0.911 | Depositor |
| Average map value | 0.001 | Depositor |
| Map value standard deviation | 0.064 | Depositor |
| Recommended contour level | 0.55 | Depositor |
| Map size (Å) | 542.72, 542.72, 542.72 | wwPDB |
| Map dimensions | 512, 512, 512 | wwPDB |
| Map angles (°) | 90.0, 90.0, 90.0 | wwPDB |
| Pixel spacing (Å) | 1.06, 1.06, 1.06 | Depositor |

# 5 Model quality (i)

## 5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: K, MG, OMU, H2U, 6MZ, IAS, MA6, MS6, 2MG, ZN, UR3, 2MA, G7M, OMC, D2T, 4D4, PSU, 5MC, 1MG, 3TD, 5MU, 4OC, OMG, MEQ

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 | 0 | 0.33 | 0/425 | 0.38 | 0/566 |
| 2 | 1 | 0.47 | 0/380 | 0.39 | 0/498 |
| 3 | 2 | 0.41 | 0/513 | 0.33 | 0/676 |
| 4 | 3 | 0.39 | 0/303 | 0.38 | 0/397 |
| 5 | 4 | 0.23 | 0/550 | 0.45 | 0/734 |
| 6 | A | 0.83 | 0/36501 | 0.81 | 9/56938 (0.0%) |
| 7 | B | 0.27 | 0/1780 | 0.51 | 0/2398 |
| 8 | C | 0.28 | 0/1650 | 0.38 | 0/2223 |
| 9 | D | 0.29 | 0/1665 | 0.30 | 0/2225 |
| 10 | E | 0.36 | 0/1168 | 0.39 | 0/1570 |
| 11 | F | 0.31 | 0/851 | 0.41 | 0/1152 |
| 12 | G | 0.24 | 0/1220 | 0.35 | 0/1638 |
| 13 | H | 0.35 | 0/987 | 0.40 | 0/1323 |
| 14 | I | 0.28 | 0/1022 | 0.37 | 0/1361 |
| 15 | J | 0.27 | 0/798 | 0.49 | 0/1078 |
| 16 | K | 0.31 | 0/885 | 0.38 | 0/1192 |
| 17 | L | 0.35 | 0/961 | 0.37 | 0/1287 |
| 18 | M | 0.24 | 0/916 | 0.41 | 0/1225 |
| 19 | N | 0.28 | 0/817 | 0.31 | 0/1088 |
| 20 | O | 0.33 | 0/718 | 0.36 | 0/955 |
| 21 | P | 0.36 | 0/646 | 0.40 | 0/870 |
| 22 | Q | 0.30 | 0/647 | 0.35 | 0/865 |
| 23 | R | 0.34 | 0/515 | 0.36 | 0/693 |
| 24 | S | 0.24 | 0/684 | 0.36 | 0/920 |
| 25 | T | 0.32 | 0/675 | 0.37 | 0/894 |
| 26 | U | 0.21 | 0/597 | 0.36 | 0/792 |
| 27 | X | 0.25 | 0/791 | 0.40 | 0/1069 |
| 28 | a | 1.03 | 0/69183 | 0.86 | 32/107924 (0.0%) |
| 29 | b | 0.80 | 0/2776 | 0.78 | 0/4328 |
| 30 | c | 0.42 | 0/2118 | 0.37 | 0/2846 |
| 31 | d | 0.42 | 0/1577 | 0.38 | 0/2122 |

| Mol | Chain | Bond lengths | | Bond angles | |
|---|---|---|---|---|---|
| | | RMSZ | #\|Z\| >5 | RMSZ | #\|Z\| >5 |
| 32 | e | 0.38 | 0/1573 | 0.38 | 0/2115 |
| 33 | f | 0.27 | 0/1434 | 0.38 | 0/1926 |
| 34 | g | 0.27 | 0/1339 | 0.36 | 0/1811 |
| 35 | h | 0.20 | 0/1110 | 0.41 | 0/1500 |
| 36 | i | 0.42 | 0/1157 | 0.37 | 0/1556 |
| 37 | j | 0.38 | 0/956 | 0.37 | 0/1281 |
| 38 | k | 0.39 | 0/1073 | 0.33 | 0/1427 |
| 39 | l | 0.39 | 0/1072 | 0.36 | 0/1434 |
| 40 | m | 0.42 | 0/963 | 0.41 | 0/1288 |
| 41 | n | 0.32 | 0/902 | 0.38 | 0/1209 |
| 42 | o | 0.40 | 0/929 | 0.34 | 0/1242 |
| 43 | p | 0.43 | 0/960 | 0.36 | 0/1278 |
| 44 | q | 0.39 | 0/829 | 0.37 | 0/1106 |
| 45 | r | 0.39 | 0/862 | 0.39 | 0/1154 |
| 46 | s | 0.34 | 0/745 | 0.38 | 0/996 |
| 47 | t | 0.34 | 0/787 | 0.34 | 0/1051 |
| 48 | u | 0.34 | 0/763 | 0.43 | 0/1024 |
| 49 | v | 0.42 | 0/599 | 0.35 | 0/795 |
| 50 | w | 0.40 | 0/635 | 0.36 | 0/848 |
| 51 | x | 0.32 | 0/500 | 0.31 | 0/665 |
| 52 | y | 0.35 | 0/451 | 0.37 | 0/603 |
| 53 | z | 0.40 | 0/449 | 0.38 | 0/597 |
| All | All | 0.83 | 0/154407 | 0.75 | 41/230753 (0.0%) |

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

| Mol | Chain | #Chirality outliers | #Planarity outliers |
|---|---|---|---|
| 39 | l | 0 | 1 |

There are no bond length outliers.

All (41) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 28 | a | 2098 | G | OP1-P-O3' | -11.40 | 73.81 | 108.00 |
| 28 | a | 2098 | G | OP2-P-O3' | -9.18 | 80.47 | 108.00 |
| 28 | a | 1310 | U | C2-N1-C1' | 7.62 | 126.85 | 117.70 |
| 28 | a | 1056 | U | C2-N1-C1' | 7.56 | 126.77 | 117.70 |
| 6 | A | 1033 | A | O4'-C1'-N9 | 7.52 | 114.21 | 108.20 |
| 28 | a | 2846 | G | O4'-C1'-N9 | 6.73 | 113.59 | 108.20 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 28 | a | 978 | A | N9-C1'-C2' | 6.58 | 119.24 | 112.00 |
| 28 | a | 1056 | U | N1-C2-O2 | 6.30 | 127.21 | 122.80 |
| 28 | a | 2159 | C | C6-N1-C2 | -6.22 | 117.81 | 120.30 |
| 28 | a | 512 | G | O4'-C1'-N9 | 5.97 | 112.98 | 108.20 |
| 28 | a | 702 | G | O4'-C1'-N9 | 5.87 | 112.89 | 108.20 |
| 28 | a | 1311 | C | C2-N1-C1' | 5.81 | 125.19 | 118.80 |
| 6 | A | 752 | C | C2-N1-C1' | 5.80 | 125.18 | 118.80 |
| 28 | a | 1056 | U | N3-C2-O2 | -5.80 | 118.14 | 122.20 |
| 28 | a | 2759 | A | O5'-C5'-C4' | 5.76 | 114.01 | 109.40 |
| 28 | a | 2158 | C | C2-N1-C1' | 5.60 | 124.96 | 118.80 |
| 28 | a | 1775 | U | O4'-C1'-N1 | 5.57 | 112.40 | 108.50 |
| 28 | a | 1727 | G | C5-C6-O6 | -5.55 | 125.27 | 128.60 |
| 6 | A | 206 | U | C2-N1-C1' | 5.48 | 124.27 | 117.70 |
| 6 | A | 494 | A | O4'-C1'-N9 | 5.42 | 112.30 | 108.50 |
| 6 | A | 991 | G | C4-N9-C1' | 5.42 | 133.54 | 126.50 |
| 28 | a | 2504 | U | O5'-C5'-C4' | 5.40 | 113.72 | 109.40 |
| 28 | a | 205 | G | O4'-C1'-N9 | 5.40 | 112.52 | 108.20 |
| 28 | a | 310 | A | O5'-C5'-C4' | 5.36 | 113.69 | 109.40 |
| 28 | a | 725 | A | N9-C1'-C2' | 5.33 | 117.86 | 112.00 |
| 28 | a | 2114 | G | O5'-C5'-C4' | 5.32 | 113.66 | 109.40 |
| 28 | a | 1060 | G | N3-C4-C5 | -5.32 | 125.94 | 128.60 |
| 28 | a | 1024 | G | O5'-C5'-C4' | 5.26 | 113.61 | 109.40 |
| 28 | a | 1060 | G | N3-C4-N9 | 5.22 | 129.13 | 126.00 |
| 6 | A | 930 | C | O5'-C5'-C4' | 5.19 | 113.56 | 109.40 |
| 28 | a | 1155 | G | N9-C4-C5 | -5.16 | 103.34 | 105.40 |
| 28 | a | 1727 | G | N1-C6-O6 | 5.16 | 122.99 | 119.90 |
| 6 | A | 991 | G | N3-C4-N9 | 5.15 | 129.09 | 126.00 |
| 28 | a | 2158 | C | C5-C6-N1 | 5.08 | 123.54 | 121.00 |
| 28 | a | 1775 | U | O5'-C5'-C4' | 5.08 | 113.46 | 109.40 |
| 28 | a | 803 | G | O5'-C5'-C4' | 5.08 | 113.46 | 109.40 |
| 6 | A | 1156 | C | C2-N1-C1' | 5.06 | 124.37 | 118.80 |
| 6 | A | 844 | G | N1-C2-N2 | -5.04 | 111.67 | 116.20 |
| 28 | a | 2499 | C | C6-N1-C1' | 5.03 | 126.84 | 120.80 |
| 28 | a | 1310 | U | C6-N1-C1' | -5.03 | 114.16 | 121.20 |
| 28 | a | 1173 | U | P-O3'-C3' | 5.02 | 125.73 | 119.70 |

There are no chirality outliers.

All (1) planarity outliers are listed below:

| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 39 | l | 81 | 4D4 | Mainchain |

## 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 | 0 | 418 | 0 | 449 | 2 | 0 |
| 2 | 1 | 377 | 0 | 418 | 2 | 0 |
| 3 | 2 | 504 | 0 | 572 | 3 | 0 |
| 4 | 3 | 302 | 0 | 340 | 3 | 0 |
| 5 | 4 | 540 | 0 | 537 | 16 | 0 |
| 6 | A | 32847 | 0 | 16540 | 253 | 0 |
| 7 | B | 1749 | 0 | 1774 | 50 | 0 |
| 8 | C | 1623 | 0 | 1696 | 23 | 0 |
| 9 | D | 1644 | 0 | 1706 | 21 | 0 |
| 10 | E | 1155 | 0 | 1206 | 19 | 0 |
| 11 | F | 832 | 0 | 821 | 18 | 0 |
| 12 | G | 1204 | 0 | 1256 | 20 | 0 |
| 13 | H | 977 | 0 | 1031 | 13 | 0 |
| 14 | I | 1010 | 0 | 1057 | 23 | 0 |
| 15 | J | 788 | 0 | 830 | 16 | 0 |
| 16 | K | 878 | 0 | 884 | 19 | 0 |
| 17 | L | 958 | 0 | 1019 | 12 | 0 |
| 18 | M | 907 | 0 | 977 | 23 | 0 |
| 19 | N | 805 | 0 | 846 | 19 | 0 |
| 20 | O | 710 | 0 | 735 | 12 | 0 |
| 21 | P | 636 | 0 | 649 | 5 | 0 |
| 22 | Q | 639 | 0 | 684 | 5 | 0 |
| 23 | R | 507 | 0 | 525 | 8 | 0 |
| 24 | S | 667 | 0 | 691 | 19 | 0 |
| 25 | T | 669 | 0 | 717 | 12 | 0 |
| 26 | U | 589 | 0 | 629 | 18 | 0 |
| 27 | X | 778 | 0 | 793 | 25 | 0 |
| 28 | a | 62284 | 0 | 31328 | 445 | 0 |
| 29 | b | 2483 | 0 | 1258 | 11 | 0 |
| 30 | c | 2080 | 0 | 2152 | 19 | 0 |
| 31 | d | 1567 | 0 | 1619 | 16 | 0 |
| 32 | e | 1554 | 0 | 1620 | 12 | 0 |
| 33 | f | 1410 | 0 | 1444 | 33 | 0 |
| 34 | g | 1319 | 0 | 1367 | 24 | 0 |
| 35 | h | 1099 | 0 | 1139 | 18 | 0 |
| 36 | i | 1134 | 0 | 1161 | 8 | 0 |
| 37 | j | 947 | 0 | 1025 | 13 | 0 |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|---|---|---|---|---|---|---|
| 38 | k | 1063 | 0 | 1130 | 8 | 0 |
| 39 | l | 1074 | 0 | 1138 | 17 | 0 |
| 40 | m | 950 | 0 | 994 | 7 | 0 |
| 41 | n | 892 | 0 | 923 | 11 | 0 |
| 42 | o | 917 | 0 | 962 | 12 | 0 |
| 43 | p | 947 | 0 | 1019 | 4 | 0 |
| 44 | q | 816 | 0 | 841 | 7 | 0 |
| 45 | r | 855 | 0 | 915 | 7 | 0 |
| 46 | s | 739 | 0 | 809 | 5 | 0 |
| 47 | t | 779 | 0 | 831 | 8 | 0 |
| 48 | u | 749 | 0 | 763 | 11 | 0 |
| 49 | v | 592 | 0 | 612 | 4 | 0 |
| 50 | w | 625 | 0 | 652 | 7 | 0 |
| 51 | x | 499 | 0 | 534 | 5 | 0 |
| 52 | y | 447 | 0 | 484 | 4 | 0 |
| 53 | z | 443 | 0 | 458 | 3 | 0 |
| 54 | 3 | 1 | 0 | 0 | 0 | 0 |
| 54 | 4 | 1 | 0 | 0 | 0 | 0 |
| 55 | A | 93 | 0 | 0 | 0 | 0 |
| 55 | K | 1 | 0 | 0 | 0 | 0 |
| 55 | N | 1 | 0 | 0 | 0 | 0 |
| 55 | Q | 1 | 0 | 0 | 0 | 0 |
| 55 | a | 252 | 0 | 0 | 0 | 0 |
| 55 | b | 5 | 0 | 0 | 0 | 0 |
| 55 | c | 1 | 0 | 0 | 0 | 0 |
| 55 | d | 1 | 0 | 0 | 0 | 0 |
| 55 | p | 1 | 0 | 0 | 0 | 0 |
| 55 | w | 1 | 0 | 0 | 0 | 0 |
| 55 | z | 2 | 0 | 0 | 0 | 0 |
| 56 | A | 46 | 0 | 0 | 0 | 0 |
| 56 | L | 1 | 0 | 0 | 0 | 0 |
| 56 | a | 113 | 0 | 0 | 0 | 0 |
| 56 | b | 1 | 0 | 0 | 0 | 0 |
| 56 | c | 5 | 0 | 0 | 0 | 0 |
| 56 | d | 1 | 0 | 0 | 0 | 0 |
| 56 | e | 1 | 0 | 0 | 0 | 0 |
| 56 | f | 1 | 0 | 0 | 0 | 0 |
| All | All | 143507 | 0 | 96560 | 1269 | 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 5.

All (1269) 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) |
|---|---|---|---|
| 6:A:76:A:N6 | 6:A:91:G:H1 | 1.24 | 1.30 |
| 28:a:2794:U:H3 | 28:a:2797:A:H61 | 1.12 | 0.97 |
| 28:a:544:U:O2 | 28:a:547:G:O6 | 1.87 | 0.90 |
| 28:a:1036:G:N2 | 28:a:1115:C:O2 | 2.07 | 0.88 |
| 28:a:2102:C:H42 | 28:a:2183:U:H3 | 1.13 | 0.88 |
| 28:a:2138:G:H1 | 28:a:2149:U:H3 | 1.21 | 0.87 |
| 28:a:2302:G:H22 | 28:a:2310:U:H3 | 1.21 | 0.85 |
| 28:a:2165:U:N3 | 28:a:2169:A:N6 | 2.25 | 0.85 |
| 33:f:134:GLU:HG2 | 33:f:149:VAL:HG13 | 1.57 | 0.85 |
| 7:B:133:GLU:HA | 7:B:136:MET:HE1 | 1.59 | 0.84 |
| 6:A:76:A:N1 | 6:A:91:G:N2 | 2.26 | 0.83 |
| 14:I:71:GLY:O | 14:I:75:GLN:HB2 | 1.78 | 0.82 |
| 18:M:81:MET:HG2 | 18:M:92:ARG:HG2 | 1.60 | 0.81 |
| 39:l:53:MET:HG3 | 39:l:120:ALA:HB2 | 1.62 | 0.81 |
| 7:B:6:MET:HE1 | 7:B:44:GLU:HA | 1.63 | 0.80 |
| 6:A:1001:G:H21 | 6:A:1003:A:H5' | 1.46 | 0.78 |
| 48:u:20:LEU:HD22 | 48:u:25:LYS:HB2 | 1.66 | 0.77 |
| 6:A:1354:G:H2' | 6:A:1355:A:C8 | 2.19 | 0.77 |
| 14:I:88:MET:HE1 | 14:I:95:ARG:HA | 1.67 | 0.77 |
| 7:B:15:HIS:HB3 | 7:B:43:LEU:HD21 | 1.67 | 0.76 |
| 28:a:2098:G:H1 | 28:a:2187:U:H3 | 1.34 | 0.75 |
| 15:J:10:LEU:HD22 | 15:J:98:VAL:HG22 | 1.67 | 0.75 |
| 27:X:44:GLU:HG2 | 27:X:46:GLN:H | 1.52 | 0.74 |
| 28:a:566:U:H1' | 28:a:2028:6MZ:H9C1 | 1.70 | 0.74 |
| 6:A:944:A:H2' | 6:A:945:G:C8 | 2.23 | 0.73 |
| 11:F:39:LEU:HD13 | 11:F:62:MET:HG2 | 1.68 | 0.73 |
| 8:C:14:ILE:HG22 | 8:C:15:VAL:HG13 | 1.71 | 0.73 |
| 24:S:11:ILE:HD12 | 24:S:38:SER:HB3 | 1.70 | 0.72 |
| 6:A:1326:C:H5" | 18:M:28:THR:HG21 | 1.71 | 0.72 |
| 17:L:121:ARG:HB3 | 17:L:123:LYS:HE2 | 1.70 | 0.72 |
| 16:K:37:ARG:HH12 | 16:K:83:GLU:HG3 | 1.54 | 0.72 |
| 42:o:89:ARG:HH22 | 42:o:115:ASN:HB2 | 1.55 | 0.72 |
| 8:C:110:GLU:HB2 | 8:C:144:LEU:HD22 | 1.71 | 0.72 |
| 41:n:39:VAL:HB | 41:n:49:VAL:HG22 | 1.70 | 0.71 |
| 5:4:61:ASN:HA | 5:4:65:SER:HB3 | 1.71 | 0.71 |
| 12:G:16:PRO:HA | 14:I:46:MET:SD | 2.31 | 0.71 |
| 8:C:33:LEU:HD11 | 19:N:93:ILE:HD13 | 1.71 | 0.71 |
| 6:A:1032:G:H2' | 6:A:1033:A:C8 | 2.26 | 0.71 |
| 28:a:1798:A:H2' | 28:a:1799:A:C8 | 2.26 | 0.70 |
| 15:J:8:ILE:HD11 | 15:J:87:LEU:HD13 | 1.74 | 0.70 |
| 40:m:33:ILE:HD12 | 40:m:114:GLU:HB3 | 1.73 | 0.69 |
| 7:B:140:GLU:O | 7:B:144:LEU:HB2 | 1.92 | 0.69 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 9:D:87:GLY:HA3 | 9:D:197:GLU:HG3 | 1.72 | 0.69 |
| 7:B:71:GLY:HA3 | 7:B:80:VAL:HG21 | 1.73 | 0.69 |
| 10:E:72:ILE:HD12 | 10:E:145:GLU:HG3 | 1.75 | 0.69 |
| 30:c:5:LYS:HD3 | 30:c:17:VAL:HG22 | 1.74 | 0.69 |
| 6:A:1060:U:H2' | 6:A:1061:C:C6 | 2.28 | 0.69 |
| 28:a:2147:U:H2' | 28:a:2148:C:O4' | 1.93 | 0.69 |
| 6:A:671:A:H2' | 6:A:672:G:C8 | 2.28 | 0.68 |
| 28:a:2099:A:H2' | 28:a:2100:G:C8 | 2.28 | 0.68 |
| 12:G:113:ASP:HB2 | 12:G:119:ARG:HG3 | 1.76 | 0.68 |
| 48:u:11:GLU:HG3 | 48:u:16:ALA:HB2 | 1.76 | 0.68 |
| 7:B:46:THR:HB | 7:B:201:PRO:HG2 | 1.76 | 0.67 |
| 15:J:9:ARG:HG2 | 15:J:99:GLN:HB2 | 1.75 | 0.67 |
| 28:a:637:U:H2' | 28:a:638:C:C6 | 2.29 | 0.67 |
| 14:I:88:MET:HE3 | 14:I:98:LEU:HD12 | 1.75 | 0.67 |
| 28:a:2303:U:H5" | 33:f:131:GLY:HA3 | 1.76 | 0.67 |
| 33:f:136:ILE:HA | 33:f:141:ILE:HD11 | 1.76 | 0.67 |
| 9:D:45:LYS:HG2 | 9:D:47:ARG:HG2 | 1.74 | 0.67 |
| 14:I:79:ILE:O | 14:I:83:ILE:HD12 | 1.94 | 0.67 |
| 53:z:43:ILE:HG22 | 53:z:49:TYR:HB2 | 1.75 | 0.67 |
| 19:N:46:LEU:HD22 | 24:S:13:LEU:HD13 | 1.76 | 0.67 |
| 6:A:76:A:N6 | 6:A:91:G:N1 | 2.03 | 0.67 |
| 8:C:129:MET:HE3 | 8:C:132:ARG:HD3 | 1.77 | 0.67 |
| 7:B:43:LEU:HA | 7:B:46:THR:HG22 | 1.77 | 0.66 |
| 20:O:7:ALA:O | 20:O:11:ILE:HG13 | 1.96 | 0.66 |
| 35:h:96:THR:HG22 | 35:h:112:LYS:HB2 | 1.77 | 0.66 |
| 9:D:124:MET:HE2 | 9:D:146:ARG:HE | 1.61 | 0.66 |
| 28:a:2113:G:H1' | 28:a:2165:U:H1' | 1.76 | 0.66 |
| 28:a:2165:U:C2 | 28:a:2169:A:N6 | 2.64 | 0.66 |
| 28:a:282:A:H2' | 28:a:283:G:H8 | 1.61 | 0.66 |
| 6:A:1216:C:H2' | 6:A:1217:A:C8 | 2.30 | 0.66 |
| 29:b:54:G:H21 | 33:f:26:MET:HE3 | 1.61 | 0.66 |
| 35:h:9:VAL:HB | 35:h:12:LEU:HB2 | 1.79 | 0.66 |
| 28:a:879:G:H1 | 28:a:893:U:H3 | 1.44 | 0.65 |
| 35:h:6:LEU:HD11 | 35:h:37:VAL:HG13 | 1.77 | 0.65 |
| 23:R:48:ARG:HB2 | 23:R:51:TYR:HD2 | 1.62 | 0.65 |
| 28:a:2157:G:H2' | 28:a:2158:C:C6 | 2.31 | 0.65 |
| 34:g:176:LYS:HB2 | 34:g:177:LYS:HE2 | 1.78 | 0.65 |
| 7:B:143:LYS:HA | 7:B:146:ASN:HB2 | 1.79 | 0.65 |
| 28:a:2160:A:H2' | 28:a:2161:A:H8 | 1.61 | 0.65 |
| 33:f:134:GLU:OE1 | 33:f:136:ILE:HG12 | 1.97 | 0.65 |
| 6:A:90:C:H2' | 6:A:91:G:C8 | 2.31 | 0.65 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 8:C:21:THR:HG23 | 8:C:58:GLU:HG2 | 1.77 | 0.65 |
| 6:A:1161:A:H2' | 6:A:1162:G:H8 | 1.61 | 0.64 |
| 39:l:77:PRO:HG2 | 39:l:80:VAL:HG21 | 1.79 | 0.64 |
| 14:I:55:VAL:HG23 | 14:I:57:MET:HG3 | 1.78 | 0.64 |
| 7:B:199:VAL:HG12 | 7:B:201:PRO:HD3 | 1.80 | 0.64 |
| 30:c:29:PRO:HG2 | 30:c:34:LEU:HD11 | 1.79 | 0.64 |
| 28:a:285:U:H3 | 28:a:355:G:H1 | 1.44 | 0.64 |
| 28:a:2158:C:H2' | 28:a:2159:C:C6 | 2.32 | 0.64 |
| 48:u:51:GLN:HG2 | 48:u:86:LEU:HD11 | 1.80 | 0.64 |
| 6:A:1248:A:H2' | 6:A:1249:A:C8 | 2.33 | 0.63 |
| 14:I:63:LEU:HD23 | 14:I:65:ILE:HD11 | 1.80 | 0.63 |
| 6:A:1285:A:H2' | 6:A:1286:A:C8 | 2.32 | 0.63 |
| 28:a:1026:A:H2' | 28:a:1027:A:C8 | 2.33 | 0.63 |
| 10:E:39:VAL:HG23 | 10:E:71:MET:HE3 | 1.78 | 0.63 |
| 28:a:847:A:H2' | 28:a:848:U:C6 | 2.33 | 0.63 |
| 28:a:2129:U:H3' | 28:a:2130:U:H2' | 1.79 | 0.63 |
| 8:C:186:THR:HG22 | 8:C:199:LYS:HG2 | 1.80 | 0.63 |
| 28:a:1466:A:H2' | 28:a:1467:A:C8 | 2.33 | 0.63 |
| 41:n:18:LEU:HD21 | 41:n:91:SER:HB2 | 1.79 | 0.63 |
| 5:4:64:PHE:O | 5:4:67:PRO:HD3 | 1.98 | 0.63 |
| 16:K:87:LYS:HB2 | 16:K:113:VAL:HG23 | 1.79 | 0.62 |
| 47:t:12:ILE:HG13 | 47:t:22:ARG:HG2 | 1.81 | 0.62 |
| 5:4:36:VAL:HG11 | 5:4:41:HIS:HD2 | 1.65 | 0.62 |
| 28:a:2326:A:H2' | 28:a:2327:U:C6 | 2.35 | 0.62 |
| 33:f:33:LYS:HG3 | 33:f:157:THR:HB | 1.82 | 0.62 |
| 46:s:54:GLU:HB3 | 46:s:88:LYS:HD3 | 1.81 | 0.62 |
| 14:I:84:THR:HG23 | 14:I:98:LEU:HD13 | 1.82 | 0.62 |
| 11:F:38:ARG:HB3 | 11:F:63:ASN:HB2 | 1.81 | 0.61 |
| 10:E:38:VAL:HG11 | 10:E:114:VAL:HG22 | 1.82 | 0.61 |
| 6:A:335:G:H2' | 6:A:336:A:C8 | 2.34 | 0.61 |
| 7:B:35:ARG:HG3 | 7:B:40:ILE:HG13 | 1.81 | 0.61 |
| 10:E:115:LEU:HD13 | 10:E:123:VAL:HG11 | 1.83 | 0.61 |
| 11:F:88:MET:HG2 | 11:F:90:MET:HE2 | 1.82 | 0.61 |
| 13:H:43:GLU:HG3 | 13:H:101:ILE:HG21 | 1.81 | 0.61 |
| 27:X:50:ALA:HB1 | 27:X:77:LEU:HD22 | 1.82 | 0.61 |
| 28:a:854:G:H2' | 28:a:855:G:C8 | 2.36 | 0.61 |
| 43:p:49:ASP:HA | 43:p:52:GLN:HB2 | 1.82 | 0.61 |
| 34:g:25:THR:HG23 | 34:g:34:THR:HB | 1.83 | 0.61 |
| 8:C:150:LYS:HG3 | 8:C:169:ARG:HB2 | 1.83 | 0.61 |
| 15:J:26:VAL:HG12 | 15:J:36:VAL:HG11 | 1.81 | 0.61 |
| 16:K:111:THR:HG23 | 26:U:3:VAL:HG22 | 1.83 | 0.61 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 35:h:135:HIS:HB3 | 35:h:138:VAL:HB | 1.83 | 0.61 |
| 6:A:1321:G:H2' | 6:A:1322:A:C8 | 2.35 | 0.61 |
| 28:a:1383:C:H2' | 28:a:1384:A:C8 | 2.35 | 0.61 |
| 33:f:8:TYR:HB2 | 33:f:173:PHE:HZ | 1.65 | 0.61 |
| 28:a:2170:U:H3' | 28:a:2171:A:H8 | 1.66 | 0.61 |
| 6:A:1410:C:H2' | 6:A:1411:A:C8 | 2.36 | 0.60 |
| 24:S:3:ARG:HH11 | 24:S:10:PHE:HB2 | 1.66 | 0.60 |
| 6:A:1161:A:H2' | 6:A:1162:G:C8 | 2.37 | 0.60 |
| 27:X:23:ARG:HB3 | 27:X:78:ILE:HG13 | 1.84 | 0.60 |
| 39:l:64:TRP:HZ3 | 39:l:106:ASP:HB2 | 1.65 | 0.60 |
| 6:A:129:A:H2' | 6:A:130:C:C6 | 2.36 | 0.60 |
| 6:A:1084:U:H3 | 6:A:1097:G:H22 | 1.49 | 0.60 |
| 28:a:579:C:H2' | 28:a:580:A:C8 | 2.37 | 0.60 |
| 6:A:821:C:HO2' | 13:H:2:SER:N | 2.00 | 0.60 |
| 28:a:701:U:H2' | 28:a:702:G:O4' | 2.02 | 0.60 |
| 9:D:105:MET:HE3 | 9:D:171:LEU:HD22 | 1.83 | 0.60 |
| 18:M:16:VAL:HG13 | 18:M:17:ILE:HD13 | 1.84 | 0.60 |
| 6:A:662:G:H22 | 6:A:739:G:H1 | 1.49 | 0.59 |
| 18:M:1:MET:SD | 18:M:11:ASP:HB3 | 2.42 | 0.59 |
| 28:a:2114:G:H5" | 28:a:2115:A:N7 | 2.16 | 0.59 |
| 28:a:1402:U:H2' | 28:a:1403:U:C6 | 2.37 | 0.59 |
| 9:D:170:TRP:CD2 | 9:D:186:PRO:HB3 | 2.37 | 0.59 |
| 34:g:15:VAL:HA | 34:g:27:LYS:O | 2.03 | 0.59 |
| 6:A:788:A:C2 | 27:X:29:LYS:HD2 | 2.38 | 0.59 |
| 28:a:1792:U:H2' | 28:a:1793:G:H8 | 1.68 | 0.59 |
| 28:a:2163:C:H2' | 28:a:2164:U:C6 | 2.38 | 0.59 |
| 20:O:26:GLU:HG3 | 20:O:81:LEU:HD22 | 1.84 | 0.59 |
| 38:k:108:ALA:HB3 | 38:k:125:LEU:HD22 | 1.85 | 0.59 |
| 6:A:537:A:H2' | 6:A:538:G:C8 | 2.38 | 0.58 |
| 28:a:2555:G:H2' | 28:a:2556:C:C6 | 2.38 | 0.58 |
| 6:A:1002:A:H2' | 6:A:1003:A:O4' | 2.03 | 0.58 |
| 28:a:1868:A:H2' | 28:a:1869:A:C8 | 2.38 | 0.58 |
| 6:A:944:A:H2' | 6:A:945:G:H8 | 1.66 | 0.58 |
| 28:a:282:A:H2' | 28:a:283:G:C8 | 2.39 | 0.58 |
| 28:a:2099:A:H2' | 28:a:2100:G:H8 | 1.68 | 0.58 |
| 6:A:17:U:H2' | 6:A:18:C:C6 | 2.38 | 0.58 |
| 27:X:35:ILE:HB | 27:X:55:ASN:HB3 | 1.86 | 0.58 |
| 28:a:1103:U:H2' | 28:a:1104:G:H8 | 1.68 | 0.58 |
| 51:x:58:THR:HG23 | 51:x:63:ALA:HB3 | 1.86 | 0.58 |
| 6:A:767:G:H4' | 6:A:1511:A:H4' | 1.85 | 0.58 |
| 28:a:591:U:H2' | 28:a:592:U:C6 | 2.38 | 0.58 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 6:A:382:G:H2' | 6:A:383:C:C6 | 2.38 | 0.58 |
| 6:A:457:A:H2' | 6:A:458:A:C8 | 2.39 | 0.58 |
| 14:I:127:PHE:CZ | 14:I:129:LYS:HD2 | 2.39 | 0.58 |
| 6:A:744:A:H2' | 6:A:745:A:C8 | 2.38 | 0.58 |
| 6:A:1354:G:H2' | 6:A:1355:A:H8 | 1.67 | 0.58 |
| 28:a:2241:U:H2' | 28:a:2242:U:C6 | 2.39 | 0.58 |
| 41:n:79:ALA:O | 41:n:83:LEU:HG | 2.04 | 0.58 |
| 6:A:857:G:H2' | 6:A:858:A:C8 | 2.38 | 0.58 |
| 8:C:129:MET:HE2 | 8:C:132:ARG:HH11 | 1.69 | 0.57 |
| 6:A:1525:U:OP2 | 26:U:42:THR:HG22 | 2.03 | 0.57 |
| 34:g:2:SER:O | 34:g:6:LYS:HG2 | 2.04 | 0.57 |
| 14:I:63:LEU:HD21 | 14:I:83:ILE:HG12 | 1.86 | 0.57 |
| 12:G:93:PRO:HA | 12:G:96:ARG:HD2 | 1.86 | 0.57 |
| 28:a:2589:C:H2' | 28:a:2590:G:C8 | 2.40 | 0.57 |
| 24:S:11:ILE:HB | 24:S:41:PHE:HE2 | 1.69 | 0.57 |
| 28:a:1176:G:H2' | 28:a:1177:U:C6 | 2.39 | 0.57 |
| 28:a:1792:U:H2' | 28:a:1793:G:C8 | 2.40 | 0.57 |
| 11:F:4:TYR:CE1 | 11:F:91:ARG:HG2 | 2.40 | 0.57 |
| 18:M:92:ARG:HD2 | 28:a:886:C:C5 | 2.40 | 0.57 |
| 6:A:475:G:H2' | 6:A:476:A:C8 | 2.39 | 0.57 |
| 6:A:1001:G:N2 | 6:A:1003:A:H5' | 2.19 | 0.57 |
| 22:Q:58:LYS:HG2 | 22:Q:79:VAL:HB | 1.86 | 0.57 |
| 35:h:4:ILE:HG22 | 35:h:18:GLN:HG2 | 1.87 | 0.57 |
| 6:A:712:G:H2' | 6:A:713:A:C8 | 2.40 | 0.57 |
| 28:a:2126:G:H2' | 28:a:2127:C:C6 | 2.39 | 0.57 |
| 11:F:4:TYR:CD2 | 11:F:71:ILE:HG13 | 2.40 | 0.57 |
| 34:g:9:VAL:HG22 | 34:g:50:LEU:HB2 | 1.87 | 0.57 |
| 6:A:79:G:H1 | 6:A:88:C:N4 | 2.02 | 0.56 |
| 15:J:88:MET:HE3 | 15:J:88:MET:O | 2.05 | 0.56 |
| 28:a:479:A:N3 | 28:a:481:G:H5" | 2.20 | 0.56 |
| 28:a:552:U:H2' | 28:a:553:G:O4' | 2.04 | 0.56 |
| 28:a:1078:A:H2' | 28:a:1079:U:C6 | 2.40 | 0.56 |
| 28:a:2797:A:O2' | 28:a:2798:A:H5" | 2.05 | 0.56 |
| 49:v:25:ARG:HD3 | 49:v:31:VAL:HG12 | 1.85 | 0.56 |
| 6:A:1491:A:C8 | 27:X:71:TYR:HB2 | 2.40 | 0.56 |
| 19:N:37:THR:HG23 | 19:N:40:ASP:H | 1.71 | 0.56 |
| 6:A:210:G:H2' | 6:A:211:G:H8 | 1.71 | 0.56 |
| 28:a:288:U:H2' | 28:a:289:G:H8 | 1.71 | 0.56 |
| 28:a:553:G:HO2' | 28:a:554:A:H8 | 1.51 | 0.56 |
| 28:a:637:U:H2' | 28:a:638:C:H6 | 1.71 | 0.56 |
| 28:a:849:C:H2' | 28:a:850:U:C6 | 2.40 | 0.56 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 29:b:35:C:H2' | 29:b:36:C:O4' | 2.04 | 0.56 |
| 28:a:1642:G:H5" | 28:a:1643:C:H5' | 1.87 | 0.56 |
| 41:n:82:ALA:HB3 | 41:n:115:LEU:HD11 | 1.87 | 0.56 |
| 28:a:1:G:H2' | 28:a:2:G:C8 | 2.40 | 0.56 |
| 28:a:1066:G:H21 | 28:a:1094:A:H4' | 1.70 | 0.56 |
| 30:c:107:PRO:HD2 | 30:c:110:LEU:HD22 | 1.87 | 0.56 |
| 42:o:33:VAL:HG22 | 42:o:38:LYS:HG2 | 1.87 | 0.56 |
| 6:A:1389:U:H2' | 6:A:1390:G:C8 | 2.41 | 0.56 |
| 28:a:244:A:H5" | 38:k:67:THR:HG21 | 1.88 | 0.56 |
| 28:a:2496:OMC:HM22 | 28:a:2497:C:H5' | 1.88 | 0.56 |
| 28:a:2639:G:H5" | 36:i:78:THR:HB | 1.87 | 0.56 |
| 34:g:85:LYS:HG3 | 34:g:141:ILE:HG12 | 1.88 | 0.56 |
| 6:A:522:G:H2' | 6:A:523:C:C6 | 2.41 | 0.56 |
| 28:a:1170:C:H3' | 28:a:1171:U:H6 | 1.71 | 0.56 |
| 28:a:2114:G:H5" | 28:a:2115:A:C8 | 2.41 | 0.55 |
| 37:j:76:VAL:HG23 | 42:o:73:VAL:HB | 1.86 | 0.55 |
| 6:A:490:C:H2' | 6:A:491:A:C8 | 2.40 | 0.55 |
| 28:a:1425:C:C5 | 28:a:1566:A:H5" | 2.41 | 0.55 |
| 34:g:73:ASN:O | 34:g:77:ILE:HG13 | 2.06 | 0.55 |
| 6:A:266:U:H2' | 6:A:267:C:C6 | 2.41 | 0.55 |
| 6:A:711:G:H2' | 6:A:712:G:C8 | 2.42 | 0.55 |
| 7:B:43:LEU:HA | 7:B:46:THR:CG2 | 2.37 | 0.55 |
| 28:a:1:G:H2' | 28:a:2:G:H8 | 1.70 | 0.55 |
| 33:f:42:GLU:H | 33:f:42:GLU:CD | 2.13 | 0.55 |
| 6:A:145:G:H2' | 6:A:146:G:C8 | 2.42 | 0.55 |
| 7:B:133:GLU:HA | 7:B:136:MET:CE | 2.32 | 0.55 |
| 13:H:111:MET:HE3 | 13:H:116:ALA:HA | 1.87 | 0.55 |
| 28:a:248:G:H5' | 28:a:250:G:N7 | 2.20 | 0.55 |
| 6:A:87:U:H2' | 6:A:88:C:C6 | 2.42 | 0.55 |
| 28:a:847:A:H2' | 28:a:848:U:H6 | 1.69 | 0.55 |
| 30:c:240:PHE:O | 30:c:242:LYS:HE3 | 2.07 | 0.55 |
| 31:d:124:ARG:HG3 | 31:d:165:LEU:HD13 | 1.88 | 0.55 |
| 6:A:1219:G:O3' | 24:S:77:THR:HG21 | 2.07 | 0.55 |
| 28:a:1717:U:H2' | 28:a:1718:G:O4' | 2.06 | 0.55 |
| 31:d:56:LYS:HD2 | 31:d:59:ARG:HG3 | 1.88 | 0.55 |
| 5:4:1:MET:HE2 | 5:4:6:HIS:CD2 | 2.41 | 0.55 |
| 6:A:964:2MG:C5 | 27:X:62:VAL:HG11 | 2.42 | 0.55 |
| 28:a:928:G:H1' | 52:y:25:LEU:HD11 | 1.89 | 0.55 |
| 28:a:1409:U:H2' | 28:a:1410:A:C8 | 2.42 | 0.55 |
| 28:a:1174:G:H2' | 28:a:1175:U:C6 | 2.41 | 0.55 |
| 33:f:158:THR:HG22 | 33:f:160:ALA:H | 1.71 | 0.55 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 6:A:1058:U:H5" | 15:J:53:ILE:HD12 | 1.89 | 0.55 |
| 6:A:1314:G:N2 | 6:A:1316:A:H3' | 2.23 | 0.55 |
| 9:D:85:ASN:HB3 | 9:D:88:GLU:HB2 | 1.89 | 0.55 |
| 30:c:144:VAL:HB | 30:c:154:LEU:HB2 | 1.89 | 0.55 |
| 6:A:840:U:H3' | 6:A:841:U:H5' | 1.88 | 0.54 |
| 22:Q:10:GLY:HA3 | 22:Q:25:ILE:HD13 | 1.89 | 0.54 |
| 14:I:88:MET:HE1 | 14:I:95:ARG:CA | 2.37 | 0.54 |
| 27:X:52:ALA:HB2 | 27:X:77:LEU:HD21 | 1.89 | 0.54 |
| 28:a:998:A:H2' | 28:a:999:A:C8 | 2.42 | 0.54 |
| 28:a:1887:A:H2' | 28:a:1888:A:C8 | 2.42 | 0.54 |
| 28:a:2138:G:O6 | 28:a:2149:U:O4 | 2.25 | 0.54 |
| 11:F:4:TYR:CE2 | 11:F:71:ILE:HG13 | 2.42 | 0.54 |
| 21:P:34:GLU:HG2 | 21:P:36:VAL:HG13 | 1.89 | 0.54 |
| 28:a:181:A:H2' | 28:a:182:A:C8 | 2.41 | 0.54 |
| 28:a:1072:G:H2' | 28:a:1073:C:C6 | 2.42 | 0.54 |
| 28:a:2023:C:H2' | 28:a:2024:U:C6 | 2.42 | 0.54 |
| 29:b:66:A:H61 | 29:b:107:G:H2' | 1.72 | 0.54 |
| 38:k:78:ARG:HG2 | 38:k:113:SER:HB3 | 1.89 | 0.54 |
| 28:a:2843:U:H5" | 42:o:52:ASN:O | 2.07 | 0.54 |
| 41:n:30:ARG:HG3 | 41:n:35:ILE:HD12 | 1.87 | 0.54 |
| 6:A:999:C:H2' | 6:A:1000:A:H8 | 1.72 | 0.54 |
| 26:U:59:LYS:HA | 26:U:62:ARG:HG2 | 1.89 | 0.54 |
| 28:a:2069:A:H2' | 28:a:2070:C:C6 | 2.43 | 0.54 |
| 6:A:1069:C:H2' | 6:A:1070:G:H8 | 1.71 | 0.54 |
| 20:O:56:LEU:HD23 | 20:O:57:LEU:HD22 | 1.88 | 0.54 |
| 28:a:1194:G:H2' | 28:a:1195:U:H6 | 1.73 | 0.54 |
| 29:b:31:C:H4' | 33:f:26:MET:HE1 | 1.89 | 0.54 |
| 37:j:43:ILE:HD12 | 37:j:56:ASP:HB2 | 1.89 | 0.54 |
| 28:a:1083:A:H2' | 28:a:1084:A:O4' | 2.08 | 0.54 |
| 28:a:2289:U:H2' | 28:a:2290:U:C6 | 2.42 | 0.54 |
| 6:A:672:G:H2' | 6:A:673:A:H8 | 1.73 | 0.54 |
| 6:A:948:U:H2' | 6:A:949:G:H8 | 1.73 | 0.54 |
| 28:a:2107:U:H5' | 28:a:2147:U:H1' | 1.90 | 0.54 |
| 28:a:2428:A:H2' | 28:a:2428:A:N3 | 2.22 | 0.54 |
| 28:a:606:A:H2' | 28:a:607:A:C8 | 2.43 | 0.54 |
| 17:L:79:VAL:O | 17:L:103:ASP:HB2 | 2.08 | 0.54 |
| 28:a:2231:U:H2' | 28:a:2232:G:C8 | 2.43 | 0.54 |
| 6:A:1312:C:H2' | 6:A:1313:U:H6 | 1.74 | 0.53 |
| 6:A:402:G:N7 | 9:D:2:ALA:HB3 | 2.23 | 0.53 |
| 28:a:1350:A:H2' | 28:a:1351:A:C8 | 2.43 | 0.53 |
| 35:h:1:MET:HE3 | 35:h:23:ALA:HA | 1.90 | 0.53 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 6:A:308:G:H5” | 21:P:31:ARG:HB2 | 1.90 | 0.53 |
| 16:K:109:ASN:HD21 | 26:U:5:LYS:HE3 | 1.72 | 0.53 |
| 28:a:896:C:H2’ | 28:a:897:A:O4’ | 2.08 | 0.53 |
| 28:a:1069:G:H3’ | 28:a:1070:C:C5 | 2.43 | 0.53 |
| 28:a:1444:C:H2’ | 28:a:1445:G:C8 | 2.43 | 0.53 |
| 41:n:58:ILE:HD11 | 41:n:81:ARG:NH2 | 2.23 | 0.53 |
| 6:A:1012:A:C2 | 6:A:1217:A:H1’ | 2.44 | 0.53 |
| 6:A:1069:C:H2’ | 6:A:1070:G:C8 | 2.42 | 0.53 |
| 28:a:2084:U:H2’ | 28:a:2085:G:C8 | 2.44 | 0.53 |
| 28:a:2672:G:H4’ | 37:j:30:ARG:HG3 | 1.91 | 0.53 |
| 11:F:47:LEU:HD13 | 11:F:51:ILE:HD12 | 1.90 | 0.53 |
| 18:M:83:LEU:HD22 | 24:S:74:PHE:HE1 | 1.73 | 0.53 |
| 28:a:2137:U:O2 | 28:a:2150:G:O6 | 2.26 | 0.53 |
| 30:c:145:GLU:HB2 | 30:c:188:CYS:HB3 | 1.91 | 0.53 |
| 10:E:72:ILE:HD13 | 10:E:141:ILE:HG23 | 1.89 | 0.53 |
| 18:M:16:VAL:HB | 18:M:41:GLU:HB3 | 1.91 | 0.53 |
| 19:N:23:LYS:O | 19:N:26:GLU:HG3 | 2.09 | 0.53 |
| 28:a:2103:U:H2’ | 28:a:2104:U:C6 | 2.43 | 0.53 |
| 41:n:49:VAL:HG12 | 41:n:85:LYS:NZ | 2.24 | 0.53 |
| 3:2:54:ASP:HB3 | 38:k:57:LEU:HD22 | 1.91 | 0.53 |
| 28:a:2165:U:N3 | 28:a:2169:A:C6 | 2.76 | 0.53 |
| 29:b:42:C:C6 | 33:f:66:LEU:HB2 | 2.44 | 0.53 |
| 41:n:49:VAL:HG12 | 41:n:85:LYS:HZ3 | 1.74 | 0.53 |
| 18:M:88:GLY:O | 18:M:92:ARG:HG3 | 2.09 | 0.53 |
| 6:A:1494:C:H2’ | 6:A:1495:G:O4’ | 2.09 | 0.53 |
| 28:a:315:C:H2’ | 28:a:316:G:O4’ | 2.08 | 0.53 |
| 31:d:61:THR:OG1 | 31:d:64:GLU:HG3 | 2.09 | 0.53 |
| 35:h:15:LEU:HD21 | 35:h:54:LEU:HD23 | 1.89 | 0.53 |
| 47:t:33:LYS:HB3 | 47:t:64:ALA:HB1 | 1.91 | 0.53 |
| 6:A:79:G:H1 | 6:A:88:C:H42 | 1.57 | 0.53 |
| 6:A:297:G:H2’ | 6:A:298:A:C8 | 2.44 | 0.53 |
| 28:a:518:G:H2’ | 28:a:519:U:C6 | 2.44 | 0.53 |
| 28:a:1429:G:H2’ | 28:a:1430:A:C8 | 2.43 | 0.53 |
| 33:f:175:PHE:HB3 | 33:f:177:PHE:CE1 | 2.43 | 0.53 |
| 7:B:99:GLY:O | 7:B:103:ASN:HB3 | 2.09 | 0.52 |
| 10:E:160:SER:HB3 | 10:E:163:GLU:HG3 | 1.91 | 0.52 |
| 18:M:78:LYS:HA | 18:M:81:MET:HE3 | 1.91 | 0.52 |
| 6:A:964:2MG:H1’ | 27:X:53:THR:HG21 | 1.92 | 0.52 |
| 27:X:42:SER:HB3 | 27:X:49:ILE:HB | 1.90 | 0.52 |
| 28:a:2050:A:H4’ | 31:d:148:GLN:O | 2.10 | 0.52 |
| 28:a:2119:G:H2’ | 28:a:2120:U:C5 | 2.44 | 0.52 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 6:A:81:G:N2 | 6:A:86:C:H42 | 2.07 | 0.52 |
| 28:a:1195:U:H2' | 28:a:1196:U:C6 | 2.44 | 0.52 |
| 28:a:2371:G:H2' | 28:a:2372:C:C6 | 2.45 | 0.52 |
| 6:A:210:G:H2' | 6:A:211:G:C8 | 2.45 | 0.52 |
| 24:S:31:LEU:HB2 | 24:S:47:LEU:HD11 | 1.92 | 0.52 |
| 28:a:355:G:H2' | 28:a:356:G:H8 | 1.73 | 0.52 |
| 6:A:1046:G:H5" | 19:N:3:LYS:HD2 | 1.91 | 0.52 |
| 29:b:106:G:H2' | 29:b:107:G:O4' | 2.09 | 0.52 |
| 33:f:8:TYR:HB2 | 33:f:173:PHE:CZ | 2.43 | 0.52 |
| 42:o:100:LEU:HD11 | 42:o:110:ILE:HD11 | 1.92 | 0.52 |
| 5:4:36:VAL:HG11 | 5:4:41:HIS:CD2 | 2.43 | 0.52 |
| 6:A:379:C:H2' | 6:A:380:A:O4' | 2.09 | 0.52 |
| 6:A:380:A:H2' | 6:A:381:A:C8 | 2.45 | 0.52 |
| 13:H:105:SER:HB2 | 13:H:126:ILE:HD11 | 1.91 | 0.52 |
| 18:M:64:VAL:HG11 | 18:M:72:GLU:OE2 | 2.10 | 0.52 |
| 20:O:14:GLU:HG2 | 20:O:84:ARG:HH21 | 1.75 | 0.52 |
| 23:R:34:THR:HG22 | 23:R:40:VAL:HG22 | 1.92 | 0.52 |
| 27:X:87:LYS:NZ | 27:X:91:LYS:HD2 | 2.25 | 0.52 |
| 35:h:84:ALA:HB2 | 35:h:90:LEU:HD23 | 1.92 | 0.52 |
| 28:a:279:A:H2' | 28:a:280:U:O4' | 2.09 | 0.52 |
| 28:a:1679:G:H2' | 28:a:1680:U:C6 | 2.45 | 0.52 |
| 28:a:2786:C:H2' | 28:a:2787:C:C6 | 2.45 | 0.52 |
| 37:j:20:MET:HE3 | 37:j:44:LYS:HE2 | 1.92 | 0.52 |
| 6:A:626:G:H2' | 6:A:627:A:C8 | 2.45 | 0.52 |
| 6:A:1002:A:N6 | 6:A:1024:G:H1' | 2.25 | 0.52 |
| 7:B:66:LYS:HB3 | 7:B:90:PHE:CE2 | 2.45 | 0.52 |
| 28:a:665:U:H2' | 28:a:666:A:O4' | 2.10 | 0.52 |
| 28:a:2098:G:H2' | 28:a:2099:A:H8 | 1.75 | 0.52 |
| 28:a:2102:C:N4 | 28:a:2183:U:H3 | 1.94 | 0.52 |
| 28:a:2589:C:H2' | 28:a:2590:G:H8 | 1.75 | 0.52 |
| 47:t:14:LEU:HD11 | 47:t:71:ALA:HB2 | 1.92 | 0.52 |
| 9:D:80:ALA:HA | 9:D:86:THR:HG23 | 1.91 | 0.52 |
| 28:a:5:A:H2' | 28:a:6:A:C8 | 2.44 | 0.52 |
| 28:a:846:C:H2' | 28:a:847:A:C8 | 2.45 | 0.52 |
| 28:a:2028:6MZ:C2 | 28:a:2497:C:H5" | 2.40 | 0.52 |
| 32:e:149:ILE:HB | 32:e:188:MET:HG2 | 1.92 | 0.52 |
| 34:g:43:VAL:HG12 | 34:g:52:PHE:HD1 | 1.75 | 0.52 |
| 39:l:42:THR:HG22 | 39:l:93:VAL:HG12 | 1.91 | 0.52 |
| 6:A:844:G:H2' | 6:A:845:G:H8 | 1.74 | 0.51 |
| 28:a:2118:G:H2' | 28:a:2119:G:H4' | 1.91 | 0.51 |
| 31:d:85:ALA:HB3 | 31:d:88:GLU:OE1 | 2.10 | 0.51 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 40:m:2:ARG:HA | 40:m:5:LYS:HD2 | 1.91 | 0.51 |
| 6:A:943:G:C2 | 6:A:944:A:C8 | 2.98 | 0.51 |
| 6:A:1027:U:H2' | 6:A:1028:U:O4' | 2.10 | 0.51 |
| 7:B:42:ASN:HD22 | 7:B:45:LYS:HE2 | 1.76 | 0.51 |
| 12:G:72:THR:HG23 | 12:G:96:ARG:HH21 | 1.75 | 0.51 |
| 32:e:191:ASP:O | 32:e:195:GLN:HG3 | 2.10 | 0.51 |
| 6:A:537:A:H2' | 6:A:538:G:H8 | 1.75 | 0.51 |
| 28:a:1289:G:H2' | 28:a:1290:C:C6 | 2.45 | 0.51 |
| 6:A:1271:C:H2' | 6:A:1272:A:O4' | 2.11 | 0.51 |
| 7:B:66:LYS:HB3 | 7:B:90:PHE:HE2 | 1.75 | 0.51 |
| 28:a:63:A:H2 | 46:s:70:HIS:NE2 | 2.08 | 0.51 |
| 28:a:1068:A:H3' | 28:a:1070:C:H41 | 1.74 | 0.51 |
| 28:a:2325:A:H2' | 28:a:2326:A:C8 | 2.46 | 0.51 |
| 10:E:148:LYS:HG2 | 10:E:152:MET:HE2 | 1.91 | 0.51 |
| 28:a:1174:G:H2' | 28:a:1175:U:H6 | 1.76 | 0.51 |
| 28:a:2738:A:H2' | 28:a:2739:A:C8 | 2.46 | 0.51 |
| 18:M:58:GLU:O | 18:M:62:LYS:HG3 | 2.11 | 0.51 |
| 28:a:1816:U:C2 | 30:c:201:MET:HG2 | 2.46 | 0.51 |
| 28:a:2545:A:H2' | 28:a:2546:U:C6 | 2.46 | 0.51 |
| 31:d:55:LYS:HD3 | 31:d:60:VAL:HG22 | 1.93 | 0.51 |
| 34:g:27:LYS:HG2 | 34:g:32:GLU:HG2 | 1.93 | 0.51 |
| 52:y:11:ARG:HG3 | 52:y:54:MET:HA | 1.92 | 0.51 |
| 6:A:743:A:H2' | 6:A:744:A:C8 | 2.45 | 0.51 |
| 15:J:22:THR:HA | 15:J:25:ILE:HB | 1.92 | 0.51 |
| 28:a:643:C:H2' | 28:a:645:G:C8 | 2.46 | 0.51 |
| 28:a:843:A:H5' | 28:a:844:C:OP2 | 2.09 | 0.51 |
| 28:a:2145:A:H2' | 28:a:2146:G:O4' | 2.10 | 0.51 |
| 28:a:2802:U:H2' | 28:a:2803:C:C6 | 2.46 | 0.51 |
| 28:a:2696:U:H2' | 28:a:2697:C:C6 | 2.46 | 0.51 |
| 49:v:37:ILE:HD11 | 49:v:82:ILE:HD11 | 1.93 | 0.51 |
| 6:A:578:C:H2' | 6:A:579:G:O4' | 2.11 | 0.51 |
| 6:A:1498:A:H5" | 6:A:1506:A:H5" | 1.92 | 0.51 |
| 11:F:12:PRO:HD2 | 11:F:54:LEU:HD21 | 1.91 | 0.51 |
| 28:a:1070:C:H42 | 28:a:1096:A:P | 2.34 | 0.51 |
| 33:f:94:GLU:O | 33:f:98:GLU:HG3 | 2.11 | 0.51 |
| 34:g:89:LEU:HD11 | 34:g:96:ALA:HB2 | 1.91 | 0.51 |
| 6:A:1312:C:H2' | 6:A:1313:U:C6 | 2.46 | 0.50 |
| 7:B:129:LEU:HD13 | 7:B:133:GLU:HB2 | 1.93 | 0.50 |
| 8:C:23:PHE:CZ | 15:J:11:LYS:HD3 | 2.46 | 0.50 |
| 25:T:35:VAL:HG11 | 25:T:79:LEU:HD13 | 1.92 | 0.50 |
| 28:a:288:U:H2' | 28:a:289:G:C8 | 2.46 | 0.50 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 28:a:2103:U:H2' | 28:a:2104:U:H6 | 1.76 | 0.50 |
| 28:a:2239:A:H2' | 28:a:2240:G:C8 | 2.46 | 0.50 |
| 6:A:33:A:H2' | 6:A:34:C:C6 | 2.47 | 0.50 |
| 28:a:306:U:H2' | 28:a:307:G:O4' | 2.10 | 0.50 |
| 28:a:655:U:H2' | 28:a:656:U:C6 | 2.46 | 0.50 |
| 28:a:2107:U:H3 | 28:a:2178:U:H3 | 1.59 | 0.50 |
| 36:i:36:LEU:HD11 | 36:i:122:LEU:HB2 | 1.93 | 0.50 |
| 48:u:46:LYS:O | 48:u:50:MET:HG2 | 2.11 | 0.50 |
| 6:A:672:G:H2' | 6:A:673:A:C8 | 2.47 | 0.50 |
| 6:A:1006:U:H2' | 6:A:1007:A:C8 | 2.47 | 0.50 |
| 9:D:23:SER:HB3 | 9:D:109:ALA:HB1 | 1.93 | 0.50 |
| 28:a:907:A:H2' | 28:a:910:C:H5 | 1.76 | 0.50 |
| 28:a:946:C:H1' | 28:a:982:A:C8 | 2.47 | 0.50 |
| 38:k:2:ARG:HB2 | 38:k:5:THR:HG23 | 1.93 | 0.50 |
| 7:B:5:SER:O | 7:B:9:MET:HG2 | 2.11 | 0.50 |
| 7:B:91:PHE:CE1 | 7:B:150:GLY:HA3 | 2.46 | 0.50 |
| 16:K:89:PRO:HG3 | 26:U:32:VAL:HG11 | 1.94 | 0.50 |
| 28:a:2244:G:H2' | 28:a:2245:A:C8 | 2.46 | 0.50 |
| 51:x:9:LYS:HG2 | 51:x:13:GLU:HB2 | 1.92 | 0.50 |
| 5:4:14:ALA:HB1 | 5:4:34:LEU:HD11 | 1.93 | 0.50 |
| 6:A:838:C:H2' | 6:A:839:C:C6 | 2.45 | 0.50 |
| 28:a:2112:A:H2' | 28:a:2113:G:C8 | 2.46 | 0.50 |
| 6:A:81:G:H3' | 6:A:82:C:H6 | 1.77 | 0.50 |
| 6:A:1034:A:H3' | 6:A:1035:C:H6 | 1.77 | 0.50 |
| 7:B:76:ALA:O | 7:B:80:VAL:HG23 | 2.11 | 0.50 |
| 28:a:1611:A:C6 | 45:r:87:PRO:HB3 | 2.47 | 0.50 |
| 35:h:78:VAL:HB | 35:h:144:ILE:HD12 | 1.94 | 0.50 |
| 6:A:20:U:H2' | 6:A:21:G:O4' | 2.12 | 0.50 |
| 6:A:56:U:H2' | 6:A:57:G:C8 | 2.46 | 0.50 |
| 6:A:233:C:H2' | 6:A:234:A:C8 | 2.46 | 0.50 |
| 16:K:84:VAL:HG11 | 16:K:97:ILE:HG12 | 1.92 | 0.50 |
| 28:a:1275:C:H2' | 28:a:1276:G:H8 | 1.77 | 0.50 |
| 34:g:27:LYS:HD3 | 34:g:28:GLY:N | 2.26 | 0.50 |
| 6:A:948:U:H2' | 6:A:949:G:C8 | 2.47 | 0.50 |
| 6:A:1128:A:H2' | 6:A:1129:G:H8 | 1.77 | 0.50 |
| 6:A:1249:A:H2' | 6:A:1250:A:C8 | 2.46 | 0.50 |
| 28:a:846:C:H2' | 28:a:847:A:H8 | 1.77 | 0.50 |
| 28:a:2647:C:H2' | 28:a:2648:U:H6 | 1.77 | 0.50 |
| 34:g:137:ASP:HB3 | 34:g:140:VAL:HB | 1.94 | 0.50 |
| 28:a:250:G:H2' | 28:a:251:A:C8 | 2.47 | 0.50 |
| 28:a:1056:U:H5' | 28:a:1057:G:OP2 | 2.11 | 0.50 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 28:a:1431:A:H2' | 28:a:1432:G:C8 | 2.47 | 0.50 |
| 31:d:152:PRO:HG3 | 31:d:156:PHE:CZ | 2.47 | 0.50 |
| 6:A:997:C:H2' | 6:A:998:A:H8 | 1.77 | 0.49 |
| 42:o:29:LYS:HD3 | 42:o:42:ALA:HB2 | 1.94 | 0.49 |
| 45:r:20:VAL:HG11 | 45:r:44:ALA:HA | 1.94 | 0.49 |
| 25:T:39:ILE:HD13 | 25:T:82:GLN:HB2 | 1.93 | 0.49 |
| 28:a:579:C:H2' | 28:a:580:A:H8 | 1.77 | 0.49 |
| 28:a:587:U:H2' | 28:a:588:A:C8 | 2.47 | 0.49 |
| 28:a:811:U:H2' | 28:a:812:C:C6 | 2.48 | 0.49 |
| 28:a:1080:U:H2' | 28:a:1081:U:C2 | 2.47 | 0.49 |
| 39:l:26:VAL:HG13 | 39:l:104:GLU:HG2 | 1.94 | 0.49 |
| 27:X:2:THR:N | 27:X:37:PRO:HD2 | 2.27 | 0.49 |
| 27:X:13:THR:HG23 | 27:X:16:ILE:HG12 | 1.93 | 0.49 |
| 28:a:1052:A:H2' | 28:a:1053:G:O4' | 2.12 | 0.49 |
| 28:a:1053:G:C2 | 28:a:1054:G:H1' | 2.48 | 0.49 |
| 28:a:2165:U:O4 | 28:a:2169:A:N7 | 2.45 | 0.49 |
| 43:p:58:ARG:HA | 43:p:61:TRP:CE3 | 2.47 | 0.49 |
| 6:A:1234:A:H2' | 6:A:1235:C:C6 | 2.48 | 0.49 |
| 19:N:42:TRP:O | 19:N:46:LEU:HG | 2.12 | 0.49 |
| 28:a:869:U:H2' | 28:a:870:U:C6 | 2.48 | 0.49 |
| 28:a:1492:A:H2' | 28:a:1493:A:C8 | 2.48 | 0.49 |
| 28:a:2107:U:H2' | 28:a:2108:G:C8 | 2.47 | 0.49 |
| 28:a:1881:U:H2' | 28:a:1882:G:O4' | 2.13 | 0.49 |
| 28:a:2151:C:H2' | 28:a:2152:G:H8 | 1.78 | 0.49 |
| 6:A:95:G:H2' | 6:A:96:A:O4' | 2.13 | 0.49 |
| 26:U:56:HIS:O | 26:U:60:LEU:HG | 2.12 | 0.49 |
| 28:a:1362:A:OP2 | 50:w:2:SER:HB3 | 2.12 | 0.49 |
| 28:a:1742:A:H2' | 28:a:1743:C:C6 | 2.47 | 0.49 |
| 28:a:2142:G:H2' | 28:a:2144:C:H42 | 1.78 | 0.49 |
| 31:d:19:GLY:HA3 | 42:o:80:VAL:HG23 | 1.94 | 0.49 |
| 32:e:97:ASN:HB2 | 32:e:100:MET:HG3 | 1.94 | 0.49 |
| 46:s:5:GLU:HG2 | 51:x:22:LEU:HD13 | 1.95 | 0.49 |
| 11:F:43:GLY:HA2 | 11:F:58:HIS:NE2 | 2.28 | 0.49 |
| 28:a:191:A:H2' | 28:a:192:C:C6 | 2.48 | 0.49 |
| 28:a:2165:U:H2' | 28:a:2166:G:C8 | 2.48 | 0.49 |
| 28:a:2582:U:H2' | 28:a:2583:U:H2' | 1.95 | 0.49 |
| 27:X:40:ILE:HB | 27:X:51:ASP:HB2 | 1.95 | 0.49 |
| 28:a:2062:C:H2' | 28:a:2063:C:C6 | 2.48 | 0.49 |
| 6:A:844:G:H2' | 6:A:845:G:C8 | 2.48 | 0.49 |
| 7:B:210:VAL:HA | 7:B:213:TYR:HD1 | 1.77 | 0.49 |
| 23:R:34:THR:HG23 | 23:R:38:LYS:O | 2.13 | 0.49 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 28:a:419:U:H2' | 28:a:420:C:C6 | 2.47 | 0.49 |
| 28:a:1026:A:N6 | 28:a:1123:G:H2' | 2.27 | 0.49 |
| 28:a:2647:C:H2' | 28:a:2648:U:C6 | 2.48 | 0.49 |
| 28:a:2678:U:O2' | 28:a:2679:C:H5' | 2.11 | 0.49 |
| 28:a:2802:U:H2' | 28:a:2803:C:H6 | 1.77 | 0.49 |
| 29:b:29:A:H2' | 29:b:30:C:C6 | 2.48 | 0.49 |
| 39:l:2:LEU:HB3 | 39:l:68:PHE:CE1 | 2.47 | 0.49 |
| 5:4:28:VAL:HG22 | 33:f:140:GLU:HA | 1.95 | 0.49 |
| 16:K:94:GLU:HB3 | 26:U:20:LYS:NZ | 2.28 | 0.49 |
| 18:M:55:ILE:O | 18:M:58:GLU:HG3 | 2.13 | 0.49 |
| 34:g:28:GLY:HA3 | 34:g:79:VAL:HB | 1.95 | 0.49 |
| 19:N:79:LEU:HD22 | 19:N:83:LYS:HB3 | 1.94 | 0.48 |
| 28:a:2072:U:H2' | 28:a:2073:U:C6 | 2.48 | 0.48 |
| 28:a:2163:C:H2' | 28:a:2164:U:H6 | 1.76 | 0.48 |
| 41:n:58:ILE:HD11 | 41:n:81:ARG:HH22 | 1.78 | 0.48 |
| 48:u:30:ILE:HG12 | 48:u:91:PHE:HB2 | 1.95 | 0.48 |
| 6:A:920:G:H2' | 6:A:921:A:C8 | 2.48 | 0.48 |
| 10:E:162:GLU:OE2 | 10:E:162:GLU:N | 2.46 | 0.48 |
| 14:I:7:TYR:HE1 | 14:I:18:ARG:HB3 | 1.77 | 0.48 |
| 28:a:27:G:N2 | 28:a:512:G:H1' | 2.28 | 0.48 |
| 28:a:642:A:H2' | 28:a:643:C:O4' | 2.13 | 0.48 |
| 28:a:849:C:H2' | 28:a:850:U:H6 | 1.77 | 0.48 |
| 28:a:1638:A:H2' | 28:a:1639:G:O4' | 2.14 | 0.48 |
| 28:a:1790:A:H2' | 28:a:1791:C:C6 | 2.48 | 0.48 |
| 28:a:2160:A:H4' | 28:a:2171:A:H1' | 1.95 | 0.48 |
| 28:a:2637:A:H2' | 28:a:2638:G:O4' | 2.13 | 0.48 |
| 33:f:69:LYS:HA | 33:f:84:PRO:HA | 1.95 | 0.48 |
| 34:g:64:GLN:O | 34:g:67:THR:HG22 | 2.13 | 0.48 |
| 6:A:262:C:H2' | 6:A:263:G:O4' | 2.13 | 0.48 |
| 28:a:657:G:H4' | 32:e:95:LYS:HG2 | 1.95 | 0.48 |
| 28:a:2117:A:H4' | 28:a:2171:A:OP1 | 2.14 | 0.48 |
| 28:a:2343:G:N3 | 28:a:2379:A:H2' | 2.28 | 0.48 |
| 28:a:2807:A:H2' | 28:a:2808:A:C8 | 2.48 | 0.48 |
| 5:4:1:MET:HG2 | 29:b:43:C:H5" | 1.96 | 0.48 |
| 6:A:217:U:H2' | 6:A:218:G:H8 | 1.78 | 0.48 |
| 7:B:72:THR:HB | 7:B:169:GLU:OE2 | 2.13 | 0.48 |
| 8:C:70:THR:HG21 | 8:C:76:VAL:HG21 | 1.94 | 0.48 |
| 13:H:102:ALA:HB3 | 13:H:113:ASP:HB3 | 1.95 | 0.48 |
| 20:O:11:ILE:HD12 | 20:O:31:LEU:HD23 | 1.95 | 0.48 |
| 28:a:363:A:H2' | 28:a:364:C:C6 | 2.48 | 0.48 |
| 28:a:2222:G:H4' | 28:a:2224:C:C2 | 2.49 | 0.48 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 28:a:2231:U:H2' | 28:a:2232:G:H8 | 1.78 | 0.48 |
| 6:A:726:A:H2' | 6:A:727:A:C8 | 2.47 | 0.48 |
| 6:A:997:C:H2' | 6:A:998:A:C8 | 2.49 | 0.48 |
| 6:A:1433:G:H2' | 6:A:1434:U:C6 | 2.49 | 0.48 |
| 28:a:1079:U:C4 | 28:a:1080:U:C4 | 3.02 | 0.48 |
| 28:a:1852:U:H2' | 28:a:1853:G:O4' | 2.13 | 0.48 |
| 28:a:2095:A:H2' | 28:a:2096:U:C6 | 2.48 | 0.48 |
| 28:a:2098:G:H2' | 28:a:2099:A:C8 | 2.49 | 0.48 |
| 28:a:2159:C:N3 | 28:a:2160:A:H1' | 2.29 | 0.48 |
| 22:Q:9:GLN:HG3 | 22:Q:60:GLU:HG3 | 1.95 | 0.48 |
| 28:a:1179:G:H2' | 28:a:1180:U:O4' | 2.13 | 0.48 |
| 28:a:1438:G:H2' | 28:a:1439:U:C6 | 2.49 | 0.48 |
| 12:G:103:TRP:CD1 | 12:G:137:LYS:HD3 | 2.48 | 0.48 |
| 15:J:21:SER:C | 15:J:23:ALA:H | 2.21 | 0.48 |
| 28:a:272:A:H2' | 28:a:273:G:H8 | 1.78 | 0.48 |
| 28:a:445:C:H2' | 28:a:446:G:O4' | 2.14 | 0.48 |
| 28:a:1054:G:H4' | 28:a:1084:A:C8 | 2.48 | 0.48 |
| 28:a:1092:U:C4 | 28:a:1094:A:H5' | 2.49 | 0.48 |
| 37:j:47:ILE:HG13 | 37:j:48:PRO:HD2 | 1.95 | 0.48 |
| 6:A:655:U:H2' | 6:A:656:C:H6 | 1.79 | 0.48 |
| 6:A:1201:C:H4' | 19:N:67:THR:HG22 | 1.95 | 0.48 |
| 7:B:9:MET:HE2 | 7:B:47:VAL:HG22 | 1.96 | 0.48 |
| 34:g:41:VAL:HG13 | 34:g:65:ALA:HA | 1.95 | 0.48 |
| 6:A:326:C:H4' | 6:A:327:A:H5' | 1.96 | 0.48 |
| 6:A:694:A:H2' | 6:A:695:U:H6 | 1.78 | 0.48 |
| 7:B:95:ARG:O | 7:B:95:ARG:HG3 | 2.14 | 0.48 |
| 28:a:2754:U:H1' | 28:a:2755:A:H5" | 1.96 | 0.48 |
| 6:A:640:A:H2' | 6:A:641:C:H6 | 1.77 | 0.48 |
| 10:E:81:LEU:HD11 | 10:E:96:MET:HB3 | 1.96 | 0.48 |
| 28:a:272:A:H2' | 28:a:273:G:C8 | 2.49 | 0.48 |
| 28:a:719:A:H2' | 28:a:720:A:C8 | 2.49 | 0.48 |
| 28:a:1430:A:H2' | 28:a:1431:A:O4' | 2.13 | 0.48 |
| 42:o:27:GLU:HB2 | 42:o:44:GLU:HG3 | 1.95 | 0.48 |
| 6:A:1031:G:C4 | 6:A:1032:G:C8 | 3.01 | 0.47 |
| 6:A:1352:U:H2' | 6:A:1353:A:H8 | 1.78 | 0.47 |
| 7:B:135:LEU:HD12 | 7:B:135:LEU:HA | 1.68 | 0.47 |
| 12:G:70:ARG:HD3 | 12:G:96:ARG:HB3 | 1.96 | 0.47 |
| 12:G:91:VAL:HG12 | 12:G:95:ARG:HB3 | 1.96 | 0.47 |
| 28:a:855:G:H2' | 28:a:856:G:O4' | 2.14 | 0.47 |
| 6:A:187:A:H2' | 6:A:188:A:C8 | 2.49 | 0.47 |
| 6:A:374:G:H5" | 21:P:5:ARG:HB2 | 1.96 | 0.47 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 11:F:42:TRP:CZ2 | 11:F:102:MET:HG3 | 2.49 | 0.47 |
| 15:J:66:GLU:HB3 | 19:N:99:ALA:HB2 | 1.96 | 0.47 |
| 18:M:11:ASP:HA | 18:M:45:ILE:HB | 1.95 | 0.47 |
| 28:a:578:U:H2' | 28:a:579:C:C6 | 2.49 | 0.47 |
| 6:A:499:C:H2' | 6:A:500:A:C8 | 2.49 | 0.47 |
| 6:A:881:C:O2' | 6:A:882:U:H5' | 2.13 | 0.47 |
| 6:A:1086:G:H21 | 6:A:1165:A:H61 | 1.63 | 0.47 |
| 26:U:31:GLU:O | 26:U:35:ARG:HG3 | 2.13 | 0.47 |
| 28:a:1275:C:H5" | 40:m:36:THR:HG22 | 1.96 | 0.47 |
| 6:A:1123:U:H4' | 15:J:7:ARG:NH2 | 2.29 | 0.47 |
| 26:U:62:ARG:HG3 | 26:U:63:GLU:N | 2.30 | 0.47 |
| 27:X:7:SER:HB2 | 27:X:12:ILE:CD1 | 2.44 | 0.47 |
| 28:a:812:C:H2' | 28:a:813:C:H6 | 1.79 | 0.47 |
| 28:a:2109:U:H5' | 28:a:2116:U:H1' | 1.96 | 0.47 |
| 28:a:2244:G:H2' | 28:a:2245:A:H8 | 1.80 | 0.47 |
| 44:q:41:ILE:HD13 | 44:q:103:ALA:HA | 1.96 | 0.47 |
| 23:R:50:LYS:HE3 | 23:R:50:LYS:HB2 | 1.65 | 0.47 |
| 28:a:1260:U:O2' | 53:z:8:PRO:HD2 | 2.15 | 0.47 |
| 28:a:1275:C:H2' | 28:a:1276:G:C8 | 2.49 | 0.47 |
| 40:m:72:ASP:HB3 | 40:m:75:ILE:HB | 1.95 | 0.47 |
| 28:a:1069:G:H1' | 28:a:1087:A:C5 | 2.50 | 0.47 |
| 28:a:2298:C:H2' | 28:a:2299:C:C6 | 2.50 | 0.47 |
| 48:u:77:VAL:HG22 | 48:u:89:ILE:HG12 | 1.96 | 0.47 |
| 6:A:76:A:N6 | 6:A:91:G:C6 | 2.70 | 0.47 |
| 6:A:906:A:H2' | 6:A:907:A:C8 | 2.50 | 0.47 |
| 6:A:1475:U:H2' | 6:A:1476:U:C6 | 2.50 | 0.47 |
| 9:D:9:LEU:HD22 | 9:D:28:ILE:HD11 | 1.97 | 0.47 |
| 10:E:95:PHE:CZ | 10:E:97:GLN:HG3 | 2.49 | 0.47 |
| 14:I:6:TYR:CD1 | 14:I:90:TYR:HA | 2.50 | 0.47 |
| 14:I:23:PRO:HA | 14:I:61:LEU:HD23 | 1.95 | 0.47 |
| 16:K:94:GLU:HB3 | 26:U:20:LYS:HZ1 | 1.79 | 0.47 |
| 28:a:248:G:O5' | 28:a:249:C:H5" | 2.15 | 0.47 |
| 28:a:1170:C:H3' | 28:a:1171:U:C6 | 2.50 | 0.47 |
| 28:a:2393:C:H2' | 28:a:2394:G:O4' | 2.15 | 0.47 |
| 32:e:18:THR:HA | 32:e:106:LYS:HG2 | 1.96 | 0.47 |
| 32:e:145:ASP:OD1 | 32:e:166:LYS:HB3 | 2.15 | 0.47 |
| 35:h:57:LYS:O | 35:h:61:VAL:HG22 | 2.13 | 0.47 |
| 44:q:24:LYS:HB3 | 44:q:24:LYS:HE3 | 1.61 | 0.47 |
| 6:A:1007:A:H8 | 6:A:1007:A:OP2 | 1.97 | 0.47 |
| 7:B:207:ILE:HA | 7:B:210:VAL:HG12 | 1.96 | 0.47 |
| 24:S:47:LEU:HD22 | 24:S:48:THR:H | 1.80 | 0.47 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 28:a:780:A:C2 | 30:c:225:MET:HG2 | 2.50 | 0.47 |
| 28:a:1849:A:H2' | 28:a:1850:A:C8 | 2.49 | 0.47 |
| 28:a:2293:C:O2' | 28:a:2294:U:H5' | 2.15 | 0.47 |
| 6:A:1321:G:H2' | 6:A:1322:A:H8 | 1.79 | 0.47 |
| 28:a:643:C:H2' | 28:a:645:G:N7 | 2.29 | 0.47 |
| 28:a:1069:G:H1' | 28:a:1087:A:C6 | 2.50 | 0.47 |
| 34:g:24:ILE:HD13 | 34:g:37:LEU:HD22 | 1.97 | 0.47 |
| 6:A:1153:A:H2' | 6:A:1154:G:O4' | 2.15 | 0.47 |
| 28:a:357:C:H2' | 28:a:358:U:C6 | 2.50 | 0.47 |
| 28:a:1537:A:H2' | 28:a:1538:C:C6 | 2.50 | 0.47 |
| 28:a:1560:U:H2' | 28:a:1561:C:C6 | 2.51 | 0.47 |
| 31:d:35:THR:HG22 | 31:d:73:VAL:HG21 | 1.97 | 0.47 |
| 39:l:75:GLU:HG3 | 39:l:90:GLU:HG3 | 1.96 | 0.47 |
| 5:4:43:PHE:HD1 | 5:4:43:PHE:O | 1.98 | 0.46 |
| 6:A:388:U:H2' | 6:A:389:G:C8 | 2.50 | 0.46 |
| 6:A:568:G:H2' | 6:A:569:U:C6 | 2.49 | 0.46 |
| 8:C:111:LEU:HD22 | 8:C:146:ALA:HB2 | 1.97 | 0.46 |
| 14:I:58:VAL:HG13 | 14:I:59:GLU:HG2 | 1.97 | 0.46 |
| 28:a:830:U:H2' | 28:a:831:A:C8 | 2.49 | 0.46 |
| 28:a:1059:U:H4' | 28:a:1068:A:H1' | 1.95 | 0.46 |
| 28:a:1085:G:H5" | 28:a:1086:A:OP2 | 2.16 | 0.46 |
| 28:a:1383:C:H2' | 28:a:1384:A:H8 | 1.79 | 0.46 |
| 28:a:2772:C:H2' | 28:a:2773:G:O4' | 2.16 | 0.46 |
| 47:t:41:LEU:HD12 | 47:t:60:GLU:HG3 | 1.97 | 0.46 |
| 3:2:55:LEU:HD23 | 3:2:55:LEU:HA | 1.74 | 0.46 |
| 5:4:28:VAL:CG2 | 33:f:140:GLU:HA | 2.45 | 0.46 |
| 6:A:1030:G:H2' | 6:A:1031:G:O4' | 2.15 | 0.46 |
| 6:A:1317:A:C8 | 6:A:1321:G:C6 | 3.03 | 0.46 |
| 13:H:11:LEU:HD22 | 13:H:75:ILE:HD11 | 1.97 | 0.46 |
| 18:M:81:MET:HE3 | 18:M:81:MET:HB2 | 1.84 | 0.46 |
| 21:P:8:ARG:NH1 | 21:P:15:PRO:HB3 | 2.30 | 0.46 |
| 28:a:2068:A:H2' | 28:a:2069:A:C8 | 2.50 | 0.46 |
| 33:f:69:LYS:HB2 | 33:f:69:LYS:HE2 | 1.61 | 0.46 |
| 34:g:10:VAL:O | 34:g:12:PRO:HD3 | 2.16 | 0.46 |
| 35:h:62:LEU:O | 35:h:66:GLU:HG2 | 2.15 | 0.46 |
| 6:A:1484:G:H2' | 6:A:1485:G:C8 | 2.50 | 0.46 |
| 7:B:45:LYS:O | 7:B:48:PRO:HD2 | 2.16 | 0.46 |
| 9:D:107:PHE:CG | 9:D:145:ILE:HD11 | 2.51 | 0.46 |
| 12:G:72:THR:HG23 | 12:G:96:ARG:NH2 | 2.30 | 0.46 |
| 17:L:110:ARG:HD2 | 17:L:110:ARG:HA | 1.73 | 0.46 |
| 18:M:77:ILE:O | 18:M:81:MET:HE2 | 2.15 | 0.46 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 26:U:21:ARG:O | 26:U:25:LYS:HG2 | 2.14 | 0.46 |
| 50:w:6:GLN:HG2 | 50:w:76:GLU:OE1 | 2.15 | 0.46 |
| 6:A:92:G:H4' | 6:A:93:G:H5' | 1.98 | 0.46 |
| 27:X:50:ALA:O | 27:X:64:SER:HA | 2.15 | 0.46 |
| 28:a:360:U:H3' | 28:a:361:G:C8 | 2.50 | 0.46 |
| 28:a:585:C:C2 | 38:k:19:LEU:HD12 | 2.51 | 0.46 |
| 28:a:782:G:H5' | 28:a:783:G:OP1 | 2.15 | 0.46 |
| 28:a:1732:U:H2' | 28:a:1733:G:O4' | 2.15 | 0.46 |
| 28:a:2162:C:C4 | 28:a:2163:C:C2 | 3.03 | 0.46 |
| 6:A:778:A:H5" | 16:K:125:LYS:HD3 | 1.98 | 0.46 |
| 6:A:857:G:H2' | 6:A:858:A:H8 | 1.77 | 0.46 |
| 6:A:924:G:H4' | 27:X:95:ARG:HH11 | 1.78 | 0.46 |
| 6:A:998:A:H2' | 6:A:999:C:C6 | 2.51 | 0.46 |
| 6:A:1408:A:H2' | 6:A:1409:C:C6 | 2.50 | 0.46 |
| 28:a:181:A:H2' | 28:a:182:A:H8 | 1.81 | 0.46 |
| 28:a:207:A:H2' | 28:a:208:C:O4' | 2.15 | 0.46 |
| 28:a:544:U:O2 | 28:a:547:G:C6 | 2.67 | 0.46 |
| 28:a:1177:U:H2' | 28:a:1178:U:O4' | 2.15 | 0.46 |
| 28:a:1466:A:H2' | 28:a:1467:A:H8 | 1.79 | 0.46 |
| 45:r:72:ALA:HB2 | 45:r:108:SER:HB3 | 1.97 | 0.46 |
| 6:A:369:A:H2' | 6:A:370:C:O4' | 2.14 | 0.46 |
| 28:a:64:A:H2' | 28:a:65:U:C6 | 2.51 | 0.46 |
| 39:l:17:ASN:O | 39:l:38:ARG:HD3 | 2.16 | 0.46 |
| 6:A:980:U:H5" | 19:N:6:MET:HE2 | 1.97 | 0.46 |
| 6:A:1402:C:H2' | 6:A:1403:G:C8 | 2.50 | 0.46 |
| 7:B:45:LYS:HE2 | 7:B:45:LYS:HB2 | 1.60 | 0.46 |
| 19:N:93:ILE:HG21 | 19:N:96:LEU:HD22 | 1.98 | 0.46 |
| 27:X:12:ILE:HD13 | 27:X:17:ARG:HH21 | 1.80 | 0.46 |
| 28:a:1358:G:H2' | 28:a:1359:C:C6 | 2.51 | 0.46 |
| 28:a:2348:C:H2' | 28:a:2349:G:O4' | 2.16 | 0.46 |
| 28:a:2682:U:H4' | 37:j:76:VAL:HG21 | 1.98 | 0.46 |
| 6:A:8:A:N6 | 9:D:206:LYS:HB2 | 2.30 | 0.46 |
| 25:T:79:LEU:O | 25:T:83:ILE:HD12 | 2.16 | 0.46 |
| 28:a:397:U:H5" | 50:w:32:ASN:HB2 | 1.98 | 0.46 |
| 43:p:107:THR:O | 43:p:111:GLU:HG2 | 2.16 | 0.46 |
| 9:D:11:LEU:HD13 | 9:D:63:ARG:HG2 | 1.97 | 0.46 |
| 14:I:45:ARG:O | 14:I:49:ARG:HG3 | 2.15 | 0.46 |
| 14:I:127:PHE:CE1 | 14:I:129:LYS:HD2 | 2.50 | 0.46 |
| 17:L:7:LEU:HD22 | 17:L:12:ARG:HG2 | 1.97 | 0.46 |
| 30:c:31:ALA:HA | 30:c:34:LEU:HD12 | 1.98 | 0.46 |
| 39:l:64:TRP:CZ3 | 39:l:106:ASP:HB2 | 2.47 | 0.46 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 40:m:35:LYS:HE2 | 40:m:112:TYR:CZ | 2.51 | 0.46 |
| 6:A:543:C:H5' | 9:D:69:GLU:CB | 2.46 | 0.46 |
| 6:A:1136:G:H2' | 6:A:1138:C:H5' | 1.96 | 0.46 |
| 10:E:154:ALA:HA | 10:E:164:ILE:HD12 | 1.98 | 0.46 |
| 11:F:26:THR:HG22 | 11:F:36:ILE:HG12 | 1.98 | 0.46 |
| 28:a:809:U:H2' | 38:k:21:ARG:HA | 1.97 | 0.46 |
| 28:a:1026:A:H2' | 28:a:1027:A:H8 | 1.81 | 0.46 |
| 28:a:1444:C:H2' | 28:a:1445:G:H8 | 1.81 | 0.46 |
| 28:a:2271:A:H2' | 28:a:2272:A:C8 | 2.51 | 0.46 |
| 6:A:1385:G:H2' | 6:A:1386:C:C6 | 2.51 | 0.45 |
| 6:A:1511:A:H2' | 6:A:1512:G:C8 | 2.50 | 0.45 |
| 19:N:31:ILE:HD12 | 19:N:45:VAL:HG23 | 1.97 | 0.45 |
| 19:N:31:ILE:HD11 | 19:N:45:VAL:N | 2.31 | 0.45 |
| 28:a:152:G:H2' | 28:a:153:U:C6 | 2.51 | 0.45 |
| 28:a:1184:G:H5' | 44:q:83:TYR:CE1 | 2.51 | 0.45 |
| 28:a:2513:C:H2' | 28:a:2514:A:H8 | 1.81 | 0.45 |
| 6:A:1236:A:H2 | 6:A:1239:G:N3 | 2.15 | 0.45 |
| 6:A:1491:A:H5' | 28:a:1911:A:N3 | 2.31 | 0.45 |
| 25:T:48:GLN:OE1 | 25:T:48:GLN:HA | 2.16 | 0.45 |
| 28:a:1056:U:O2 | 28:a:1056:U:H2' | 2.17 | 0.45 |
| 28:a:1707:G:H4' | 28:a:2856:C:O2 | 2.16 | 0.45 |
| 28:a:2249:OMG:HM23 | 28:a:2249:OMG:H1' | 1.63 | 0.45 |
| 28:a:2467:A:H4' | 39:l:55:ARG:CD | 2.46 | 0.45 |
| 28:a:2682:U:H4' | 37:j:76:VAL:CG2 | 2.46 | 0.45 |
| 5:4:49:ARG:HH21 | 18:M:64:VAL:HG22 | 1.81 | 0.45 |
| 6:A:457:A:H2' | 6:A:458:A:H8 | 1.81 | 0.45 |
| 15:J:10:LEU:HB3 | 15:J:18:ILE:HD11 | 1.99 | 0.45 |
| 24:S:46:GLY:HA2 | 24:S:61:PHE:CZ | 2.52 | 0.45 |
| 33:f:4:LEU:HD23 | 33:f:4:LEU:HA | 1.80 | 0.45 |
| 35:h:96:THR:HG23 | 35:h:115:VAL:HB | 1.97 | 0.45 |
| 6:A:75:C:H2' | 6:A:76:A:C8 | 2.50 | 0.45 |
| 6:A:89:U:H2' | 6:A:90:C:C6 | 2.51 | 0.45 |
| 6:A:348:G:H2' | 6:A:349:G:C8 | 2.51 | 0.45 |
| 8:C:89:LYS:HB2 | 8:C:89:LYS:HE3 | 1.66 | 0.45 |
| 11:F:77:ASN:O | 11:F:81:ASN:HB2 | 2.16 | 0.45 |
| 27:X:10:MET:HE3 | 27:X:10:MET:HB3 | 1.78 | 0.45 |
| 28:a:721:C:H2' | 28:a:722:U:O4' | 2.16 | 0.45 |
| 28:a:908:A:H2' | 28:a:909:A:C8 | 2.50 | 0.45 |
| 28:a:1095:U:H3' | 28:a:1096:A:H8 | 1.81 | 0.45 |
| 28:a:2685:U:H2' | 28:a:2686:G:O4' | 2.16 | 0.45 |
| 44:q:72:VAL:HG22 | 44:q:89:HIS:HB3 | 1.98 | 0.45 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 6:A:930:C:H5” | 12:G:4:ARG:CZ | 2.47 | 0.45 |
| 28:a:1139:U:H4’ | 28:a:1140:A:O4’ | 2.16 | 0.45 |
| 6:A:1316:A:H1’ | 24:S:37:ARG:NH2 | 2.32 | 0.45 |
| 8:C:112:ASP:HB3 | 8:C:115:LEU:HB2 | 1.98 | 0.45 |
| 10:E:90:THR:HG22 | 10:E:91:GLY:H | 1.81 | 0.45 |
| 12:G:71:PRO:O | 12:G:96:ARG:HG2 | 2.16 | 0.45 |
| 17:L:50:ARG:HB3 | 17:L:66:TYR:HE1 | 1.82 | 0.45 |
| 28:a:358:U:H2’ | 28:a:359:G:H8 | 1.81 | 0.45 |
| 28:a:1055:A:C5 | 28:a:1056:U:H1’ | 2.52 | 0.45 |
| 28:a:2269:G:OP1 | 49:v:18:ALA:HB1 | 2.17 | 0.45 |
| 39:l:111:GLU:CD | 39:l:111:GLU:H | 2.23 | 0.45 |
| 6:A:611:C:H2’ | 6:A:612:C:C6 | 2.52 | 0.45 |
| 13:H:3:MET:HE2 | 13:H:3:MET:HA | 1.98 | 0.45 |
| 13:H:50:LYS:HB2 | 13:H:50:LYS:HE2 | 1.69 | 0.45 |
| 24:S:31:LEU:HD22 | 24:S:49:ILE:HG23 | 1.99 | 0.45 |
| 26:U:6:VAL:HG22 | 26:U:15:ALA:HB1 | 1.99 | 0.45 |
| 28:a:2183:U:H2’ | 28:a:2184:G:C8 | 2.52 | 0.45 |
| 32:e:141:MET:HB3 | 32:e:141:MET:HE2 | 1.83 | 0.45 |
| 34:g:89:LEU:HD22 | 34:g:162:VAL:HG22 | 1.99 | 0.45 |
| 4:3:32:LYS:HE2 | 28:a:2476:A:H5’ | 1.99 | 0.45 |
| 6:A:210:G:C4 | 6:A:211:G:C8 | 3.05 | 0.45 |
| 6:A:418:U:H2’ | 6:A:420:C:C5 | 2.51 | 0.45 |
| 12:G:11:LYS:HB2 | 12:G:11:LYS:HE3 | 1.60 | 0.45 |
| 25:T:29:ARG:O | 25:T:33:LYS:HD2 | 2.17 | 0.45 |
| 28:a:727:G:H5” | 28:a:728:A:H5” | 1.99 | 0.45 |
| 28:a:1324:A:H2’ | 28:a:1325:A:O4’ | 2.16 | 0.45 |
| 6:A:1028:U:H1’ | 6:A:1030:G:N1 | 2.32 | 0.45 |
| 16:K:117:PRO:HD2 | 26:U:35:ARG:HD3 | 1.99 | 0.45 |
| 28:a:1488:G:O2’ | 30:c:100:GLU:HG3 | 2.17 | 0.45 |
| 28:a:2613:U:C2 | 53:z:4:GLN:HA | 2.52 | 0.45 |
| 30:c:53:HIS:HA | 30:c:217:ARG:HB2 | 1.99 | 0.45 |
| 7:B:72:THR:CG2 | 7:B:95:ARG:H | 2.30 | 0.45 |
| 28:a:155:A:H2’ | 28:a:156:A:C8 | 2.52 | 0.45 |
| 28:a:479:A:H4’ | 28:a:480:A:OP1 | 2.16 | 0.45 |
| 28:a:907:A:H2’ | 28:a:910:C:C5 | 2.50 | 0.45 |
| 35:h:21:VAL:HG23 | 35:h:26:ALA:HB2 | 1.99 | 0.45 |
| 39:l:49:ALA:HB1 | 39:l:120:ALA:HB1 | 1.99 | 0.45 |
| 42:o:24:ASP:OD2 | 42:o:89:ARG:HA | 2.17 | 0.45 |
| 6:A:234:A:H2’ | 6:A:235:G:C8 | 2.53 | 0.44 |
| 6:A:511:C:H2’ | 6:A:512:C:C6 | 2.52 | 0.44 |
| 6:A:557:A:H4’ | 6:A:558:A:H3’ | 1.98 | 0.44 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 6:A:735:C:H2' | 6:A:736:C:H6 | 1.82 | 0.44 |
| 6:A:862:A:H4' | 10:E:90:THR:HG23 | 1.99 | 0.44 |
| 6:A:1325:C:H2' | 6:A:1326:C:C6 | 2.52 | 0.44 |
| 6:A:1340:C:H2' | 6:A:1341:G:C8 | 2.53 | 0.44 |
| 8:C:121:THR:HG23 | 8:C:189:ALA:HA | 1.99 | 0.44 |
| 28:a:841:G:H2' | 28:a:842:A:C8 | 2.52 | 0.44 |
| 28:a:2202:G:H4' | 30:c:150:LYS:HG3 | 1.98 | 0.44 |
| 28:a:2310:U:H5' | 33:f:85:ILE:HD11 | 1.99 | 0.44 |
| 6:A:660:U:H2' | 6:A:661:A:C8 | 2.52 | 0.44 |
| 6:A:1155:A:C2 | 6:A:1179:G:C4 | 3.05 | 0.44 |
| 6:A:1410:C:H2' | 6:A:1411:A:H8 | 1.81 | 0.44 |
| 25:T:49:LYS:HE3 | 25:T:49:LYS:HB3 | 1.78 | 0.44 |
| 27:X:24:LEU:HD22 | 27:X:78:ILE:HD11 | 1.99 | 0.44 |
| 28:a:2113:G:H2' | 28:a:2115:A:N7 | 2.31 | 0.44 |
| 28:a:2512:U:H2' | 28:a:2513:C:C6 | 2.52 | 0.44 |
| 28:a:2749:G:C5 | 34:g:3:ARG:HD3 | 2.52 | 0.44 |
| 6:A:74:A:H2' | 6:A:75:C:O4' | 2.17 | 0.44 |
| 6:A:214:U:H2' | 6:A:215:C:C6 | 2.52 | 0.44 |
| 6:A:640:A:H2' | 6:A:641:C:C6 | 2.52 | 0.44 |
| 6:A:1032:G:H2' | 6:A:1033:A:H8 | 1.76 | 0.44 |
| 6:A:1426:A:H2' | 6:A:1427:A:O4' | 2.18 | 0.44 |
| 8:C:129:MET:CE | 8:C:132:ARG:HD3 | 2.46 | 0.44 |
| 18:M:83:LEU:HD22 | 24:S:74:PHE:CE1 | 2.51 | 0.44 |
| 28:a:2157:G:H2' | 28:a:2158:C:H6 | 1.81 | 0.44 |
| 28:a:2465:C:H2' | 28:a:2466:A:O4' | 2.17 | 0.44 |
| 6:A:1051:G:N7 | 6:A:1198:C:H5' | 2.32 | 0.44 |
| 16:K:63:ALA:HB1 | 16:K:96:THR:HG23 | 2.00 | 0.44 |
| 19:N:46:LEU:O | 19:N:50:THR:HG22 | 2.17 | 0.44 |
| 28:a:1313:U:H2' | 28:a:1314:G:C8 | 2.53 | 0.44 |
| 28:a:1649:A:H2' | 28:a:1650:G:O4' | 2.18 | 0.44 |
| 28:a:1867:U:H3' | 28:a:1868:A:C8 | 2.53 | 0.44 |
| 28:a:2698:A:H2' | 28:a:2699:U:C6 | 2.52 | 0.44 |
| 30:c:171:TYR:CE1 | 30:c:185:GLU:HG3 | 2.53 | 0.44 |
| 35:h:16:GLY:HA2 | 35:h:47:PHE:CE2 | 2.52 | 0.44 |
| 5:4:13:THR:HG23 | 5:4:23:LYS:HD3 | 1.98 | 0.44 |
| 6:A:244:A:C2 | 6:A:280:A:C5 | 3.05 | 0.44 |
| 6:A:1255:A:H2 | 19:N:57:PRO:HG3 | 1.82 | 0.44 |
| 9:D:122:ALA:C | 9:D:146:ARG:HG3 | 2.43 | 0.44 |
| 11:F:51:ILE:HG22 | 11:F:52:ASN:OD1 | 2.17 | 0.44 |
| 12:G:133:THR:C | 12:G:135:VAL:H | 2.26 | 0.44 |
| 14:I:75:GLN:O | 14:I:79:ILE:HG12 | 2.18 | 0.44 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 15:J:32:THR:HG21 | 15:J:83:THR:HG22 | 1.99 | 0.44 |
| 20:O:73:LYS:HD3 | 20:O:73:LYS:HA | 1.91 | 0.44 |
| 23:R:29:LEU:HD22 | 23:R:59:ILE:HG13 | 2.00 | 0.44 |
| 27:X:87:LYS:HZ3 | 27:X:91:LYS:HD2 | 1.82 | 0.44 |
| 28:a:150:U:H2' | 28:a:151:C:C6 | 2.53 | 0.44 |
| 44:q:46:GLU:C | 44:q:47:ILE:HD13 | 2.43 | 0.44 |
| 48:u:61:LEU:HD21 | 48:u:74:VAL:HG23 | 1.99 | 0.44 |
| 6:A:206:U:C5 | 6:A:209:G:C6 | 3.06 | 0.44 |
| 6:A:382:G:H2' | 6:A:383:C:H6 | 1.81 | 0.44 |
| 6:A:740:G:H5" | 20:O:58:ARG:HH21 | 1.81 | 0.44 |
| 7:B:132:LYS:O | 7:B:136:MET:HE3 | 2.18 | 0.44 |
| 10:E:41:ASP:OD2 | 10:E:45:ARG:HB2 | 2.18 | 0.44 |
| 17:L:56:ARG:HG3 | 17:L:62:GLU:HG2 | 2.00 | 0.44 |
| 28:a:977:A:H2' | 28:a:980:C:H42 | 1.83 | 0.44 |
| 28:a:2160:A:N3 | 28:a:2161:A:C8 | 2.85 | 0.44 |
| 28:a:2311:C:H5" | 33:f:88:LYS:HD2 | 1.99 | 0.44 |
| 28:a:2698:A:H2' | 28:a:2699:U:H6 | 1.82 | 0.44 |
| 28:a:2745:G:O6 | 28:a:2753:C:H5" | 2.17 | 0.44 |
| 6:A:499:C:H2' | 6:A:500:A:H8 | 1.81 | 0.44 |
| 10:E:90:THR:HG22 | 10:E:91:GLY:N | 2.33 | 0.44 |
| 10:E:113:ALA:O | 10:E:117:VAL:HG22 | 2.18 | 0.44 |
| 12:G:86:GLN:HB2 | 12:G:148:ASN:OD1 | 2.18 | 0.44 |
| 19:N:46:LEU:HB3 | 24:S:13:LEU:HD22 | 1.99 | 0.44 |
| 28:a:443:A:N7 | 32:e:40:ARG:HG2 | 2.33 | 0.44 |
| 28:a:1534:G:C5 | 28:a:1535:G:H1' | 2.52 | 0.44 |
| 42:o:30:VAL:HG12 | 42:o:81:VAL:HA | 1.99 | 0.44 |
| 6:A:543:C:H5' | 9:D:69:GLU:HB2 | 2.00 | 0.44 |
| 6:A:819:G:H2' | 6:A:820:U:C6 | 2.53 | 0.44 |
| 6:A:965:5MC:H4' | 14:I:127:PHE:HE2 | 1.80 | 0.44 |
| 8:C:156:ARG:HD3 | 8:C:193:TYR:O | 2.18 | 0.44 |
| 20:O:10:LYS:HE2 | 20:O:10:LYS:HB2 | 1.50 | 0.44 |
| 21:P:50:THR:HG22 | 21:P:52:LEU:HD13 | 2.00 | 0.44 |
| 23:R:65:LEU:HD23 | 23:R:65:LEU:HA | 1.80 | 0.44 |
| 25:T:24:ARG:HB3 | 25:T:66:LEU:HD22 | 1.99 | 0.44 |
| 28:a:837:U:H2' | 28:a:838:C:C6 | 2.52 | 0.44 |
| 28:a:1037:A:H2' | 28:a:1038:A:O4' | 2.18 | 0.44 |
| 28:a:1069:G:H3' | 28:a:1070:C:C6 | 2.52 | 0.44 |
| 28:a:2113:G:H8 | 28:a:2113:G:O5' | 2.01 | 0.44 |
| 28:a:2136:G:C6 | 28:a:2152:G:C5 | 3.05 | 0.44 |
| 28:a:2153:U:C4 | 28:a:2154:G:C5 | 3.06 | 0.44 |
| 28:a:2165:U:H2' | 28:a:2166:G:O4' | 2.18 | 0.44 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 28:a:2375:A:H2' | 28:a:2376:A:C8 | 2.53 | 0.44 |
| 6:A:765:A:H2' | 6:A:766:A:O4' | 2.18 | 0.44 |
| 11:F:9:MET:HE3 | 11:F:59:TYR:OH | 2.18 | 0.44 |
| 26:U:5:LYS:HB3 | 26:U:5:LYS:HE2 | 1.74 | 0.44 |
| 26:U:46:LYS:HA | 26:U:46:LYS:HD2 | 1.73 | 0.44 |
| 28:a:1194:G:H2' | 28:a:1195:U:C6 | 2.51 | 0.44 |
| 28:a:1743:C:H2' | 28:a:1744:C:C6 | 2.53 | 0.44 |
| 28:a:2453:G:H2' | 28:a:2454:C:C6 | 2.53 | 0.44 |
| 34:g:164:TYR:HB2 | 34:g:167:GLU:HB3 | 2.00 | 0.44 |
| 51:x:9:LYS:HG2 | 51:x:13:GLU:CB | 2.48 | 0.44 |
| 7:B:23:TRP:CH2 | 7:B:25:PRO:HA | 2.53 | 0.43 |
| 7:B:217:VAL:O | 7:B:221:VAL:HG12 | 2.18 | 0.43 |
| 12:G:74:GLU:O | 12:G:88:PRO:HA | 2.18 | 0.43 |
| 15:J:90:LEU:HA | 15:J:90:LEU:HD12 | 1.76 | 0.43 |
| 28:a:291:G:O6 | 28:a:349:U:O2 | 2.36 | 0.43 |
| 6:A:202:G:H2' | 6:A:203:A:O4' | 2.18 | 0.43 |
| 6:A:916:A:H2' | 6:A:917:A:C8 | 2.53 | 0.43 |
| 6:A:1304:A:H2' | 6:A:1305:U:O4' | 2.18 | 0.43 |
| 6:A:1385:G:H2' | 6:A:1386:C:H6 | 1.83 | 0.43 |
| 14:I:12:ARG:HG3 | 14:I:13:LYS:HG3 | 2.00 | 0.43 |
| 16:K:110:ILE:HG22 | 26:U:19:PHE:CD1 | 2.53 | 0.43 |
| 28:a:739:U:H2' | 28:a:740:A:C8 | 2.54 | 0.43 |
| 28:a:2120:U:H5 | 28:a:2121:G:C4 | 2.36 | 0.43 |
| 28:a:2303:U:H2' | 28:a:2304:C:C6 | 2.52 | 0.43 |
| 30:c:232:HIS:HA | 30:c:242:LYS:HD2 | 2.00 | 0.43 |
| 34:g:18:LYS:HD3 | 34:g:18:LYS:HA | 1.79 | 0.43 |
| 35:h:89:LYS:HB3 | 35:h:89:LYS:HE3 | 1.81 | 0.43 |
| 36:i:73:MET:SD | 36:i:88:THR:HG22 | 2.58 | 0.43 |
| 45:r:74:ILE:HD12 | 45:r:105:VAL:HG22 | 2.00 | 0.43 |
| 6:A:879:G:H2' | 6:A:880:C:O4' | 2.18 | 0.43 |
| 15:J:82:LYS:HE3 | 15:J:82:LYS:HB2 | 1.81 | 0.43 |
| 24:S:10:PHE:O | 24:S:39:THR:HG22 | 2.19 | 0.43 |
| 28:a:2748:A:H1' | 28:a:2750:C:N4 | 2.33 | 0.43 |
| 34:g:17:VAL:HG11 | 34:g:50:LEU:HD21 | 1.99 | 0.43 |
| 36:i:114:LEU:O | 36:i:118:MET:HG3 | 2.19 | 0.43 |
| 6:A:694:A:H2' | 6:A:695:U:C6 | 2.53 | 0.43 |
| 16:K:113:VAL:HG12 | 23:R:73:ARG:NE | 2.33 | 0.43 |
| 19:N:88:ALA:HB2 | 19:N:96:LEU:HD23 | 2.01 | 0.43 |
| 25:T:27:MET:HB3 | 25:T:27:MET:HE3 | 1.66 | 0.43 |
| 28:a:672:G:O2' | 32:e:69:ARG:HD2 | 2.19 | 0.43 |
| 28:a:740:A:H2' | 28:a:741:A:C8 | 2.54 | 0.43 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 28:a:2159:C:H2' | 28:a:2160:A:O4' | 2.19 | 0.43 |
| 7:B:126:PHE:CE2 | 7:B:137:ARG:HB3 | 2.54 | 0.43 |
| 28:a:181:A:H1' | 28:a:435:C:H5' | 2.00 | 0.43 |
| 28:a:1226:G:H2' | 28:a:1227:U:C6 | 2.53 | 0.43 |
| 28:a:1313:U:H2' | 28:a:1314:G:H8 | 1.83 | 0.43 |
| 28:a:1483:A:H2' | 28:a:1484:U:C6 | 2.54 | 0.43 |
| 28:a:2036:G:H2' | 28:a:2037:U:O4' | 2.18 | 0.43 |
| 28:a:2845:U:H2' | 28:a:2846:G:O4' | 2.18 | 0.43 |
| 29:b:66:A:N6 | 29:b:107:G:H2' | 2.33 | 0.43 |
| 37:j:43:ILE:HD11 | 37:j:58:LEU:HD12 | 2.00 | 0.43 |
| 48:u:40:ILE:HD12 | 48:u:42:LEU:HD21 | 1.99 | 0.43 |
| 1:0:4:GLY:C | 1:0:5:ILE:HD13 | 2.43 | 0.43 |
| 6:A:511:C:H2' | 6:A:512:C:H6 | 1.82 | 0.43 |
| 7:B:182:PRO:HA | 7:B:197:ASP:OD2 | 2.19 | 0.43 |
| 20:O:69:TYR:CE1 | 20:O:73:LYS:HE3 | 2.53 | 0.43 |
| 28:a:1257:A:H2' | 28:a:1258:C:O4' | 2.18 | 0.43 |
| 28:a:2191:G:H2' | 28:a:2192:U:C6 | 2.54 | 0.43 |
| 39:l:62:LYS:HD3 | 39:l:64:TRP:CZ2 | 2.53 | 0.43 |
| 52:y:48:VAL:HG11 | 52:y:57:VAL:HG21 | 2.00 | 0.43 |
| 7:B:60:ILE:HD13 | 7:B:60:ILE:HA | 1.87 | 0.43 |
| 22:Q:12:VAL:HG22 | 22:Q:21:ILE:HD12 | 2.01 | 0.43 |
| 26:U:49:LYS:HB2 | 26:U:49:LYS:HE3 | 1.81 | 0.43 |
| 28:a:1202:A:C6 | 32:e:165:HIS:HB2 | 2.53 | 0.43 |
| 28:a:2152:G:C2 | 28:a:2153:U:C5 | 3.07 | 0.43 |
| 28:a:2311:C:H2' | 28:a:2312:A:H8 | 1.84 | 0.43 |
| 28:a:2542:G:H2' | 28:a:2543:G:O4' | 2.19 | 0.43 |
| 28:a:2847:U:H4' | 28:a:2866:A:C2 | 2.54 | 0.43 |
| 30:c:132:MET:SD | 30:c:172:VAL:HG21 | 2.59 | 0.43 |
| 31:d:2:ILE:HD13 | 31:d:90:PHE:CZ | 2.54 | 0.43 |
| 5:4:45:THR:HB | 5:4:47:LYS:NZ | 2.34 | 0.43 |
| 6:A:713:A:H2' | 6:A:714:A:C8 | 2.53 | 0.43 |
| 6:A:937:G:H2' | 6:A:938:C:C6 | 2.54 | 0.43 |
| 6:A:1034:A:H3' | 6:A:1035:C:C6 | 2.54 | 0.43 |
| 7:B:133:GLU:H | 7:B:133:GLU:HG2 | 1.58 | 0.43 |
| 10:E:126:LYS:HG2 | 10:E:128:TYR:CE1 | 2.53 | 0.43 |
| 11:F:18:VAL:O | 11:F:22:ILE:HG13 | 2.19 | 0.43 |
| 19:N:79:LEU:HB2 | 19:N:84:VAL:HG23 | 2.01 | 0.43 |
| 28:a:139:U:H5' | 28:a:140:C:H5 | 1.83 | 0.43 |
| 28:a:296:U:H2' | 28:a:297:G:C8 | 2.53 | 0.43 |
| 28:a:361:G:O2' | 28:a:362:A:H8 | 2.01 | 0.43 |
| 28:a:993:C:N4 | 36:i:2:LYS:HG2 | 2.33 | 0.43 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 28:a:2037:U:H2' | 28:a:2038:G:C8 | 2.54 | 0.43 |
| 50:w:70:GLU:O | 50:w:74:ARG:HG3 | 2.19 | 0.43 |
| 6:A:832:U:H2' | 6:A:833:U:C6 | 2.54 | 0.43 |
| 6:A:909:U:H2' | 6:A:910:C:C6 | 2.54 | 0.43 |
| 6:A:984:U:H2' | 6:A:985:G:O4' | 2.19 | 0.43 |
| 7:B:74:ARG:NH1 | 7:B:74:ARG:HA | 2.34 | 0.43 |
| 8:C:86:LYS:O | 8:C:90:VAL:HG23 | 2.18 | 0.43 |
| 8:C:132:ARG:CG | 8:C:136:ARG:HH21 | 2.32 | 0.43 |
| 10:E:111:MET:HE2 | 10:E:111:MET:HB3 | 1.83 | 0.43 |
| 16:K:108:THR:HG22 | 16:K:109:ASN:OD1 | 2.18 | 0.43 |
| 28:a:1786:C:H2' | 28:a:1787:A:C5 | 2.54 | 0.43 |
| 52:y:3:LYS:HD2 | 52:y:3:LYS:HA | 1.63 | 0.43 |
| 6:A:138:U:H2' | 6:A:139:G:O4' | 2.19 | 0.43 |
| 6:A:649:C:H2' | 6:A:650:U:C6 | 2.54 | 0.43 |
| 7:B:6:MET:HB2 | 7:B:7:ARG:NH1 | 2.33 | 0.43 |
| 7:B:68:LEU:HD11 | 7:B:154:MET:HE1 | 2.01 | 0.43 |
| 20:O:40:GLN:HE21 | 28:a:714:A:H1' | 1.82 | 0.43 |
| 24:S:50:ALA:HA | 24:S:58:VAL:O | 2.19 | 0.43 |
| 28:a:826:U:H2' | 28:a:827:A:C8 | 2.54 | 0.43 |
| 28:a:1066:G:H21 | 28:a:1094:A:C4' | 2.30 | 0.43 |
| 28:a:1426:G:H2' | 28:a:1427:G:C8 | 2.54 | 0.43 |
| 28:a:1700:G:H2' | 28:a:1701:C:C6 | 2.54 | 0.43 |
| 28:a:2228:G:H2' | 28:a:2229:U:C6 | 2.53 | 0.43 |
| 28:a:2749:G:H4' | 34:g:4:VAL:HG23 | 2.00 | 0.43 |
| 37:j:98:ARG:CZ | 37:j:100:PHE:HE1 | 2.31 | 0.43 |
| 6:A:1256:G:H2' | 6:A:1257:C:C6 | 2.54 | 0.42 |
| 7:B:6:MET:HG2 | 7:B:47:VAL:HG21 | 2.00 | 0.42 |
| 28:a:588:A:H2' | 28:a:589:U:C6 | 2.54 | 0.42 |
| 28:a:1078:A:C2 | 28:a:1079:U:C4 | 3.07 | 0.42 |
| 28:a:1227:U:H2' | 28:a:1228:U:O4' | 2.18 | 0.42 |
| 28:a:1491:A:H2' | 28:a:1492:A:C8 | 2.53 | 0.42 |
| 28:a:2049:A:H5' | 28:a:2576:G:O4' | 2.19 | 0.42 |
| 28:a:2893:G:H2' | 28:a:2894:C:C6 | 2.54 | 0.42 |
| 32:e:147:LEU:HD11 | 32:e:170:ARG:HG2 | 2.00 | 0.42 |
| 39:l:105:MET:HE3 | 39:l:113:ALA:HA | 2.01 | 0.42 |
| 6:A:41:G:H2' | 6:A:42:G:H8 | 1.84 | 0.42 |
| 6:A:755:U:H2' | 6:A:756:C:O4' | 2.19 | 0.42 |
| 6:A:1094:C:H2' | 6:A:1095:C:C6 | 2.54 | 0.42 |
| 7:B:218:ALA:HB1 | 7:B:222:ARG:HH12 | 1.83 | 0.42 |
| 17:L:74:LEU:HD21 | 17:L:80:ILE:HG21 | 2.00 | 0.42 |
| 28:a:688:G:H2' | 28:a:689:C:O4' | 2.19 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 28:a:1060:G:C4 | 28:a:1061:G:N2 | 2.87 | 0.42 |
| 28:a:1316:C:O2' | 28:a:1317:C:H5' | 2.19 | 0.42 |
| 28:a:2327:U:H2' | 28:a:2328:G:C8 | 2.54 | 0.42 |
| 30:c:222:GLY:HA2 | 30:c:225:MET:SD | 2.58 | 0.42 |
| 37:j:63:VAL:HG12 | 37:j:107:LEU:HD11 | 2.01 | 0.42 |
| 42:o:93:ARG:HE | 42:o:93:ARG:HB3 | 1.78 | 0.42 |
| 44:q:74:ILE:HB | 44:q:87:GLN:HB3 | 2.00 | 0.42 |
| 47:t:72:ILE:HD12 | 47:t:72:ILE:HA | 1.86 | 0.42 |
| 50:w:49:LEU:HD21 | 50:w:78:TYR:HB2 | 2.01 | 0.42 |
| 6:A:56:U:H2' | 6:A:57:G:H8 | 1.83 | 0.42 |
| 6:A:1012:A:H2' | 6:A:1013:G:C8 | 2.54 | 0.42 |
| 7:B:78:GLU:CD | 7:B:78:GLU:H | 2.28 | 0.42 |
| 7:B:184:PHE:HD1 | 7:B:198:PHE:HB2 | 1.83 | 0.42 |
| 8:C:134:MET:HE3 | 8:C:168:TYR:HD2 | 1.85 | 0.42 |
| 16:K:35:THR:HG22 | 16:K:41:ALA:HA | 2.02 | 0.42 |
| 18:M:71:ARG:CZ | 33:f:115:ARG:HD2 | 2.50 | 0.42 |
| 18:M:90:ARG:CB | 18:M:97:VAL:HG12 | 2.50 | 0.42 |
| 28:a:607:A:H2' | 28:a:608:C:O4' | 2.19 | 0.42 |
| 28:a:2161:A:C2 | 28:a:2162:C:C5 | 3.07 | 0.42 |
| 28:a:2513:C:H2' | 28:a:2514:A:C8 | 2.54 | 0.42 |
| 31:d:131:ASP:HB3 | 31:d:133:THR:O | 2.19 | 0.42 |
| 6:A:573:G:O2' | 6:A:819:G:H5' | 2.19 | 0.42 |
| 6:A:735:C:H2' | 6:A:736:C:C6 | 2.55 | 0.42 |
| 7:B:133:GLU:O | 7:B:137:ARG:HB2 | 2.18 | 0.42 |
| 20:O:74:ASP:OD1 | 20:O:77:ARG:HG3 | 2.19 | 0.42 |
| 28:a:635:A:H4' | 28:a:636:G:O5' | 2.19 | 0.42 |
| 28:a:1426:G:H2' | 28:a:1427:G:H8 | 1.84 | 0.42 |
| 28:a:2024:U:H2' | 28:a:2025:G:O4' | 2.20 | 0.42 |
| 28:a:2695:G:H2' | 28:a:2696:U:O4' | 2.19 | 0.42 |
| 31:d:56:LYS:O | 31:d:60:VAL:HG23 | 2.19 | 0.42 |
| 2:1:18:PHE:HA | 2:1:43:THR:HG21 | 2.00 | 0.42 |
| 6:A:41:G:H2' | 6:A:42:G:C8 | 2.54 | 0.42 |
| 6:A:209:G:H2' | 6:A:210:G:O4' | 2.19 | 0.42 |
| 6:A:517:C:OP2 | 17:L:47:SER:HB3 | 2.20 | 0.42 |
| 6:A:1352:U:H2' | 6:A:1353:A:C8 | 2.55 | 0.42 |
| 27:X:10:MET:HG2 | 27:X:11:GLU:N | 2.34 | 0.42 |
| 28:a:30:G:H2' | 28:a:31:C:C6 | 2.54 | 0.42 |
| 28:a:83:A:OP1 | 47:t:2:ALA:HB2 | 2.20 | 0.42 |
| 28:a:2063:C:H2' | 28:a:2064:C:H6 | 1.83 | 0.42 |
| 28:a:2226:G:H2' | 28:a:2227:U:C6 | 2.53 | 0.42 |
| 32:e:149:ILE:HG22 | 32:e:192:ALA:HB1 | 2.02 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 39:l:6:ARG:HE | 39:l:6:ARG:HB2 | 1.61 | 0.42 |
| 40:m:97:ILE:HG12 | 40:m:113:ILE:HG13 | 2.00 | 0.42 |
| 49:v:59:LEU:HD12 | 49:v:80:ILE:HD12 | 2.02 | 0.42 |
| 6:A:62:U:H2' | 6:A:63:C:C6 | 2.54 | 0.42 |
| 6:A:1270:G:H2' | 6:A:1271:C:C6 | 2.55 | 0.42 |
| 9:D:58:LYS:HD3 | 9:D:203:LEU:HD23 | 2.02 | 0.42 |
| 13:H:96:MET:SD | 13:H:130:ALA:HB1 | 2.60 | 0.42 |
| 28:a:1054:G:H5' | 28:a:1055:A:H1' | 2.02 | 0.42 |
| 28:a:1116:C:H2' | 28:a:1117:U:O4' | 2.19 | 0.42 |
| 28:a:1266:A:H2' | 28:a:1267:C:C6 | 2.55 | 0.42 |
| 28:a:1289:G:H2' | 28:a:1290:C:H6 | 1.82 | 0.42 |
| 28:a:1591:U:H2' | 28:a:1592:C:C6 | 2.55 | 0.42 |
| 28:a:2162:C:H2' | 28:a:2163:C:O4' | 2.20 | 0.42 |
| 28:a:2455:PSU:H2' | 28:a:2456:G:O4' | 2.19 | 0.42 |
| 28:a:2510:C:H2' | 28:a:2511:A:O4' | 2.20 | 0.42 |
| 33:f:29:PRO:HB3 | 33:f:160:ALA:HB2 | 2.01 | 0.42 |
| 33:f:52:ASN:HB3 | 33:f:150:ARG:HH22 | 1.85 | 0.42 |
| 42:o:53:ARG:HD3 | 42:o:53:ARG:HA | 1.92 | 0.42 |
| 48:u:2:PHE:HE2 | 48:u:55:GLU:HG2 | 1.84 | 0.42 |
| 6:A:866:C:H2' | 6:A:867:G:O4' | 2.19 | 0.42 |
| 6:A:1476:U:H2' | 6:A:1477:C:C6 | 2.55 | 0.42 |
| 8:C:47:LEU:HB3 | 8:C:50:ALA:HB3 | 2.02 | 0.42 |
| 20:O:4:SER:O | 20:O:8:LYS:HG3 | 2.19 | 0.42 |
| 28:a:541:A:H2' | 28:a:542:C:C6 | 2.54 | 0.42 |
| 28:a:1391:U:H2' | 28:a:1392:A:O4' | 2.19 | 0.42 |
| 28:a:1804:A:H3' | 28:a:1805:A:C8 | 2.55 | 0.42 |
| 28:a:2119:G:C2 | 28:a:2175:C:C2 | 3.07 | 0.42 |
| 28:a:2141:C:H2' | 28:a:2142:G:O4' | 2.20 | 0.42 |
| 33:f:58:ALA:HB2 | 33:f:65:PRO:HD3 | 2.01 | 0.42 |
| 37:j:51:LYS:H | 37:j:51:LYS:HG2 | 1.67 | 0.42 |
| 6:A:335:G:H2' | 6:A:336:A:H8 | 1.79 | 0.42 |
| 7:B:144:LEU:HD23 | 7:B:144:LEU:HA | 1.81 | 0.42 |
| 15:J:8:ILE:HG12 | 15:J:100:ILE:HD13 | 2.02 | 0.42 |
| 25:T:39:ILE:HD11 | 25:T:83:ILE:HG13 | 2.02 | 0.42 |
| 28:a:208:C:H2' | 28:a:209:C:C6 | 2.54 | 0.42 |
| 28:a:867:G:H2' | 28:a:868:U:O4' | 2.19 | 0.42 |
| 40:m:24:MET:HB3 | 40:m:44:LEU:HD13 | 2.02 | 0.42 |
| 6:A:413:A:C4 | 6:A:414:G:C8 | 3.08 | 0.42 |
| 6:A:1068:U:H2' | 6:A:1069:C:H6 | 1.85 | 0.42 |
| 17:L:82:ILE:O | 17:L:82:ILE:HG13 | 2.18 | 0.42 |
| 24:S:21:LYS:HE3 | 24:S:21:LYS:HB2 | 1.88 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 28:a:1820:G:O3' | 30:c:247:PRO:HD3 | 2.20 | 0.42 |
| 2:1:4:THR:HG22 | 28:a:685:C:H1' | 2.01 | 0.42 |
| 6:A:179:A:N6 | 6:A:193:A:C8 | 2.88 | 0.42 |
| 6:A:318:A:H2' | 6:A:319:A:O4' | 2.19 | 0.42 |
| 8:C:153:VAL:HG22 | 8:C:198:VAL:HG22 | 2.02 | 0.42 |
| 12:G:27:VAL:HG11 | 12:G:40:GLU:HG3 | 2.01 | 0.42 |
| 16:K:86:VAL:HG11 | 16:K:93:ARG:HB3 | 2.01 | 0.42 |
| 18:M:1:MET:HE3 | 18:M:1:MET:HB3 | 1.80 | 0.42 |
| 24:S:36:ARG:HB3 | 24:S:72:GLY:HA3 | 2.02 | 0.42 |
| 27:X:9:GLN:O | 27:X:43:LYS:HD2 | 2.20 | 0.42 |
| 28:a:661:G:H5" | 38:k:17:LYS:HD2 | 2.00 | 0.42 |
| 30:c:120:VAL:HB | 35:h:91:PHE:HB3 | 2.02 | 0.42 |
| 31:d:62:LYS:HB2 | 31:d:62:LYS:HE2 | 1.73 | 0.42 |
| 6:A:1313:U:H2' | 6:A:1314:G:C8 | 2.55 | 0.41 |
| 7:B:27:MET:HE3 | 7:B:188:ASP:O | 2.20 | 0.41 |
| 12:G:26:PHE:HA | 12:G:101:MET:HE3 | 2.01 | 0.41 |
| 17:L:108:LYS:HA | 17:L:108:LYS:HD3 | 1.84 | 0.41 |
| 28:a:27:G:C2 | 28:a:512:G:N3 | 2.88 | 0.41 |
| 28:a:191:A:H2' | 28:a:192:C:H6 | 1.85 | 0.41 |
| 28:a:396:G:H1' | 50:w:29:PHE:HB3 | 2.02 | 0.41 |
| 4:3:2:LYS:HD2 | 4:3:4:ARG:NH2 | 2.34 | 0.41 |
| 5:4:25:ARG:HB2 | 33:f:98:GLU:OE1 | 2.20 | 0.41 |
| 6:A:81:G:H3' | 6:A:82:C:C6 | 2.54 | 0.41 |
| 13:H:45:PHE:HB3 | 13:H:72:VAL:HG22 | 2.02 | 0.41 |
| 25:T:37:ALA:HA | 25:T:40:GLU:HG3 | 2.01 | 0.41 |
| 28:a:39:G:H2' | 28:a:40:U:C6 | 2.55 | 0.41 |
| 28:a:1103:U:H2' | 28:a:1104:G:C8 | 2.52 | 0.41 |
| 28:a:2133:A:H2' | 28:a:2134:G:O4' | 2.19 | 0.41 |
| 28:a:2144:C:H1' | 28:a:2145:A:N3 | 2.35 | 0.41 |
| 28:a:2793:C:H2' | 28:a:2794:U:C6 | 2.55 | 0.41 |
| 35:h:94:ILE:HG23 | 35:h:98:ASP:HB2 | 2.01 | 0.41 |
| 41:n:16:ARG:HA | 41:n:16:ARG:HD3 | 1.87 | 0.41 |
| 50:w:18:ARG:CZ | 50:w:24:ALA:HB2 | 2.51 | 0.41 |
| 6:A:89:U:H2' | 6:A:90:C:C5 | 2.54 | 0.41 |
| 6:A:1117:C:H2' | 6:A:1118:C:H6 | 1.85 | 0.41 |
| 6:A:1434:U:H2' | 6:A:1435:A:C8 | 2.55 | 0.41 |
| 28:a:176:A:O2' | 28:a:177:G:H5' | 2.19 | 0.41 |
| 28:a:751:A:H2' | 28:a:752:U:C6 | 2.55 | 0.41 |
| 36:i:92:MET:HB3 | 36:i:92:MET:HE3 | 1.80 | 0.41 |
| 43:p:76:TYR:CZ | 43:p:80:ILE:HG13 | 2.55 | 0.41 |
| 45:r:24:ILE:HD13 | 45:r:36:LEU:HD11 | 2.03 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 46:s:93:LEU:HD13 | 46:s:93:LEU:HA | 1.81 | 0.41 |
| 48:u:4:ILE:HD12 | 48:u:4:ILE:N | 2.35 | 0.41 |
| 6:A:1028:U:H2' | 6:A:1029:C:C6 | 2.55 | 0.41 |
| 6:A:1116:U:H2' | 6:A:1117:C:H6 | 1.86 | 0.41 |
| 6:A:1493:U:HO2' | 6:A:1494:C:H6 | 1.64 | 0.41 |
| 7:B:152:LYS:HB3 | 7:B:152:LYS:HE2 | 1.95 | 0.41 |
| 9:D:91:LEU:HD23 | 9:D:91:LEU:HA | 1.89 | 0.41 |
| 17:L:121:ARG:HA | 17:L:122:PRO:HD3 | 1.95 | 0.41 |
| 18:M:90:ARG:HA | 18:M:90:ARG:HD2 | 1.85 | 0.41 |
| 28:a:152:G:H2' | 28:a:153:U:H6 | 1.86 | 0.41 |
| 28:a:627:G:H4' | 28:a:648:C:O2 | 2.20 | 0.41 |
| 28:a:826:U:H4' | 28:a:829:G:N1 | 2.35 | 0.41 |
| 33:f:20:PHE:HB2 | 33:f:22:TYR:CE2 | 2.55 | 0.41 |
| 41:n:4:LYS:O | 41:n:8:ILE:HG12 | 2.21 | 0.41 |
| 5:4:57:VAL:HG22 | 24:S:42:PRO:HB3 | 2.02 | 0.41 |
| 16:K:67:ALA:HB1 | 16:K:100:LEU:CD1 | 2.50 | 0.41 |
| 16:K:122:ARG:HA | 16:K:123:PRO:HD3 | 1.97 | 0.41 |
| 28:a:697:A:H2' | 28:a:698:G:O4' | 2.19 | 0.41 |
| 28:a:712:U:H1' | 28:a:715:C:H5 | 1.86 | 0.41 |
| 28:a:1569:A:H2' | 28:a:1570:G:H8 | 1.86 | 0.41 |
| 28:a:2312:A:H1' | 33:f:155:THR:HG21 | 2.02 | 0.41 |
| 30:c:97:LYS:HB3 | 30:c:97:LYS:HE3 | 1.85 | 0.41 |
| 33:f:119:ALA:HB1 | 33:f:167:ARG:HE | 1.86 | 0.41 |
| 35:h:23:ALA:O | 35:h:27:ARG:HB3 | 2.21 | 0.41 |
| 37:j:38:ILE:HD11 | 37:j:112:PHE:HZ | 1.84 | 0.41 |
| 6:A:503:G:H2' | 6:A:504:G:C8 | 2.56 | 0.41 |
| 6:A:510:U:H2' | 6:A:511:C:C6 | 2.55 | 0.41 |
| 6:A:1217:A:H2' | 6:A:1218:G:C8 | 2.55 | 0.41 |
| 8:C:12:LEU:HD23 | 8:C:12:LEU:HA | 1.93 | 0.41 |
| 11:F:51:ILE:O | 11:F:54:LEU:HB2 | 2.21 | 0.41 |
| 11:F:90:MET:HE3 | 11:F:90:MET:HB2 | 1.94 | 0.41 |
| 13:H:24:ALA:HB1 | 13:H:60:GLU:OE2 | 2.20 | 0.41 |
| 18:M:7:ILE:HD12 | 18:M:7:ILE:C | 2.45 | 0.41 |
| 23:R:30:LYS:HE3 | 23:R:33:ILE:HD11 | 2.03 | 0.41 |
| 28:a:139:U:C5 | 46:s:1:MET:HE2 | 2.56 | 0.41 |
| 28:a:347:A:H2' | 28:a:348:A:C8 | 2.55 | 0.41 |
| 28:a:415:A:H2' | 28:a:416:U:C6 | 2.55 | 0.41 |
| 28:a:642:A:C2 | 28:a:2367:A:H1' | 2.55 | 0.41 |
| 28:a:1391:U:H4' | 28:a:1600:A:H4' | 2.03 | 0.41 |
| 28:a:1790:A:H2' | 28:a:1791:C:H6 | 1.84 | 0.41 |
| 6:A:81:G:H22 | 6:A:86:C:H42 | 1.68 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 6:A:222:U:H2' | 6:A:223:C:C6 | 2.56 | 0.41 |
| 6:A:301:A:H2' | 6:A:302:U:O4' | 2.20 | 0.41 |
| 6:A:1003:A:C5 | 6:A:1004:C:H1' | 2.56 | 0.41 |
| 6:A:1400:4OC:H2' | 6:A:1401:C:O4' | 2.20 | 0.41 |
| 7:B:72:THR:HG23 | 7:B:95:ARG:H | 1.83 | 0.41 |
| 8:C:129:MET:HE2 | 8:C:132:ARG:NH1 | 2.33 | 0.41 |
| 9:D:145:ILE:HG13 | 9:D:178:MET:HB3 | 2.03 | 0.41 |
| 10:E:85:VAL:HG23 | 10:E:96:MET:HB2 | 2.02 | 0.41 |
| 28:a:2138:G:C5 | 28:a:2150:G:C6 | 3.08 | 0.41 |
| 28:a:2527:G:O3' | 34:g:175:LYS:HD3 | 2.20 | 0.41 |
| 31:d:179:ARG:HB3 | 31:d:188:LEU:HB2 | 2.03 | 0.41 |
| 37:j:66:LYS:HE2 | 37:j:66:LYS:HB3 | 1.74 | 0.41 |
| 39:l:24:THR:HG22 | 39:l:99:GLY:O | 2.21 | 0.41 |
| 39:l:75:GLU:HG3 | 39:l:90:GLU:CG | 2.50 | 0.41 |
| 6:A:498:G:H2' | 6:A:499:C:C6 | 2.55 | 0.41 |
| 6:A:635:U:H2' | 6:A:636:C:C6 | 2.56 | 0.41 |
| 6:A:675:U:H3 | 6:A:711:G:H22 | 1.67 | 0.41 |
| 6:A:822:G:H2' | 6:A:823:A:H8 | 1.85 | 0.41 |
| 6:A:1495:G:H1' | 6:A:1516:MA6:H2 | 2.03 | 0.41 |
| 14:I:5:GLN:C | 14:I:6:TYR:HD2 | 2.28 | 0.41 |
| 16:K:72:GLU:C | 16:K:74:VAL:H | 2.28 | 0.41 |
| 25:T:24:ARG:HG3 | 25:T:24:ARG:HH11 | 1.85 | 0.41 |
| 28:a:1173:U:H1' | 28:a:1174:G:OP2 | 2.20 | 0.41 |
| 28:a:1280:G:N2 | 28:a:1282:A:H3' | 2.35 | 0.41 |
| 28:a:2811:A:H2' | 28:a:2812:A:C8 | 2.56 | 0.41 |
| 6:A:75:C:H2' | 6:A:76:A:H8 | 1.84 | 0.41 |
| 6:A:405:U:H2' | 6:A:406:A:C8 | 2.55 | 0.41 |
| 6:A:449:A:H61 | 6:A:479:G:H5' | 1.86 | 0.41 |
| 6:A:485:A:H2' | 6:A:486:C:O4' | 2.20 | 0.41 |
| 6:A:761:G:H2' | 6:A:762:C:C6 | 2.56 | 0.41 |
| 6:A:1099:A:H4' | 6:A:1100:A:O5' | 2.21 | 0.41 |
| 7:B:186:ILE:HD13 | 7:B:200:ILE:HB | 2.03 | 0.41 |
| 13:H:42:GLU:HG3 | 13:H:43:GLU:N | 2.35 | 0.41 |
| 14:I:34:SER:HB3 | 14:I:37:GLN:HG3 | 2.03 | 0.41 |
| 25:T:2:ALA:HB3 | 25:T:8:LYS:HG3 | 2.02 | 0.41 |
| 27:X:53:THR:HG22 | 27:X:62:VAL:HG13 | 2.02 | 0.41 |
| 28:a:273:G:H2' | 28:a:274:U:C6 | 2.55 | 0.41 |
| 28:a:850:U:H2' | 28:a:851:U:C6 | 2.56 | 0.41 |
| 28:a:1115:C:H2' | 28:a:1116:C:C6 | 2.56 | 0.41 |
| 28:a:1354:C:H2' | 28:a:1355:G:O4' | 2.21 | 0.41 |
| 28:a:1633:U:H2' | 28:a:1634:A:C8 | 2.56 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 28:a:2063:C:H2' | 28:a:2064:C:C6 | 2.56 | 0.41 |
| 28:a:2106:A:N3 | 28:a:2106:A:H2' | 2.36 | 0.41 |
| 28:a:2139:G:H2' | 28:a:2140:A:C8 | 2.55 | 0.41 |
| 33:f:103:LEU:O | 33:f:108:VAL:HG23 | 2.20 | 0.41 |
| 33:f:108:VAL:HB | 33:f:109:PRO:HD3 | 2.02 | 0.41 |
| 44:q:81:LYS:HA | 44:q:81:LYS:HD3 | 1.86 | 0.41 |
| 47:t:41:LEU:HA | 47:t:41:LEU:HD13 | 1.82 | 0.41 |
| 51:x:39:GLN:HB3 | 51:x:41:HIS:CE1 | 2.56 | 0.41 |
| 5:4:35:ASP:OD2 | 5:4:35:ASP:C | 2.64 | 0.41 |
| 6:A:35:G:H2' | 6:A:36:C:C6 | 2.56 | 0.41 |
| 7:B:101:LEU:HD21 | 7:B:161:LEU:HD11 | 2.03 | 0.41 |
| 11:F:45:ARG:HE | 11:F:45:ARG:HB3 | 1.63 | 0.41 |
| 12:G:90:GLU:CD | 12:G:90:GLU:H | 2.29 | 0.41 |
| 12:G:129:ASP:HB2 | 12:G:131:LYS:HE3 | 2.02 | 0.41 |
| 13:H:48:ASP:OD2 | 13:H:49:PHE:N | 2.54 | 0.41 |
| 14:I:54:LEU:HD22 | 14:I:98:LEU:HD23 | 2.03 | 0.41 |
| 18:M:86:TYR:O | 18:M:90:ARG:HG2 | 2.21 | 0.41 |
| 24:S:70:LYS:O | 24:S:73:GLU:HG3 | 2.20 | 0.41 |
| 26:U:62:ARG:HE | 26:U:62:ARG:HB2 | 1.65 | 0.41 |
| 28:a:128:C:H2' | 28:a:129:C:C6 | 2.56 | 0.41 |
| 28:a:1867:U:H3' | 28:a:1868:A:H8 | 1.86 | 0.41 |
| 28:a:2280:G:H4' | 28:a:2387:G:O2' | 2.21 | 0.41 |
| 28:a:2867:G:H2' | 28:a:2868:C:O4' | 2.21 | 0.41 |
| 31:d:37:VAL:HG22 | 31:d:48:ILE:HG22 | 2.03 | 0.41 |
| 33:f:42:GLU:CD | 33:f:42:GLU:N | 2.79 | 0.41 |
| 36:i:109:LEU:HD22 | 36:i:118:MET:HE2 | 2.03 | 0.41 |
| 47:t:85:PHE:CE1 | 47:t:94:ARG:HG2 | 2.56 | 0.41 |
| 1:0:34:MET:HE1 | 28:a:2284:G:N3 | 2.37 | 0.40 |
| 6:A:689:G:O2' | 6:A:795:C:H4' | 2.20 | 0.40 |
| 28:a:3:U:H2' | 28:a:4:U:C6 | 2.56 | 0.40 |
| 28:a:276:U:H2' | 28:a:277:G:C8 | 2.56 | 0.40 |
| 28:a:1124:A:H8 | 28:a:1124:A:OP1 | 2.04 | 0.40 |
| 28:a:1487:A:H2' | 28:a:1487:A:N3 | 2.36 | 0.40 |
| 28:a:1930:A:H2' | 28:a:1931:G:O4' | 2.21 | 0.40 |
| 28:a:2076:C:H2' | 28:a:2077:U:C6 | 2.56 | 0.40 |
| 28:a:2144:C:H1' | 28:a:2145:A:C4 | 2.56 | 0.40 |
| 3:2:50:VAL:HG11 | 3:2:58:VAL:HG21 | 2.03 | 0.40 |
| 6:A:12:U:H4' | 6:A:524:C:H4' | 2.03 | 0.40 |
| 6:A:159:A:H2' | 6:A:160:A:C8 | 2.56 | 0.40 |
| 9:D:188:ARG:HD2 | 9:D:188:ARG:HA | 1.82 | 0.40 |
| 12:G:133:THR:HG22 | 12:G:134:ALA:H | 1.86 | 0.40 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 28:a:78:U:H2' | 28:a:79:C:C6 | 2.56 | 0.40 |
| 28:a:1063:U:P | 28:a:1064:U:H5" | 2.61 | 0.40 |
| 28:a:1063:U:H3' | 28:a:1064:U:C5' | 2.51 | 0.40 |
| 28:a:2160:A:C2 | 28:a:2161:A:C8 | 3.09 | 0.40 |
| 28:a:2459:A:H2' | 28:a:2460:C:C6 | 2.56 | 0.40 |
| 48:u:6:ALA:HB1 | 48:u:40:ILE:HB | 2.04 | 0.40 |
| 6:A:148:U:H2' | 6:A:149:A:H8 | 1.87 | 0.40 |
| 6:A:406:A:H2' | 6:A:407:U:C6 | 2.56 | 0.40 |
| 17:L:99:ARG:HE | 17:L:99:ARG:HB3 | 1.70 | 0.40 |
| 22:Q:30:LYS:HB2 | 22:Q:37:PHE:CE1 | 2.56 | 0.40 |
| 28:a:184:C:H2' | 28:a:185:G:C8 | 2.57 | 0.40 |
| 28:a:556:U:OP1 | 36:i:113:PRO:HD2 | 2.21 | 0.40 |
| 28:a:1046:A:N7 | 28:a:1109:A:C6 | 2.89 | 0.40 |
| 28:a:2311:C:H2' | 28:a:2312:A:C8 | 2.56 | 0.40 |
| 31:d:121:THR:HB | 31:d:127:PHE:CD2 | 2.56 | 0.40 |
| 4:3:9:LYS:HE2 | 4:3:16:ILE:HD12 | 2.02 | 0.40 |
| 6:A:321:U:H2' | 6:A:322:G:O4' | 2.21 | 0.40 |
| 6:A:475:G:H2' | 6:A:476:A:H8 | 1.83 | 0.40 |
| 6:A:1240:G:H1 | 6:A:1293:U:H3 | 1.68 | 0.40 |
| 9:D:58:LYS:HA | 9:D:200:ILE:HG12 | 2.02 | 0.40 |
| 12:G:18:PHE:CD1 | 12:G:18:PHE:N | 2.89 | 0.40 |
| 19:N:45:VAL:O | 19:N:49:GLN:HG3 | 2.21 | 0.40 |
| 27:X:91:LYS:HE2 | 27:X:91:LYS:HB3 | 1.84 | 0.40 |
| 28:a:494:G:H4' | 45:r:6:GLN:HB3 | 2.02 | 0.40 |
| 28:a:707:U:H2' | 28:a:708:U:C6 | 2.56 | 0.40 |
| 28:a:764:U:H2' | 28:a:765:U:C6 | 2.56 | 0.40 |
| 28:a:1090:C:H2' | 28:a:1091:G:O4' | 2.22 | 0.40 |
| 28:a:1322:U:C4 | 45:r:86:MET:HE1 | 2.56 | 0.40 |
| 28:a:1879:C:H2' | 28:a:1880:U:O4' | 2.20 | 0.40 |
| 28:a:2624:C:H2' | 28:a:2625:G:O4' | 2.22 | 0.40 |
| 29:b:52:A:OP2 | 29:b:52:A:H8 | 2.04 | 0.40 |
| 33:f:74:VAL:HG12 | 33:f:77:PHE:H | 1.87 | 0.40 |
| 6:A:1174:A:H2' | 6:A:1175:G:C8 | 2.57 | 0.40 |
| 28:a:157:C:H2' | 28:a:158:U:O4' | 2.22 | 0.40 |
| 28:a:737:A:H1' | 28:a:738:C:H5 | 1.86 | 0.40 |
| 28:a:1067:A:C2 | 28:a:1094:A:H4' | 2.57 | 0.40 |
| 28:a:1471:U:H2' | 28:a:1472:G:O4' | 2.22 | 0.40 |
| 29:b:51:G:O2' | 29:b:52:A:H5' | 2.20 | 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 | 0 | 49/55 (89%) | 49 (100%) | 0 | 0 | 100 | 100 |
| 2 | 1 | 44/46 (96%) | 44 (100%) | 0 | 0 | 100 | 100 |
| 3 | 2 | 62/65 (95%) | 60 (97%) | 2 (3%) | 0 | 100 | 100 |
| 4 | 3 | 36/38 (95%) | 36 (100%) | 0 | 0 | 100 | 100 |
| 5 | 4 | 68/70 (97%) | 58 (85%) | 10 (15%) | 0 | 100 | 100 |
| 7 | B | 222/241 (92%) | 204 (92%) | 18 (8%) | 0 | 100 | 100 |
| 8 | C | 204/232 (88%) | 197 (97%) | 7 (3%) | 0 | 100 | 100 |
| 9 | D | 203/206 (98%) | 200 (98%) | 3 (2%) | 0 | 100 | 100 |
| 10 | E | 154/167 (92%) | 149 (97%) | 5 (3%) | 0 | 100 | 100 |
| 11 | F | 101/131 (77%) | 97 (96%) | 4 (4%) | 0 | 100 | 100 |
| 12 | G | 151/156 (97%) | 143 (95%) | 8 (5%) | 0 | 100 | 100 |
| 13 | H | 127/130 (98%) | 121 (95%) | 6 (5%) | 0 | 100 | 100 |
| 14 | I | 124/130 (95%) | 118 (95%) | 6 (5%) | 0 | 100 | 100 |
| 15 | J | 96/103 (93%) | 88 (92%) | 7 (7%) | 1 (1%) | 12 | 32 |
| 16 | K | 113/129 (88%) | 105 (93%) | 8 (7%) | 0 | 100 | 100 |
| 17 | L | 120/124 (97%) | 115 (96%) | 5 (4%) | 0 | 100 | 100 |
| 18 | M | 114/118 (97%) | 107 (94%) | 7 (6%) | 0 | 100 | 100 |
| 19 | N | 98/101 (97%) | 96 (98%) | 2 (2%) | 0 | 100 | 100 |
| 20 | O | 86/89 (97%) | 85 (99%) | 1 (1%) | 0 | 100 | 100 |
| 21 | P | 79/82 (96%) | 74 (94%) | 5 (6%) | 0 | 100 | 100 |
| 22 | Q | 77/84 (92%) | 73 (95%) | 4 (5%) | 0 | 100 | 100 |
| 23 | R | 60/75 (80%) | 58 (97%) | 2 (3%) | 0 | 100 | 100 |
| 24 | S | 82/92 (89%) | 77 (94%) | 5 (6%) | 0 | 100 | 100 |
| 25 | T | 84/87 (97%) | 83 (99%) | 1 (1%) | 0 | 100 | 100 |
| 26 | U | 68/71 (96%) | 66 (97%) | 2 (3%) | 0 | 100 | 100 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|---|---|---|---|---|---|---|---|
| 27 | X | 96/111 (86%) | 95 (99%) | 1 (1%) | 0 | 100 | 100 |
| 30 | c | 269/273 (98%) | 258 (96%) | 11 (4%) | 0 | 100 | 100 |
| 31 | d | 206/209 (99%) | 199 (97%) | 6 (3%) | 1 (0%) | 24 | 48 |
| 32 | e | 199/201 (99%) | 196 (98%) | 3 (2%) | 0 | 100 | 100 |
| 33 | f | 175/179 (98%) | 166 (95%) | 9 (5%) | 0 | 100 | 100 |
| 34 | g | 174/177 (98%) | 167 (96%) | 7 (4%) | 0 | 100 | 100 |
| 35 | h | 146/149 (98%) | 136 (93%) | 8 (6%) | 2 (1%) | 9 | 23 |
| 36 | i | 140/142 (99%) | 140 (100%) | 0 | 0 | 100 | 100 |
| 37 | j | 121/123 (98%) | 115 (95%) | 6 (5%) | 0 | 100 | 100 |
| 38 | k | 142/144 (99%) | 138 (97%) | 4 (3%) | 0 | 100 | 100 |
| 39 | l | 132/136 (97%) | 128 (97%) | 4 (3%) | 0 | 100 | 100 |
| 40 | m | 117/128 (91%) | 113 (97%) | 4 (3%) | 0 | 100 | 100 |
| 41 | n | 114/117 (97%) | 109 (96%) | 5 (4%) | 0 | 100 | 100 |
| 42 | o | 112/115 (97%) | 109 (97%) | 3 (3%) | 0 | 100 | 100 |
| 43 | p | 115/118 (98%) | 115 (100%) | 0 | 0 | 100 | 100 |
| 44 | q | 101/103 (98%) | 100 (99%) | 1 (1%) | 0 | 100 | 100 |
| 45 | r | 108/110 (98%) | 104 (96%) | 4 (4%) | 0 | 100 | 100 |
| 46 | s | 91/100 (91%) | 89 (98%) | 2 (2%) | 0 | 100 | 100 |
| 47 | t | 100/104 (96%) | 93 (93%) | 7 (7%) | 0 | 100 | 100 |
| 48 | u | 92/94 (98%) | 87 (95%) | 5 (5%) | 0 | 100 | 100 |
| 49 | v | 76/85 (89%) | 74 (97%) | 2 (3%) | 0 | 100 | 100 |
| 50 | w | 75/78 (96%) | 75 (100%) | 0 | 0 | 100 | 100 |
| 51 | x | 60/63 (95%) | 60 (100%) | 0 | 0 | 100 | 100 |
| 52 | y | 56/59 (95%) | 55 (98%) | 1 (2%) | 0 | 100 | 100 |
| 53 | z | 54/57 (95%) | 52 (96%) | 2 (4%) | 0 | 100 | 100 |
| All | All | 5693/5997 (95%) | 5476 (96%) | 213 (4%) | 4 (0%) | 49 | 73 |

All (4) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 31 | d | 149 | ASN |
| 15 | J | 57 | VAL |
| 35 | h | 76 | GLU |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 35 | h | 115 | VAL |

### 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 | 0 | 46/49 (94%) | 45 (98%) | 1 (2%) | 45 74 |
| 2 | 1 | 38/38 (100%) | 38 (100%) | 0 | 100 100 |
| 3 | 2 | 51/52 (98%) | 51 (100%) | 0 | 100 100 |
| 4 | 3 | 34/34 (100%) | 34 (100%) | 0 | 100 100 |
| 5 | 4 | 60/60 (100%) | 58 (97%) | 2 (3%) | 33 63 |
| 7 | B | 185/198 (93%) | 176 (95%) | 9 (5%) | 22 49 |
| 8 | C | 170/189 (90%) | 166 (98%) | 4 (2%) | 43 72 |
| 9 | D | 171/172 (99%) | 170 (99%) | 1 (1%) | 78 91 |
| 10 | E | 119/126 (94%) | 114 (96%) | 5 (4%) | 26 55 |
| 11 | F | 88/111 (79%) | 85 (97%) | 3 (3%) | 32 62 |
| 12 | G | 126/129 (98%) | 123 (98%) | 3 (2%) | 43 72 |
| 13 | H | 104/105 (99%) | 103 (99%) | 1 (1%) | 68 86 |
| 14 | I | 104/107 (97%) | 101 (97%) | 3 (3%) | 37 67 |
| 15 | J | 87/91 (96%) | 80 (92%) | 7 (8%) | 11 28 |
| 16 | K | 89/98 (91%) | 88 (99%) | 1 (1%) | 65 85 |
| 17 | L | 102/103 (99%) | 102 (100%) | 0 | 100 100 |
| 18 | M | 96/98 (98%) | 92 (96%) | 4 (4%) | 26 55 |
| 19 | N | 83/84 (99%) | 79 (95%) | 4 (5%) | 23 50 |
| 20 | O | 75/76 (99%) | 72 (96%) | 3 (4%) | 28 56 |
| 21 | P | 63/63 (100%) | 62 (98%) | 1 (2%) | 55 80 |
| 22 | Q | 73/78 (94%) | 71 (97%) | 2 (3%) | 39 69 |
| 23 | R | 53/65 (82%) | 52 (98%) | 1 (2%) | 50 77 |
| 24 | S | 72/79 (91%) | 71 (99%) | 1 (1%) | 59 82 |

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| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles |
|---|---|---|---|---|---|
| 25 | T | 65/66 (98%) | 63 (97%) | 2 (3%) | 35 65 |
| 26 | U | 60/61 (98%) | 56 (93%) | 4 (7%) | 15 36 |
| 27 | X | 83/94 (88%) | 81 (98%) | 2 (2%) | 43 72 |
| 30 | c | 215/217 (99%) | 215 (100%) | 0 | 100 100 |
| 31 | d | 163/163 (100%) | 163 (100%) | 0 | 100 100 |
| 32 | e | 165/165 (100%) | 163 (99%) | 2 (1%) | 63 84 |
| 33 | f | 148/150 (99%) | 141 (95%) | 7 (5%) | 23 51 |
| 34 | g | 135/136 (99%) | 133 (98%) | 2 (2%) | 57 81 |
| 35 | h | 112/113 (99%) | 103 (92%) | 9 (8%) | 11 28 |
| 36 | i | 116/116 (100%) | 115 (99%) | 1 (1%) | 70 87 |
| 37 | j | 104/104 (100%) | 101 (97%) | 3 (3%) | 37 67 |
| 38 | k | 105/105 (100%) | 102 (97%) | 3 (3%) | 37 67 |
| 39 | l | 107/107 (100%) | 105 (98%) | 2 (2%) | 50 77 |
| 40 | m | 98/103 (95%) | 96 (98%) | 2 (2%) | 48 76 |
| 41 | n | 86/87 (99%) | 86 (100%) | 0 | 100 100 |
| 42 | o | 99/100 (99%) | 97 (98%) | 2 (2%) | 48 76 |
| 43 | p | 89/90 (99%) | 88 (99%) | 1 (1%) | 65 85 |
| 44 | q | 83/83 (100%) | 80 (96%) | 3 (4%) | 31 60 |
| 45 | r | 92/92 (100%) | 90 (98%) | 2 (2%) | 45 74 |
| 46 | s | 80/84 (95%) | 78 (98%) | 2 (2%) | 42 71 |
| 47 | t | 83/85 (98%) | 81 (98%) | 2 (2%) | 43 72 |
| 48 | u | 76/76 (100%) | 75 (99%) | 1 (1%) | 61 83 |
| 49 | v | 60/64 (94%) | 59 (98%) | 1 (2%) | 53 79 |
| 50 | w | 67/68 (98%) | 65 (97%) | 2 (3%) | 36 66 |
| 51 | x | 53/54 (98%) | 51 (96%) | 2 (4%) | 29 58 |
| 52 | y | 48/49 (98%) | 48 (100%) | 0 | 100 100 |
| 53 | z | 47/48 (98%) | 47 (100%) | 0 | 100 100 |
| All | All | 4728/4885 (97%) | 4615 (98%) | 113 (2%) | 43 72 |

All (113) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 0 | 51 | GLU |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 5 | 4 | 3 | LYS |
| 5 | 4 | 70 | LYS |
| 7 | B | 4 | VAL |
| 7 | B | 10 | LEU |
| 7 | B | 70 | VAL |
| 7 | B | 88 | ASP |
| 7 | B | 101 | LEU |
| 7 | B | 110 | SER |
| 7 | B | 135 | LEU |
| 7 | B | 146 | ASN |
| 7 | B | 148 | LEU |
| 8 | C | 43 | LEU |
| 8 | C | 185 | ASN |
| 8 | C | 192 | THR |
| 8 | C | 206 | GLU |
| 9 | D | 116 | GLN |
| 10 | E | 61 | GLN |
| 10 | E | 134 | ILE |
| 10 | E | 148 | LYS |
| 10 | E | 151 | ASP |
| 10 | E | 161 | VAL |
| 11 | F | 45 | ARG |
| 11 | F | 53 | LYS |
| 11 | F | 76 | THR |
| 12 | G | 47 | LEU |
| 12 | G | 75 | VAL |
| 12 | G | 146 | GLU |
| 13 | H | 96 | MET |
| 14 | I | 21 | ILE |
| 14 | I | 52 | LEU |
| 14 | I | 66 | THR |
| 15 | J | 6 | ILE |
| 15 | J | 15 | HIS |
| 15 | J | 18 | ILE |
| 15 | J | 36 | VAL |
| 15 | J | 80 | THR |
| 15 | J | 84 | VAL |
| 15 | J | 96 | VAL |
| 16 | K | 94 | GLU |
| 18 | M | 1 | MET |
| 18 | M | 17 | ILE |
| 18 | M | 42 | ASN |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 18 | M | 75 | LEU |
| 19 | N | 34 | VAL |
| 19 | N | 45 | VAL |
| 19 | N | 74 | LEU |
| 19 | N | 89 | MET |
| 20 | O | 58 | ARG |
| 20 | O | 75 | VAL |
| 20 | O | 84 | ARG |
| 21 | P | 31 | ARG |
| 22 | Q | 38 | ILE |
| 22 | Q | 42 | THR |
| 23 | R | 73 | ARG |
| 24 | S | 60 | VAL |
| 25 | T | 6 | SER |
| 25 | T | 26 | SER |
| 26 | U | 16 | LEU |
| 26 | U | 28 | VAL |
| 26 | U | 35 | ARG |
| 26 | U | 71 | TYR |
| 27 | X | 13 | THR |
| 27 | X | 62 | VAL |
| 32 | e | 16 | GLU |
| 32 | e | 127 | GLU |
| 33 | f | 25 | VAL |
| 33 | f | 40 | VAL |
| 33 | f | 79 | ILE |
| 33 | f | 108 | VAL |
| 33 | f | 117 | LEU |
| 33 | f | 137 | ILE |
| 33 | f | 147 | ASP |
| 34 | g | 72 | LEU |
| 34 | g | 85 | LYS |
| 35 | h | 76 | GLU |
| 35 | h | 78 | VAL |
| 35 | h | 80 | ILE |
| 35 | h | 108 | VAL |
| 35 | h | 110 | VAL |
| 35 | h | 117 | LEU |
| 35 | h | 121 | VAL |
| 35 | h | 122 | LEU |
| 35 | h | 131 | ASP |
| 36 | i | 12 | LYS |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 37 | j | 45 | GLU |
| 37 | j | 76 | VAL |
| 37 | j | 114 | LYS |
| 38 | k | 86 | GLU |
| 38 | k | 115 | GLU |
| 38 | k | 121 | THR |
| 39 | l | 105 | MET |
| 39 | l | 132 | THR |
| 40 | m | 6 | SER |
| 40 | m | 15 | SER |
| 42 | o | 65 | SER |
| 42 | o | 104 | THR |
| 43 | p | 9 | ILE |
| 44 | q | 26 | ASP |
| 44 | q | 51 | VAL |
| 44 | q | 62 | GLU |
| 45 | r | 68 | ASP |
| 45 | r | 86 | MET |
| 46 | s | 88 | LYS |
| 46 | s | 93 | LEU |
| 47 | t | 41 | LEU |
| 47 | t | 58 | ILE |
| 48 | u | 61 | LEU |
| 49 | v | 39 | ARG |
| 50 | w | 70 | GLU |
| 50 | w | 76 | GLU |
| 51 | x | 9 | LYS |
| 51 | x | 17 | GLU |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (36) such sidechains are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 2 | 1 | 26 | ASN |
| 7 | B | 18 | HIS |
| 7 | B | 58 | ASN |
| 7 | B | 177 | ASN |
| 8 | C | 100 | GLN |
| 8 | C | 102 | ASN |
| 9 | D | 152 | GLN |
| 10 | E | 89 | HIS |
| 16 | K | 22 | HIS |
| 21 | P | 26 | ASN |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 21 | P | 29 | ASN |
| 21 | P | 59 | HIS |
| 23 | R | 31 | ASN |
| 25 | T | 61 | GLN |
| 25 | T | 75 | HIS |
| 27 | X | 19 | HIS |
| 27 | X | 75 | ASN |
| 27 | X | 89 | GLN |
| 30 | c | 25 | HIS |
| 30 | c | 260 | ASN |
| 31 | d | 173 | GLN |
| 33 | f | 135 | GLN |
| 34 | g | 139 | GLN |
| 35 | h | 11 | ASN |
| 36 | i | 67 | ASN |
| 36 | i | 136 | GLN |
| 37 | j | 93 | GLN |
| 40 | m | 18 | GLN |
| 41 | n | 61 | GLN |
| 41 | n | 98 | GLN |
| 42 | o | 41 | GLN |
| 42 | o | 66 | ASN |
| 45 | r | 9 | HIS |
| 48 | u | 12 | GLN |
| 50 | w | 36 | HIS |
| 51 | x | 36 | GLN |

### 5.3.3 RNA (i)

| Mol | Chain | Analysed | Backbone Outliers | Pucker Outliers |
|---|---|---|---|---|
| 28 | a | 2899/2923 (99%) | 438 (15%) | 0 |
| 29 | b | 115/116 (99%) | 17 (14%) | 0 |
| 6 | A | 1529/1550 (98%) | 227 (14%) | 2 (0%) |
| All | All | 4543/4589 (98%) | 682 (15%) | 2 (0%) |

All (682) RNA backbone outliers are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 6 | A | 4 | U |
| 6 | A | 9 | G |
| 6 | A | 22 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 6 | A | 39 | G |
| 6 | A | 44 | A |
| 6 | A | 47 | C |
| 6 | A | 48 | C |
| 6 | A | 51 | A |
| 6 | A | 65 | A |
| 6 | A | 75 | C |
| 6 | A | 76 | A |
| 6 | A | 79 | G |
| 6 | A | 81 | G |
| 6 | A | 83 | U |
| 6 | A | 84 | U |
| 6 | A | 85 | G |
| 6 | A | 86 | C |
| 6 | A | 92 | G |
| 6 | A | 93 | G |
| 6 | A | 118 | A |
| 6 | A | 119 | U |
| 6 | A | 128 | A |
| 6 | A | 129 | A |
| 6 | A | 139 | G |
| 6 | A | 141 | A |
| 6 | A | 142 | G |
| 6 | A | 147 | A |
| 6 | A | 161 | C |
| 6 | A | 171 | U |
| 6 | A | 175 | G |
| 6 | A | 179 | A |
| 6 | A | 180 | A |
| 6 | A | 181 | U |
| 6 | A | 202 | G |
| 6 | A | 205 | C |
| 6 | A | 207 | U |
| 6 | A | 208 | C |
| 6 | A | 210 | G |
| 6 | A | 238 | G |
| 6 | A | 243 | U |
| 6 | A | 244 | A |
| 6 | A | 245 | G |
| 6 | A | 249 | G |
| 6 | A | 251 | A |
| 6 | A | 264 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 6 | A | 265 | C |
| 6 | A | 278 | C |
| 6 | A | 287 | G |
| 6 | A | 319 | A |
| 6 | A | 326 | C |
| 6 | A | 328 | C |
| 6 | A | 345 | G |
| 6 | A | 349 | G |
| 6 | A | 350 | C |
| 6 | A | 352 | G |
| 6 | A | 365 | U |
| 6 | A | 370 | C |
| 6 | A | 371 | A |
| 6 | A | 382 | G |
| 6 | A | 395 | A |
| 6 | A | 404 | G |
| 6 | A | 410 | A |
| 6 | A | 411 | G |
| 6 | A | 412 | A |
| 6 | A | 413 | A |
| 6 | A | 419 | U |
| 6 | A | 420 | C |
| 6 | A | 422 | G |
| 6 | A | 427 | U |
| 6 | A | 437 | U |
| 6 | A | 451 | G |
| 6 | A | 455 | A |
| 6 | A | 456 | U |
| 6 | A | 465 | U |
| 6 | A | 466 | A |
| 6 | A | 473 | U |
| 6 | A | 476 | A |
| 6 | A | 477 | U |
| 6 | A | 479 | G |
| 6 | A | 482 | G |
| 6 | A | 484 | U |
| 6 | A | 493 | A |
| 6 | A | 494 | A |
| 6 | A | 495 | G |
| 6 | A | 509 | C |
| 6 | A | 515 | G |
| 6 | A | 516 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 6 | A | 519 | G |
| 6 | A | 522 | G |
| 6 | A | 525 | G7M |
| 6 | A | 529 | U |
| 6 | A | 530 | A |
| 6 | A | 545 | A |
| 6 | A | 557 | A |
| 6 | A | 570 | A |
| 6 | A | 571 | A |
| 6 | A | 574 | C |
| 6 | A | 575 | G |
| 6 | A | 631 | G |
| 6 | A | 639 | A |
| 6 | A | 651 | A |
| 6 | A | 654 | G |
| 6 | A | 663 | A |
| 6 | A | 700 | A |
| 6 | A | 701 | G |
| 6 | A | 721 | U |
| 6 | A | 722 | G |
| 6 | A | 732 | G |
| 6 | A | 745 | A |
| 6 | A | 746 | G |
| 6 | A | 747 | A |
| 6 | A | 753 | G |
| 6 | A | 775 | A |
| 6 | A | 791 | U |
| 6 | A | 792 | A |
| 6 | A | 810 | G |
| 6 | A | 813 | A |
| 6 | A | 815 | C |
| 6 | A | 817 | A |
| 6 | A | 819 | G |
| 6 | A | 830 | G |
| 6 | A | 838 | C |
| 6 | A | 839 | C |
| 6 | A | 840 | U |
| 6 | A | 841 | U |
| 6 | A | 849 | G |
| 6 | A | 882 | U |
| 6 | A | 888 | G |
| 6 | A | 912 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 6 | A | 924 | G |
| 6 | A | 932 | C |
| 6 | A | 933 | A |
| 6 | A | 958 | U |
| 6 | A | 967 | A |
| 6 | A | 969 | G |
| 6 | A | 973 | A |
| 6 | A | 974 | G |
| 6 | A | 975 | A |
| 6 | A | 990 | U |
| 6 | A | 991 | G |
| 6 | A | 994 | A |
| 6 | A | 1002 | A |
| 6 | A | 1003 | A |
| 6 | A | 1007 | A |
| 6 | A | 1015 | U |
| 6 | A | 1018 | U |
| 6 | A | 1020 | U |
| 6 | A | 1029 | C |
| 6 | A | 1031 | G |
| 6 | A | 1032 | G |
| 6 | A | 1033 | A |
| 6 | A | 1034 | A |
| 6 | A | 1035 | C |
| 6 | A | 1041 | G |
| 6 | A | 1042 | A |
| 6 | A | 1063 | U |
| 6 | A | 1086 | G |
| 6 | A | 1092 | G |
| 6 | A | 1093 | U |
| 6 | A | 1099 | A |
| 6 | A | 1122 | G |
| 6 | A | 1127 | C |
| 6 | A | 1130 | C |
| 6 | A | 1132 | G |
| 6 | A | 1135 | C |
| 6 | A | 1137 | G |
| 6 | A | 1157 | U |
| 6 | A | 1165 | A |
| 6 | A | 1169 | A |
| 6 | A | 1172 | G |
| 6 | A | 1181 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 6 | A | 1182 | G |
| 6 | A | 1194 | A |
| 6 | A | 1195 | A |
| 6 | A | 1198 | C |
| 6 | A | 1200 | U |
| 6 | A | 1211 | A |
| 6 | A | 1212 | C |
| 6 | A | 1224 | C |
| 6 | A | 1225 | A |
| 6 | A | 1226 | C |
| 6 | A | 1236 | A |
| 6 | A | 1239 | G |
| 6 | A | 1255 | A |
| 6 | A | 1258 | G |
| 6 | A | 1273 | A |
| 6 | A | 1278 | A |
| 6 | A | 1284 | U |
| 6 | A | 1285 | A |
| 6 | A | 1288 | G |
| 6 | A | 1295 | G |
| 6 | A | 1298 | G |
| 6 | A | 1300 | C |
| 6 | A | 1303 | G |
| 6 | A | 1315 | C |
| 6 | A | 1317 | A |
| 6 | A | 1318 | C |
| 6 | A | 1321 | G |
| 6 | A | 1329 | G |
| 6 | A | 1334 | C |
| 6 | A | 1336 | G |
| 6 | A | 1344 | A |
| 6 | A | 1351 | G |
| 6 | A | 1361 | A |
| 6 | A | 1366 | A |
| 6 | A | 1373 | A |
| 6 | A | 1376 | C |
| 6 | A | 1377 | G |
| 6 | A | 1395 | C |
| 6 | A | 1396 | A |
| 6 | A | 1417 | G |
| 6 | A | 1430 | G |
| 6 | A | 1439 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 6 | A | 1444 | A |
| 6 | A | 1450 | C |
| 6 | A | 1490 | A |
| 6 | A | 1492 | G |
| 6 | A | 1493 | U |
| 6 | A | 1494 | C |
| 6 | A | 1495 | G |
| 6 | A | 1497 | A |
| 6 | A | 1501 | A |
| 6 | A | 1504 | U |
| 6 | A | 1515 | G |
| 6 | A | 1517 | MA6 |
| 6 | A | 1527 | G |
| 6 | A | 1528 | G |
| 28 | a | 10 | A |
| 28 | a | 15 | G |
| 28 | a | 27 | G |
| 28 | a | 34 | U |
| 28 | a | 42 | A |
| 28 | a | 45 | G |
| 28 | a | 51 | G |
| 28 | a | 55 | G |
| 28 | a | 71 | A |
| 28 | a | 74 | A |
| 28 | a | 75 | G |
| 28 | a | 86 | G |
| 28 | a | 101 | A |
| 28 | a | 102 | U |
| 28 | a | 118 | A |
| 28 | a | 119 | A |
| 28 | a | 120 | U |
| 28 | a | 125 | A |
| 28 | a | 131 | A |
| 28 | a | 136 | G |
| 28 | a | 139 | U |
| 28 | a | 140 | C |
| 28 | a | 141 | G |
| 28 | a | 142 | U |
| 28 | a | 163 | A |
| 28 | a | 165 | A |
| 28 | a | 181 | A |
| 28 | a | 196 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 28 | a | 199 | A |
| 28 | a | 215 | G |
| 28 | a | 216 | A |
| 28 | a | 222 | A |
| 28 | a | 248 | G |
| 28 | a | 250 | G |
| 28 | a | 272 | A |
| 28 | a | 279 | A |
| 28 | a | 288 | U |
| 28 | a | 311 | A |
| 28 | a | 329 | G |
| 28 | a | 330 | A |
| 28 | a | 333 | G |
| 28 | a | 345 | A |
| 28 | a | 360 | U |
| 28 | a | 361 | G |
| 28 | a | 367 | G |
| 28 | a | 386 | G |
| 28 | a | 389 | G |
| 28 | a | 396 | G |
| 28 | a | 400 | G |
| 28 | a | 405 | U |
| 28 | a | 411 | G |
| 28 | a | 420 | C |
| 28 | a | 425 | G |
| 28 | a | 455 | C |
| 28 | a | 467 | G |
| 28 | a | 481 | G |
| 28 | a | 491 | G |
| 28 | a | 505 | A |
| 28 | a | 508 | A |
| 28 | a | 509 | C |
| 28 | a | 532 | A |
| 28 | a | 545 | U |
| 28 | a | 546 | C |
| 28 | a | 547 | G |
| 28 | a | 561 | A |
| 28 | a | 571 | U |
| 28 | a | 573 | A |
| 28 | a | 575 | G |
| 28 | a | 601 | A |
| 28 | a | 612 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 28 | a | 613 | U |
| 28 | a | 625 | A |
| 28 | a | 635 | A |
| 28 | a | 643 | C |
| 28 | a | 645 | G |
| 28 | a | 652 | A |
| 28 | a | 653 | A |
| 28 | a | 683 | A |
| 28 | a | 684 | U |
| 28 | a | 702 | G |
| 28 | a | 715 | C |
| 28 | a | 726 | G |
| 28 | a | 727 | G |
| 28 | a | 728 | A |
| 28 | a | 737 | A |
| 28 | a | 738 | C |
| 28 | a | 745 | 5MU |
| 28 | a | 762 | A |
| 28 | a | 773 | G |
| 28 | a | 774 | G |
| 28 | a | 775 | G |
| 28 | a | 780 | A |
| 28 | a | 782 | G |
| 28 | a | 783 | G |
| 28 | a | 787 | A |
| 28 | a | 789 | C |
| 28 | a | 803 | G |
| 28 | a | 809 | U |
| 28 | a | 810 | C |
| 28 | a | 825 | U |
| 28 | a | 826 | U |
| 28 | a | 827 | A |
| 28 | a | 828 | G |
| 28 | a | 843 | A |
| 28 | a | 844 | C |
| 28 | a | 857 | G |
| 28 | a | 878 | G |
| 28 | a | 879 | G |
| 28 | a | 881 | G |
| 28 | a | 886 | C |
| 28 | a | 889 | G |
| 28 | a | 891 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 28 | a | 893 | U |
| 28 | a | 894 | A |
| 28 | a | 895 | C |
| 28 | a | 908 | A |
| 28 | a | 912 | A |
| 28 | a | 944 | C |
| 28 | a | 946 | C |
| 28 | a | 951 | G |
| 28 | a | 959 | C |
| 28 | a | 972 | G |
| 28 | a | 981 | A |
| 28 | a | 983 | C |
| 28 | a | 987 | G |
| 28 | a | 994 | A |
| 28 | a | 1010 | U |
| 28 | a | 1011 | C |
| 28 | a | 1023 | G |
| 28 | a | 1031 | U |
| 28 | a | 1038 | A |
| 28 | a | 1044 | A |
| 28 | a | 1045 | G |
| 28 | a | 1054 | G |
| 28 | a | 1055 | A |
| 28 | a | 1056 | U |
| 28 | a | 1057 | G |
| 28 | a | 1059 | U |
| 28 | a | 1060 | G |
| 28 | a | 1061 | G |
| 28 | a | 1062 | C |
| 28 | a | 1063 | U |
| 28 | a | 1064 | U |
| 28 | a | 1066 | G |
| 28 | a | 1067 | A |
| 28 | a | 1068 | A |
| 28 | a | 1069 | G |
| 28 | a | 1070 | C |
| 28 | a | 1071 | A |
| 28 | a | 1072 | G |
| 28 | a | 1076 | U |
| 28 | a | 1077 | C |
| 28 | a | 1079 | U |
| 28 | a | 1081 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 28 | a | 1082 | A |
| 28 | a | 1083 | A |
| 28 | a | 1085 | G |
| 28 | a | 1086 | A |
| 28 | a | 1087 | A |
| 28 | a | 1088 | A |
| 28 | a | 1091 | G |
| 28 | a | 1092 | U |
| 28 | a | 1093 | A |
| 28 | a | 1094 | A |
| 28 | a | 1095 | U |
| 28 | a | 1099 | U |
| 28 | a | 1102 | C |
| 28 | a | 1103 | U |
| 28 | a | 1108 | G |
| 28 | a | 1109 | A |
| 28 | a | 1110 | G |
| 28 | a | 1120 | G |
| 28 | a | 1128 | U |
| 28 | a | 1130 | U |
| 28 | a | 1131 | A |
| 28 | a | 1133 | C |
| 28 | a | 1140 | A |
| 28 | a | 1168 | C |
| 28 | a | 1170 | C |
| 28 | a | 1172 | A |
| 28 | a | 1173 | U |
| 28 | a | 1174 | G |
| 28 | a | 1185 | U |
| 28 | a | 1203 | G |
| 28 | a | 1244 | A |
| 28 | a | 1245 | G |
| 28 | a | 1247 | G |
| 28 | a | 1250 | A |
| 28 | a | 1253 | G |
| 28 | a | 1268 | G |
| 28 | a | 1269 | A |
| 28 | a | 1270 | U |
| 28 | a | 1285 | G |
| 28 | a | 1297 | G |
| 28 | a | 1298 | A |
| 28 | a | 1318 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 28 | a | 1326 | U |
| 28 | a | 1335 | G |
| 28 | a | 1340 | G |
| 28 | a | 1341 | U |
| 28 | a | 1349 | U |
| 28 | a | 1362 | A |
| 28 | a | 1376 | U |
| 28 | a | 1380 | A |
| 28 | a | 1392 | A |
| 28 | a | 1408 | U |
| 28 | a | 1413 | G |
| 28 | a | 1425 | C |
| 28 | a | 1431 | A |
| 28 | a | 1449 | G |
| 28 | a | 1450 | A |
| 28 | a | 1479 | G |
| 28 | a | 1490 | C |
| 28 | a | 1505 | A |
| 28 | a | 1506 | A |
| 28 | a | 1507 | G |
| 28 | a | 1512 | A |
| 28 | a | 1519 | A |
| 28 | a | 1521 | G |
| 28 | a | 1526 | G |
| 28 | a | 1532 | A |
| 28 | a | 1533 | C |
| 28 | a | 1534 | G |
| 28 | a | 1536 | U |
| 28 | a | 1545 | A |
| 28 | a | 1557 | G |
| 28 | a | 1562 | C |
| 28 | a | 1563 | A |
| 28 | a | 1566 | A |
| 28 | a | 1575 | U |
| 28 | a | 1580 | A |
| 28 | a | 1581 | U |
| 28 | a | 1582 | C |
| 28 | a | 1604 | C |
| 28 | a | 1605 | A |
| 28 | a | 1631 | A |
| 28 | a | 1644 | U |
| 28 | a | 1645 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 28 | a | 1646 | G |
| 28 | a | 1671 | G |
| 28 | a | 1712 | G |
| 28 | a | 1725 | C |
| 28 | a | 1726 | U |
| 28 | a | 1727 | G |
| 28 | a | 1729 | G |
| 28 | a | 1734 | G |
| 28 | a | 1754 | U |
| 28 | a | 1760 | C |
| 28 | a | 1769 | A |
| 28 | a | 1796 | C |
| 28 | a | 1797 | A |
| 28 | a | 1803 | G |
| 28 | a | 1804 | A |
| 28 | a | 1812 | C |
| 28 | a | 1816 | U |
| 28 | a | 1825 | A |
| 28 | a | 1844 | A |
| 28 | a | 1854 | A |
| 28 | a | 1858 | G |
| 28 | a | 1862 | A |
| 28 | a | 1866 | G |
| 28 | a | 1867 | U |
| 28 | a | 1868 | A |
| 28 | a | 1904 | G |
| 28 | a | 1905 | G |
| 28 | a | 1906 | C |
| 28 | a | 1911 | A |
| 28 | a | 1912 | C |
| 28 | a | 1913 | 3TD |
| 28 | a | 1927 | G |
| 28 | a | 1928 | G |
| 28 | a | 1934 | A |
| 28 | a | 1936 | A |
| 28 | a | 1953 | U |
| 28 | a | 1965 | C |
| 28 | a | 1968 | A |
| 28 | a | 1969 | U |
| 28 | a | 1970 | G |
| 28 | a | 1989 | U |
| 28 | a | 1990 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 28 | a | 1991 | U |
| 28 | a | 2018 | A |
| 28 | a | 2021 | C |
| 28 | a | 2028 | 6MZ |
| 28 | a | 2029 | A |
| 28 | a | 2030 | G |
| 28 | a | 2031 | A |
| 28 | a | 2033 | G |
| 28 | a | 2034 | C |
| 28 | a | 2041 | C |
| 28 | a | 2053 | C |
| 28 | a | 2054 | G |
| 28 | a | 2058 | A |
| 28 | a | 2059 | G |
| 28 | a | 2060 | A |
| 28 | a | 2067 | G7M |
| 28 | a | 2078 | A |
| 28 | a | 2091 | G |
| 28 | a | 2105 | G |
| 28 | a | 2106 | A |
| 28 | a | 2107 | U |
| 28 | a | 2109 | U |
| 28 | a | 2112 | A |
| 28 | a | 2113 | G |
| 28 | a | 2114 | G |
| 28 | a | 2115 | A |
| 28 | a | 2116 | U |
| 28 | a | 2117 | A |
| 28 | a | 2118 | G |
| 28 | a | 2119 | G |
| 28 | a | 2120 | U |
| 28 | a | 2123 | G |
| 28 | a | 2124 | A |
| 28 | a | 2127 | C |
| 28 | a | 2128 | U |
| 28 | a | 2129 | U |
| 28 | a | 2130 | U |
| 28 | a | 2131 | G |
| 28 | a | 2139 | G |
| 28 | a | 2143 | C |
| 28 | a | 2144 | C |
| 28 | a | 2145 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 28 | a | 2152 | G |
| 28 | a | 2155 | G |
| 28 | a | 2156 | A |
| 28 | a | 2157 | G |
| 28 | a | 2158 | C |
| 28 | a | 2167 | A |
| 28 | a | 2170 | U |
| 28 | a | 2171 | A |
| 28 | a | 2174 | A |
| 28 | a | 2175 | C |
| 28 | a | 2177 | C |
| 28 | a | 2178 | U |
| 28 | a | 2179 | U |
| 28 | a | 2180 | U |
| 28 | a | 2185 | U |
| 28 | a | 2186 | U |
| 28 | a | 2190 | U |
| 28 | a | 2192 | U |
| 28 | a | 2193 | U |
| 28 | a | 2195 | U |
| 28 | a | 2196 | A |
| 28 | a | 2201 | U |
| 28 | a | 2202 | G |
| 28 | a | 2209 | U |
| 28 | a | 2223 | A |
| 28 | a | 2236 | G |
| 28 | a | 2237 | G |
| 28 | a | 2266 | A |
| 28 | a | 2276 | A |
| 28 | a | 2281 | C |
| 28 | a | 2285 | A |
| 28 | a | 2286 | A |
| 28 | a | 2303 | U |
| 28 | a | 2306 | G |
| 28 | a | 2307 | A |
| 28 | a | 2317 | G |
| 28 | a | 2320 | A |
| 28 | a | 2323 | G |
| 28 | a | 2331 | A |
| 28 | a | 2332 | U |
| 28 | a | 2334 | A |
| 28 | a | 2343 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 28 | a | 2345 | C |
| 28 | a | 2359 | G |
| 28 | a | 2381 | G |
| 28 | a | 2382 | U |
| 28 | a | 2383 | C |
| 28 | a | 2387 | G |
| 28 | a | 2389 | G |
| 28 | a | 2394 | G |
| 28 | a | 2400 | U |
| 28 | a | 2404 | A |
| 28 | a | 2423 | A |
| 28 | a | 2426 | G |
| 28 | a | 2427 | G |
| 28 | a | 2428 | A |
| 28 | a | 2433 | A |
| 28 | a | 2439 | U |
| 28 | a | 2446 | A |
| 28 | a | 2456 | G |
| 28 | a | 2468 | G |
| 28 | a | 2471 | U |
| 28 | a | 2472 | U |
| 28 | a | 2473 | C |
| 28 | a | 2476 | A |
| 28 | a | 2489 | U |
| 28 | a | 2496 | OMC |
| 28 | a | 2500 | G |
| 28 | a | 2503 | G |
| 28 | a | 2516 | A |
| 28 | a | 2518 | C |
| 28 | a | 2523 | G |
| 28 | a | 2527 | G |
| 28 | a | 2533 | G |
| 28 | a | 2545 | A |
| 28 | a | 2564 | A |
| 28 | a | 2565 | G |
| 28 | a | 2571 | C |
| 28 | a | 2580 | G |
| 28 | a | 2607 | U |
| 28 | a | 2611 | U |
| 28 | a | 2613 | U |
| 28 | a | 2627 | U |
| 28 | a | 2628 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 28 | a | 2644 | C |
| 28 | a | 2659 | G |
| 28 | a | 2661 | G |
| 28 | a | 2687 | U |
| 28 | a | 2688 | U |
| 28 | a | 2712 | G |
| 28 | a | 2724 | A |
| 28 | a | 2730 | G |
| 28 | a | 2731 | A |
| 28 | a | 2742 | G |
| 28 | a | 2746 | A |
| 28 | a | 2755 | A |
| 28 | a | 2760 | C |
| 28 | a | 2763 | A |
| 28 | a | 2776 | A |
| 28 | a | 2788 | U |
| 28 | a | 2789 | G |
| 28 | a | 2791 | G |
| 28 | a | 2796 | U |
| 28 | a | 2797 | A |
| 28 | a | 2806 | G |
| 28 | a | 2818 | A |
| 28 | a | 2819 | A |
| 28 | a | 2833 | A |
| 28 | a | 2834 | U |
| 28 | a | 2847 | U |
| 28 | a | 2859 | U |
| 28 | a | 2870 | A |
| 28 | a | 2871 | A |
| 28 | a | 2877 | A |
| 28 | a | 2882 | U |
| 28 | a | 2889 | U |
| 29 | b | 9 | G |
| 29 | b | 13 | C |
| 29 | b | 24 | G |
| 29 | b | 33 | G |
| 29 | b | 35 | C |
| 29 | b | 37 | C |
| 29 | b | 41 | G |
| 29 | b | 42 | C |
| 29 | b | 44 | G |
| 29 | b | 52 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 29 | b | 56 | G |
| 29 | b | 67 | G |
| 29 | b | 89 | U |
| 29 | b | 90 | C |
| 29 | b | 99 | A |
| 29 | b | 109 | A |
| 29 | b | 118 | C |

All (2) RNA pucker outliers are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 6 | A | 1033 | A |
| 6 | A | 1492 | G |

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

40 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 | $\#\|Z\| > 2$ |
| 39 | 4D4 | l | 81 | 39 | 9,11,12 | 0.86 | 0 | 8,13,15 | 1.78 | 2 (25%) |
| 28 | 2MG | a | 1831 | 28 | 23,26,27 | 2.56 | 7 (30%) | 32,38,41 | 2.16 | 10 (31%) |
| 6 | G7M | A | 525 | 6,56 | 23,26,27 | 2.17 | 5 (21%) | 35,39,42 | 1.91 | 7 (20%) |
| 6 | UR3 | A | 1496 | 6 | 19,22,23 | 2.57 | 6 (31%) | 26,32,35 | 1.28 | 1 (3%) |
| 28 | 5MU | a | 1937 | 28,56 | 19,22,23 | 2.73 | 7 (36%) | 28,32,35 | 3.84 | 10 (35%) |
| 28 | H2U | a | 2447 | 28 | 18,21,22 | 3.92 | 5 (27%) | 21,30,33 | 5.72 | 7 (33%) |
| 17 | D2T | L | 89 | 17 | 7,9,10 | 1.20 | 0 | 6,11,13 | 1.49 | 1 (16%) |
| 28 | 6MZ | a | 2028 | 28 | 22,25,26 | 2.52 | 4 (18%) | 30,36,39 | 2.25 | 10 (33%) |
| 28 | PSU | a | 2602 | 28 | 18,21,22 | 2.24 | 8 (44%) | 22,30,33 | 1.95 | 4 (18%) |
| 28 | 1MG | a | 743 | 28 | 22,26,27 | 2.52 | 6 (27%) | 33,39,42 | 2.02 | 7 (21%) |
| 28 | 5MC | a | 1960 | 28,56 | 18,22,23 | 2.00 | 5 (27%) | 26,32,35 | 1.32 | 2 (7%) |
| 28 | OMG | a | 2249 | 28,56 | 23,26,27 | 2.35 | 6 (26%) | 33,38,41 | 1.86 | 10 (30%) |

| Mol | Type | Chain | Res | Link | Bond lengths | | | Bond angles | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Counts | RMSZ | $\#\|Z\|>2$ | Counts | RMSZ | $\#\|Z\|>2$ |
| 28 | PSU | a | 744 | 28,55 | 18,21,22 | 2.22 | 9 (50%) | 22,30,33 | 1.79 | 3 (13%) |
| 31 | MEQ | d | 150 | 31 | 8,9,10 | 0.86 | 0 | 5,10,12 | 0.54 | 0 |
| 6 | 5MC | A | 1405 | 6 | 18,22,23 | 1.94 | 6 (33%) | 26,32,35 | 1.33 | 1 (3%) |
| 39 | MS6 | l | 82 | 39 | 5,7,8 | 0.60 | 0 | 2,7,9 | 1.43 | 0 |
| 6 | 2MG | A | 1205 | 6,56 | 23,26,27 | 2.57 | 6 (26%) | 32,38,41 | 2.06 | 10 (31%) |
| 28 | PSU | a | 1909 | 28 | 18,21,22 | 2.17 | 8 (44%) | 22,30,33 | 1.86 | 4 (18%) |
| 28 | 2MA | a | 2501 | 28,55,56 | 22,25,26 | 1.39 | 4 (18%) | 33,37,40 | 2.03 | 8 (24%) |
| 6 | 5MC | A | 965 | 6 | 18,22,23 | 2.01 | 6 (33%) | 26,32,35 | 1.38 | 2 (7%) |
| 6 | PSU | A | 514 | 6,55 | 18,21,22 | 2.16 | 7 (38%) | 22,30,33 | 1.92 | 5 (22%) |
| 6 | 2MG | A | 1514 | 6 | 23,26,27 | 2.62 | 7 (30%) | 32,38,41 | 2.10 | 9 (28%) |
| 28 | 5MU | a | 745 | 28 | 19,22,23 | 2.57 | 7 (36%) | 28,32,35 | 4.01 | 12 (42%) |
| 28 | PSU | a | 1915 | 28 | 18,21,22 | 2.10 | 8 (44%) | 22,30,33 | 1.81 | 3 (13%) |
| 6 | 4OC | A | 1400 | 6 | 20,23,24 | 2.20 | 4 (20%) | 26,32,35 | 1.13 | 4 (15%) |
| 28 | OMU | a | 2550 | 28,55,56 | 19,22,23 | 2.80 | 7 (36%) | 26,31,34 | 1.82 | 5 (19%) |
| 6 | 2MG | A | 964 | 6 | 23,26,27 | 2.59 | 6 (26%) | 32,38,41 | 2.08 | 10 (31%) |
| 28 | PSU | a | 2502 | 28,56 | 18,21,22 | 2.30 | 8 (44%) | 22,30,33 | 1.93 | 5 (22%) |
| 28 | 6MZ | a | 1615 | 28 | 22,25,26 | 2.31 | 4 (18%) | 30,36,39 | 2.62 | 11 (36%) |
| 16 | IAS | K | 119 | 16 | 6,7,8 | 1.78 | 1 (16%) | 6,8,10 | 2.58 | 2 (33%) |
| 6 | MA6 | A | 1516 | 6 | 23,26,27 | 1.34 | 3 (13%) | 34,38,41 | 2.18 | 9 (26%) |
| 28 | PSU | a | 2455 | 28 | 18,21,22 | 2.31 | 6 (33%) | 22,30,33 | 2.02 | 4 (18%) |
| 28 | 3TD | a | 1913 | - | 18,22,23 | 2.71 | 7 (38%) | 22,32,35 | 1.71 | 2 (9%) |
| 28 | PSU | a | 2578 | 28 | 18,21,22 | 2.38 | 9 (50%) | 22,30,33 | 2.04 | 5 (22%) |
| 28 | PSU | a | 953 | 28 | 18,21,22 | 2.31 | 8 (44%) | 22,30,33 | 1.92 | 3 (13%) |
| 28 | PSU | a | 2603 | 28 | 18,21,22 | 2.33 | 8 (44%) | 22,30,33 | 2.13 | 4 (18%) |
| 28 | 2MG | a | 2443 | 28 | 23,26,27 | 2.61 | 7 (30%) | 32,38,41 | 2.10 | 10 (31%) |
| 6 | MA6 | A | 1517 | 6 | 23,26,27 | 1.31 | 3 (13%) | 34,38,41 | 2.28 | 9 (26%) |
| 28 | G7M | a | 2067 | 28,56 | 23,26,27 | 2.23 | 5 (21%) | 35,39,42 | 1.88 | 7 (20%) |
| 28 | OMC | a | 2496 | 28,55 | 19,22,23 | 1.86 | 5 (26%) | 26,31,34 | 1.18 | 2 (7%) |

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 |
|---|---|---|---|---|---|---|---|
| 39 | 4D4 | l | 81 | 39 | - | 2/11/12/14 | - |

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| Mol | Type | Chain | Res | Link | Chirals | Torsions | Rings |
|---|---|---|---|---|---|---|---|
| 28 | 2MG | a | 1831 | 28 | - | 0/9/27/28 | 0/3/3/3 |
| 6 | G7M | A | 525 | 6,56 | - | 3/7/25/26 | 0/3/3/3 |
| 6 | UR3 | A | 1496 | 6 | - | 0/7/25/26 | 0/2/2/2 |
| 28 | 5MU | a | 1937 | 28,56 | - | 0/7/25/26 | 0/2/2/2 |
| 28 | H2U | a | 2447 | 28 | - | 0/7/38/39 | 0/2/2/2 |
| 17 | D2T | L | 89 | 17 | - | 4/7/12/14 | - |
| 28 | 6MZ | a | 2028 | 28 | - | 2/9/27/28 | 0/3/3/3 |
| 28 | PSU | a | 2602 | 28 | - | 0/7/25/26 | 0/2/2/2 |
| 28 | 1MG | a | 743 | 28 | - | 0/7/25/26 | 0/3/3/3 |
| 28 | 5MC | a | 1960 | 28,56 | - | 0/7/25/26 | 0/2/2/2 |
| 28 | OMG | a | 2249 | 28,56 | - | 1/9/27/28 | 0/3/3/3 |
| 28 | PSU | a | 744 | 28,55 | - | 1/7/25/26 | 0/2/2/2 |
| 31 | MEQ | d | 150 | 31 | - | 3/8/9/11 | - |
| 6 | 5MC | A | 1405 | 6 | - | 0/7/25/26 | 0/2/2/2 |
| 39 | MS6 | l | 82 | 39 | - | 2/4/6/8 | - |
| 6 | 2MG | A | 1205 | 6,56 | - | 0/9/27/28 | 0/3/3/3 |
| 28 | PSU | a | 1909 | 28 | - | 0/7/25/26 | 0/2/2/2 |
| 28 | 2MA | a | 2501 | 28,55,56 | - | 2/7/25/26 | 0/3/3/3 |
| 6 | 5MC | A | 965 | 6 | - | 0/7/25/26 | 0/2/2/2 |
| 6 | PSU | A | 514 | 6,55 | - | 0/7/25/26 | 0/2/2/2 |
| 6 | 2MG | A | 1514 | 6 | - | 0/9/27/28 | 0/3/3/3 |
| 28 | 5MU | a | 745 | 28 | - | 0/7/25/26 | 0/2/2/2 |
| 28 | PSU | a | 1915 | 28 | - | 0/7/25/26 | 0/2/2/2 |
| 6 | 4OC | A | 1400 | 6 | - | 0/9/29/30 | 0/2/2/2 |
| 28 | OMU | a | 2550 | 28,55,56 | - | 0/9/27/28 | 0/2/2/2 |
| 6 | 2MG | A | 964 | 6 | - | 0/9/27/28 | 0/3/3/3 |
| 28 | PSU | a | 2502 | 28,56 | - | 2/7/25/26 | 0/2/2/2 |
| 28 | 6MZ | a | 1615 | 28 | - | 0/9/27/28 | 0/3/3/3 |
| 16 | IAS | K | 119 | 16 | - | 1/7/7/8 | - |
| 6 | MA6 | A | 1516 | 6 | - | 0/11/29/30 | 0/3/3/3 |
| 28 | PSU | a | 2455 | 28 | - | 0/7/25/26 | 0/2/2/2 |
| 28 | 3TD | a | 1913 | - | - | 0/7/25/26 | 0/2/2/2 |
| 28 | PSU | a | 2578 | 28 | - | 0/7/25/26 | 0/2/2/2 |
| 28 | PSU | a | 953 | 28 | - | 0/7/25/26 | 0/2/2/2 |
| 28 | PSU | a | 2603 | 28 | - | 0/7/25/26 | 0/2/2/2 |
| 28 | 2MG | a | 2443 | 28 | - | 1/9/27/28 | 0/3/3/3 |
| 6 | MA6 | A | 1517 | 6 | - | 3/11/29/30 | 0/3/3/3 |
| 28 | G7M | a | 2067 | 28,56 | - | 3/7/25/26 | 0/3/3/3 |
| 28 | OMC | a | 2496 | 28,55 | - | 0/9/27/28 | 0/2/2/2 |

All (218) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 28 | a | 2028 | 6MZ | C6-N6 | 9.95 | 1.45 | 1.34 |
| 28 | a | 2447 | H2U | O4-C4 | 9.75 | 1.43 | 1.23 |
| 6 | A | 964 | 2MG | O6-C6 | 9.10 | 1.40 | 1.23 |
| 28 | a | 1615 | 6MZ | C6-N6 | 9.06 | 1.44 | 1.34 |
| 6 | A | 1205 | 2MG | O6-C6 | 8.90 | 1.40 | 1.23 |
| 6 | A | 1514 | 2MG | O6-C6 | 8.90 | 1.40 | 1.23 |
| 28 | a | 1831 | 2MG | O6-C6 | 8.82 | 1.40 | 1.23 |
| 28 | a | 2443 | 2MG | O6-C6 | 8.76 | 1.40 | 1.23 |
| 6 | A | 1496 | UR3 | O4-C4 | 8.57 | 1.42 | 1.23 |
| 28 | a | 2249 | OMG | O6-C6 | 8.08 | 1.39 | 1.23 |
| 28 | a | 2447 | H2U | O2-C2 | 7.97 | 1.37 | 1.23 |
| 28 | a | 743 | 1MG | O6-C6 | 7.89 | 1.39 | 1.23 |
| 28 | a | 1913 | 3TD | O4-C4 | 7.73 | 1.39 | 1.23 |
| 28 | a | 2067 | G7M | O6-C6 | 7.67 | 1.38 | 1.23 |
| 28 | a | 2550 | OMU | O4-C4 | 7.64 | 1.39 | 1.24 |
| 28 | a | 2447 | H2U | C2-N1 | 7.53 | 1.46 | 1.35 |
| 6 | A | 525 | G7M | O6-C6 | 7.51 | 1.37 | 1.23 |
| 28 | a | 1937 | 5MU | C2-N1 | -6.53 | 1.28 | 1.38 |
| 28 | a | 2447 | H2U | C2-N3 | 6.26 | 1.49 | 1.38 |
| 6 | A | 1400 | 4OC | O2-C2 | 6.18 | 1.35 | 1.23 |
| 28 | a | 745 | 5MU | C2-N1 | -5.83 | 1.29 | 1.38 |
| 6 | A | 1514 | 2MG | C2-N2 | 5.80 | 1.46 | 1.33 |
| 6 | A | 1205 | 2MG | C2-N2 | 5.75 | 1.46 | 1.33 |
| 28 | a | 743 | 1MG | C2-N2 | 5.60 | 1.44 | 1.34 |
| 6 | A | 964 | 2MG | C2-N2 | 5.58 | 1.45 | 1.33 |
| 28 | a | 2443 | 2MG | C2-N2 | 5.44 | 1.45 | 1.33 |
| 28 | a | 1831 | 2MG | C2-N2 | 5.39 | 1.45 | 1.33 |
| 28 | a | 1937 | 5MU | C2-N3 | -5.39 | 1.28 | 1.38 |
| 28 | a | 745 | 5MU | C2-N3 | -5.28 | 1.28 | 1.38 |
| 6 | A | 1400 | 4OC | C4-N4 | 5.25 | 1.46 | 1.35 |
| 28 | a | 2550 | OMU | C2-N1 | -5.24 | 1.30 | 1.38 |
| 28 | a | 1937 | 5MU | C6-N1 | -4.86 | 1.29 | 1.38 |
| 28 | a | 2578 | PSU | C2-N1 | -4.73 | 1.30 | 1.36 |
| 28 | a | 745 | 5MU | C6-N1 | -4.68 | 1.30 | 1.38 |
| 28 | a | 2603 | PSU | C4-N3 | -4.53 | 1.30 | 1.38 |
| 28 | a | 2603 | PSU | C2-N3 | -4.42 | 1.29 | 1.37 |
| 28 | a | 2502 | PSU | C2-N1 | -4.40 | 1.30 | 1.36 |
| 28 | a | 2455 | PSU | C4-N3 | -4.40 | 1.30 | 1.38 |
| 28 | a | 1960 | 5MC | C2-N1 | -4.40 | 1.30 | 1.40 |
| 28 | a | 2496 | OMC | C4-N4 | 4.36 | 1.44 | 1.33 |
| 28 | a | 2447 | H2U | C4-N3 | 4.36 | 1.45 | 1.37 |
| 28 | a | 953 | PSU | C4-N3 | -4.34 | 1.30 | 1.38 |
| 28 | a | 744 | PSU | C2-N1 | -4.26 | 1.31 | 1.36 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 28 | a | 2496 | OMC | C2-N1 | -4.25 | 1.30 | 1.40 |
| 28 | a | 2501 | 2MA | C6-N6 | 4.24 | 1.44 | 1.34 |
| 28 | a | 2550 | OMU | C4-N3 | -4.24 | 1.31 | 1.38 |
| 28 | a | 2578 | PSU | C4-N3 | -4.24 | 1.31 | 1.38 |
| 28 | a | 2455 | PSU | C2-N1 | -4.22 | 1.31 | 1.36 |
| 28 | a | 953 | PSU | C2-N1 | -4.22 | 1.31 | 1.36 |
| 6 | A | 514 | PSU | C2-N1 | -4.21 | 1.31 | 1.36 |
| 28 | a | 1913 | 3TD | C4-N3 | -4.20 | 1.31 | 1.40 |
| 28 | a | 2550 | OMU | C2-N3 | -4.20 | 1.30 | 1.38 |
| 6 | A | 965 | 5MC | C2-N1 | -4.19 | 1.30 | 1.40 |
| 28 | a | 2502 | PSU | C4-N3 | -4.17 | 1.31 | 1.38 |
| 28 | a | 2602 | PSU | C2-N1 | -4.17 | 1.31 | 1.36 |
| 28 | a | 953 | PSU | C2-N3 | -4.15 | 1.30 | 1.37 |
| 6 | A | 965 | 5MC | C4-N4 | 4.12 | 1.44 | 1.34 |
| 28 | a | 2249 | OMG | C6-N1 | -4.11 | 1.31 | 1.38 |
| 28 | a | 2578 | PSU | C2-N3 | -4.11 | 1.30 | 1.37 |
| 28 | a | 2602 | PSU | C4-N3 | -4.08 | 1.31 | 1.38 |
| 28 | a | 1913 | 3TD | C2-N1 | -4.06 | 1.31 | 1.37 |
| 28 | a | 744 | PSU | C4-N3 | -4.04 | 1.31 | 1.38 |
| 28 | a | 2603 | PSU | C2-N1 | -4.03 | 1.31 | 1.36 |
| 28 | a | 1909 | PSU | C2-N1 | -4.02 | 1.31 | 1.36 |
| 28 | a | 743 | 1MG | C6-N1 | -4.01 | 1.31 | 1.40 |
| 6 | A | 1400 | 4OC | C2-N1 | -3.99 | 1.31 | 1.40 |
| 28 | a | 2455 | PSU | C2-N3 | -3.98 | 1.30 | 1.37 |
| 28 | a | 2502 | PSU | C2-N3 | -3.97 | 1.30 | 1.37 |
| 6 | A | 1405 | 5MC | C4-N4 | 3.94 | 1.44 | 1.34 |
| 28 | a | 1909 | PSU | C4-N3 | -3.93 | 1.31 | 1.38 |
| 6 | A | 514 | PSU | C4-N3 | -3.92 | 1.31 | 1.38 |
| 6 | A | 1405 | 5MC | C2-N1 | -3.91 | 1.31 | 1.40 |
| 28 | a | 1915 | PSU | C4-N3 | -3.89 | 1.31 | 1.38 |
| 28 | a | 2067 | G7M | C5-N7 | -3.87 | 1.34 | 1.39 |
| 28 | a | 744 | PSU | C2-N3 | -3.85 | 1.30 | 1.37 |
| 28 | a | 1960 | 5MC | C6-N1 | -3.85 | 1.31 | 1.38 |
| 28 | a | 1909 | PSU | C2-N3 | -3.85 | 1.30 | 1.37 |
| 6 | A | 525 | G7M | C5-N7 | -3.83 | 1.34 | 1.39 |
| 28 | a | 2602 | PSU | C2-N3 | -3.82 | 1.31 | 1.37 |
| 6 | A | 1496 | UR3 | C4-N3 | -3.81 | 1.32 | 1.40 |
| 28 | a | 2249 | OMG | C2-N2 | 3.74 | 1.43 | 1.34 |
| 28 | a | 1960 | 5MC | C4-N4 | 3.72 | 1.43 | 1.34 |
| 28 | a | 1915 | PSU | C2-N1 | -3.71 | 1.31 | 1.36 |
| 6 | A | 525 | G7M | C6-N1 | -3.70 | 1.32 | 1.38 |
| 28 | a | 1937 | 5MU | C4-N3 | -3.65 | 1.32 | 1.38 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 28 | a | 1915 | PSU | C2-N3 | -3.65 | 1.31 | 1.37 |
| 28 | a | 2028 | 6MZ | C8-N9 | -3.64 | 1.31 | 1.37 |
| 6 | A | 514 | PSU | C2-N3 | -3.64 | 1.31 | 1.37 |
| 28 | a | 745 | 5MU | C4-N3 | -3.63 | 1.32 | 1.38 |
| 6 | A | 1516 | MA6 | C8-N9 | -3.62 | 1.31 | 1.37 |
| 6 | A | 1496 | UR3 | C2-N3 | -3.59 | 1.32 | 1.39 |
| 28 | a | 2067 | G7M | C6-N1 | -3.57 | 1.32 | 1.38 |
| 16 | K | 119 | IAS | OD1-CG | 3.57 | 1.40 | 1.19 |
| 6 | A | 1517 | MA6 | C8-N9 | -3.47 | 1.31 | 1.37 |
| 28 | a | 2443 | 2MG | C6-N1 | -3.45 | 1.32 | 1.38 |
| 6 | A | 1514 | 2MG | C6-N1 | -3.45 | 1.32 | 1.38 |
| 6 | A | 965 | 5MC | C6-N1 | -3.31 | 1.32 | 1.38 |
| 28 | a | 1831 | 2MG | C6-N1 | -3.27 | 1.32 | 1.38 |
| 28 | a | 2455 | PSU | C6-N1 | -3.22 | 1.30 | 1.36 |
| 6 | A | 1516 | MA6 | C6-N6 | 3.20 | 1.46 | 1.36 |
| 6 | A | 1205 | 2MG | C6-N1 | -3.19 | 1.32 | 1.38 |
| 28 | a | 1615 | 6MZ | C8-N9 | -3.19 | 1.31 | 1.37 |
| 6 | A | 1405 | 5MC | C6-N1 | -3.19 | 1.32 | 1.38 |
| 6 | A | 1405 | 5MC | O2-C2 | -3.16 | 1.17 | 1.23 |
| 28 | a | 953 | PSU | O4-C4 | -3.15 | 1.17 | 1.23 |
| 6 | A | 965 | 5MC | O2-C2 | -3.14 | 1.17 | 1.23 |
| 28 | a | 1913 | 3TD | C6-C5 | 3.14 | 1.39 | 1.35 |
| 28 | a | 1909 | PSU | O4-C4 | -3.14 | 1.17 | 1.23 |
| 28 | a | 2603 | PSU | O4-C4 | -3.12 | 1.17 | 1.23 |
| 28 | a | 2550 | OMU | O2-C2 | -3.10 | 1.17 | 1.23 |
| 28 | a | 2455 | PSU | O4-C4 | -3.10 | 1.17 | 1.23 |
| 28 | a | 1937 | 5MU | O4-C4 | -3.08 | 1.17 | 1.23 |
| 28 | a | 2578 | PSU | C6-N1 | -3.07 | 1.31 | 1.36 |
| 6 | A | 1496 | UR3 | C2-N1 | -3.05 | 1.34 | 1.38 |
| 28 | a | 2249 | OMG | C8-N9 | -3.05 | 1.30 | 1.37 |
| 28 | a | 2603 | PSU | C6-N1 | -3.04 | 1.31 | 1.36 |
| 6 | A | 964 | 2MG | C5-N7 | -3.03 | 1.33 | 1.39 |
| 28 | a | 1960 | 5MC | O2-C2 | -3.02 | 1.18 | 1.23 |
| 6 | A | 525 | G7M | C2-N2 | 3.01 | 1.41 | 1.34 |
| 28 | a | 1937 | 5MU | C6-C5 | 2.99 | 1.39 | 1.34 |
| 28 | a | 2443 | 2MG | C5-N7 | -2.99 | 1.33 | 1.39 |
| 6 | A | 964 | 2MG | C6-N1 | -2.99 | 1.33 | 1.38 |
| 28 | a | 2249 | OMG | C5-N7 | -2.98 | 1.33 | 1.39 |
| 28 | a | 2602 | PSU | C6-N1 | -2.97 | 1.31 | 1.36 |
| 28 | a | 2502 | PSU | O4-C4 | -2.95 | 1.18 | 1.23 |
| 6 | A | 1514 | 2MG | C5-N7 | -2.95 | 1.33 | 1.39 |
| 28 | a | 1913 | 3TD | C2-N3 | -2.93 | 1.32 | 1.38 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 6 | A | 514 | PSU | C6-N1 | -2.92 | 1.31 | 1.36 |
| 6 | A | 1517 | MA6 | C6-N6 | 2.91 | 1.45 | 1.36 |
| 28 | a | 2602 | PSU | O4-C4 | -2.91 | 1.18 | 1.23 |
| 28 | a | 745 | 5MU | C6-C5 | 2.89 | 1.39 | 1.34 |
| 28 | a | 2502 | PSU | C6-N1 | -2.89 | 1.31 | 1.36 |
| 28 | a | 744 | PSU | C6-N1 | -2.88 | 1.31 | 1.36 |
| 28 | a | 1831 | 2MG | C5-N7 | -2.88 | 1.33 | 1.39 |
| 28 | a | 2067 | G7M | C2-N2 | 2.87 | 1.41 | 1.34 |
| 28 | a | 745 | 5MU | O2-C2 | -2.86 | 1.17 | 1.23 |
| 6 | A | 1205 | 2MG | C5-N7 | -2.86 | 1.33 | 1.39 |
| 28 | a | 1915 | PSU | O4-C4 | -2.83 | 1.18 | 1.23 |
| 28 | a | 745 | 5MU | O4-C4 | -2.83 | 1.18 | 1.23 |
| 28 | a | 2028 | 6MZ | C5-N7 | -2.81 | 1.33 | 1.39 |
| 28 | a | 2578 | PSU | O4'-C1' | -2.80 | 1.40 | 1.43 |
| 28 | a | 1937 | 5MU | O2-C2 | -2.79 | 1.17 | 1.23 |
| 28 | a | 2578 | PSU | O4-C4 | -2.78 | 1.18 | 1.23 |
| 28 | a | 744 | PSU | O4-C4 | -2.78 | 1.18 | 1.23 |
| 28 | a | 743 | 1MG | C5-N7 | -2.77 | 1.33 | 1.39 |
| 28 | a | 2067 | G7M | C2-N1 | -2.77 | 1.30 | 1.37 |
| 28 | a | 2602 | PSU | O2-C2 | -2.76 | 1.17 | 1.23 |
| 28 | a | 953 | PSU | C6-N1 | -2.76 | 1.31 | 1.36 |
| 28 | a | 2578 | PSU | O2-C2 | -2.76 | 1.17 | 1.23 |
| 28 | a | 2455 | PSU | O2-C2 | -2.73 | 1.17 | 1.23 |
| 28 | a | 1615 | 6MZ | C5-N7 | -2.73 | 1.33 | 1.39 |
| 28 | a | 2502 | PSU | O2-C2 | -2.72 | 1.17 | 1.23 |
| 28 | a | 1909 | PSU | C6-N1 | -2.72 | 1.31 | 1.36 |
| 28 | a | 2603 | PSU | O2-C2 | -2.71 | 1.17 | 1.23 |
| 28 | a | 953 | PSU | O2-C2 | -2.67 | 1.17 | 1.23 |
| 28 | a | 2502 | PSU | C6-C5 | 2.65 | 1.38 | 1.35 |
| 28 | a | 743 | 1MG | C8-N9 | -2.65 | 1.31 | 1.37 |
| 6 | A | 514 | PSU | O4-C4 | -2.65 | 1.18 | 1.23 |
| 28 | a | 1913 | 3TD | C6-N1 | -2.64 | 1.31 | 1.36 |
| 28 | a | 2550 | OMU | C6-N1 | -2.63 | 1.31 | 1.38 |
| 6 | A | 965 | 5MC | C6-C5 | 2.63 | 1.38 | 1.34 |
| 6 | A | 525 | G7M | C2-N1 | -2.61 | 1.31 | 1.37 |
| 28 | a | 2550 | OMU | C5-C4 | -2.57 | 1.37 | 1.43 |
| 6 | A | 514 | PSU | C6-C5 | 2.57 | 1.38 | 1.35 |
| 28 | a | 1915 | PSU | C6-N1 | -2.55 | 1.32 | 1.36 |
| 6 | A | 1516 | MA6 | C5-N7 | -2.54 | 1.34 | 1.39 |
| 28 | a | 2496 | OMC | C5-C4 | -2.54 | 1.37 | 1.42 |
| 28 | a | 2496 | OMC | C2-N3 | -2.50 | 1.31 | 1.36 |
| 28 | a | 1913 | 3TD | O2-C2 | -2.47 | 1.18 | 1.23 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 28 | a | 953 | PSU | C6-C5 | 2.45 | 1.38 | 1.35 |
| 28 | a | 1909 | PSU | O2-C2 | -2.45 | 1.18 | 1.23 |
| 28 | a | 2602 | PSU | C6-C5 | 2.44 | 1.38 | 1.35 |
| 6 | A | 1517 | MA6 | C5-N7 | -2.44 | 1.34 | 1.39 |
| 28 | a | 2249 | OMG | C2-N1 | -2.42 | 1.31 | 1.37 |
| 28 | a | 2443 | 2MG | C4-N9 | -2.41 | 1.31 | 1.38 |
| 6 | A | 1405 | 5MC | C6-C5 | 2.40 | 1.38 | 1.34 |
| 6 | A | 1514 | 2MG | C4-N9 | -2.39 | 1.31 | 1.38 |
| 28 | a | 2443 | 2MG | C8-N9 | -2.38 | 1.32 | 1.37 |
| 28 | a | 2028 | 6MZ | C6-N1 | -2.37 | 1.31 | 1.35 |
| 28 | a | 1915 | PSU | C6-C5 | 2.36 | 1.38 | 1.35 |
| 6 | A | 514 | PSU | O2-C2 | -2.36 | 1.18 | 1.23 |
| 28 | a | 1960 | 5MC | C2-N3 | -2.35 | 1.31 | 1.36 |
| 28 | a | 744 | PSU | O2-C2 | -2.35 | 1.18 | 1.23 |
| 6 | A | 1496 | UR3 | C6-N1 | -2.33 | 1.32 | 1.38 |
| 28 | a | 2443 | 2MG | CM2-N2 | -2.33 | 1.41 | 1.45 |
| 28 | a | 2501 | 2MA | C4-N9 | -2.32 | 1.32 | 1.37 |
| 28 | a | 1831 | 2MG | CM2-N2 | -2.30 | 1.41 | 1.45 |
| 28 | a | 744 | PSU | C6-C5 | 2.30 | 1.38 | 1.35 |
| 6 | A | 1405 | 5MC | C2-N3 | -2.30 | 1.31 | 1.36 |
| 28 | a | 1831 | 2MG | C4-N9 | -2.29 | 1.32 | 1.38 |
| 28 | a | 2501 | 2MA | C8-N9 | -2.28 | 1.33 | 1.37 |
| 28 | a | 1915 | PSU | O2-C2 | -2.26 | 1.18 | 1.23 |
| 28 | a | 2501 | 2MA | C5-N7 | -2.24 | 1.34 | 1.39 |
| 6 | A | 1205 | 2MG | C4-N9 | -2.23 | 1.32 | 1.38 |
| 28 | a | 2496 | OMC | O2-C2 | -2.22 | 1.19 | 1.23 |
| 6 | A | 1514 | 2MG | CM2-N2 | -2.22 | 1.41 | 1.45 |
| 6 | A | 964 | 2MG | C4-N9 | -2.21 | 1.32 | 1.38 |
| 28 | a | 2602 | PSU | C4-C5 | -2.20 | 1.37 | 1.44 |
| 6 | A | 1400 | 4OC | C2-N3 | -2.20 | 1.31 | 1.36 |
| 28 | a | 1915 | PSU | C4-C5 | -2.19 | 1.37 | 1.44 |
| 6 | A | 965 | 5MC | C2-N3 | -2.19 | 1.31 | 1.36 |
| 6 | A | 964 | 2MG | CM2-N2 | -2.19 | 1.41 | 1.45 |
| 28 | a | 1831 | 2MG | C8-N9 | -2.18 | 1.32 | 1.37 |
| 28 | a | 2578 | PSU | C4-C5 | -2.18 | 1.38 | 1.44 |
| 28 | a | 953 | PSU | C4-C5 | -2.17 | 1.38 | 1.44 |
| 6 | A | 1514 | 2MG | C8-N9 | -2.17 | 1.32 | 1.37 |
| 28 | a | 2578 | PSU | C6-C5 | 2.16 | 1.37 | 1.35 |
| 28 | a | 2603 | PSU | C6-C5 | 2.15 | 1.37 | 1.35 |
| 28 | a | 2603 | PSU | C4-C5 | -2.15 | 1.38 | 1.44 |
| 28 | a | 743 | 1MG | C5-C6 | -2.14 | 1.40 | 1.45 |
| 28 | a | 744 | PSU | C4-C5 | -2.14 | 1.38 | 1.44 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 28 | a | 1909 | PSU | C4-C5 | -2.14 | 1.38 | 1.44 |
| 28 | a | 744 | PSU | O4'-C1' | -2.11 | 1.40 | 1.43 |
| 28 | a | 1909 | PSU | C6-C5 | 2.11 | 1.37 | 1.35 |
| 28 | a | 2502 | PSU | C4-C5 | -2.10 | 1.38 | 1.44 |
| 28 | a | 1615 | 6MZ | C4-N9 | -2.09 | 1.33 | 1.37 |
| 6 | A | 1205 | 2MG | C8-N9 | -2.03 | 1.33 | 1.37 |
| 6 | A | 1496 | UR3 | O2-C2 | 2.01 | 1.26 | 1.22 |

All (220) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 28 | a | 2447 | H2U | C4-N3-C2 | -19.08 | 109.96 | 125.79 |
| 28 | a | 2447 | H2U | O2-C2-N1 | -10.55 | 109.86 | 123.11 |
| 28 | a | 745 | 5MU | C5M-C5-C4 | 9.24 | 128.94 | 118.77 |
| 28 | a | 1937 | 5MU | C4-N3-C2 | -8.90 | 115.83 | 127.35 |
| 28 | a | 745 | 5MU | C4-N3-C2 | -8.69 | 116.09 | 127.35 |
| 28 | a | 2447 | H2U | N3-C2-N1 | -8.51 | 107.66 | 116.65 |
| 28 | a | 745 | 5MU | N3-C2-N1 | 8.22 | 125.81 | 114.89 |
| 28 | a | 1937 | 5MU | N3-C2-N1 | 8.22 | 125.80 | 114.89 |
| 28 | a | 1937 | 5MU | C5M-C5-C4 | 8.12 | 127.71 | 118.77 |
| 28 | a | 1937 | 5MU | C5-C6-N1 | -7.81 | 115.30 | 123.34 |
| 28 | a | 2447 | H2U | O4-C4-N3 | -7.80 | 107.91 | 120.28 |
| 28 | a | 745 | 5MU | C5-C6-N1 | -7.57 | 115.55 | 123.34 |
| 28 | a | 1831 | 2MG | C2-N3-C4 | 7.42 | 121.23 | 112.04 |
| 28 | a | 745 | 5MU | C5M-C5-C6 | -7.26 | 113.16 | 122.85 |
| 28 | a | 2443 | 2MG | C2-N3-C4 | 7.24 | 121.02 | 112.04 |
| 6 | A | 1514 | 2MG | C2-N3-C4 | 7.17 | 120.93 | 112.04 |
| 28 | a | 2501 | 2MA | C5-C4-N3 | -7.15 | 119.15 | 127.19 |
| 28 | a | 1937 | 5MU | C5-C4-N3 | 7.03 | 121.31 | 115.31 |
| 6 | A | 1205 | 2MG | C2-N3-C4 | 6.98 | 120.69 | 112.04 |
| 6 | A | 964 | 2MG | C2-N3-C4 | 6.92 | 120.62 | 112.04 |
| 28 | a | 1615 | 6MZ | C9-N6-C6 | -6.89 | 116.94 | 122.87 |
| 28 | a | 1913 | 3TD | N1-C2-N3 | 6.86 | 121.55 | 116.14 |
| 28 | a | 743 | 1MG | C5-C4-N3 | -6.83 | 117.38 | 128.46 |
| 28 | a | 745 | 5MU | C5-C4-N3 | 6.65 | 120.98 | 115.31 |
| 28 | a | 2603 | PSU | N1-C2-N3 | 6.37 | 122.35 | 115.13 |
| 28 | a | 2455 | PSU | N1-C2-N3 | 6.26 | 122.23 | 115.13 |
| 28 | a | 1937 | 5MU | C5M-C5-C6 | -6.24 | 114.52 | 122.85 |
| 28 | a | 2578 | PSU | N1-C2-N3 | 6.19 | 122.14 | 115.13 |
| 28 | a | 2602 | PSU | N1-C2-N3 | 6.05 | 121.98 | 115.13 |
| 28 | a | 2447 | H2U | O2-C2-N3 | -5.94 | 110.44 | 121.50 |
| 28 | a | 2502 | PSU | N1-C2-N3 | 5.94 | 121.86 | 115.13 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 28 | a | 1615 | 6MZ | N1-C2-N3 | -5.88 | 119.40 | 128.60 |
| 28 | a | 2447 | H2U | O4-C4-C5 | -5.85 | 109.68 | 122.17 |
| 6 | A | 514 | PSU | N1-C2-N3 | 5.75 | 121.65 | 115.13 |
| 28 | a | 953 | PSU | N1-C2-N3 | 5.65 | 121.54 | 115.13 |
| 6 | A | 1517 | MA6 | C5-C4-N3 | -5.55 | 119.50 | 126.75 |
| 6 | A | 965 | 5MC | C5-C6-N1 | -5.53 | 117.65 | 123.34 |
| 28 | a | 2550 | OMU | N3-C2-N1 | 5.51 | 122.20 | 114.89 |
| 28 | a | 744 | PSU | N1-C2-N3 | 5.44 | 121.30 | 115.13 |
| 28 | a | 2249 | OMG | C5-C4-N3 | -5.42 | 119.67 | 128.46 |
| 16 | K | 119 | IAS | OD1-CG-CB | -5.39 | 109.73 | 125.43 |
| 28 | a | 1909 | PSU | N1-C2-N3 | 5.35 | 121.19 | 115.13 |
| 28 | a | 1915 | PSU | N1-C2-N3 | 5.32 | 121.16 | 115.13 |
| 6 | A | 1516 | MA6 | C5-C4-N3 | -5.31 | 119.82 | 126.75 |
| 6 | A | 1517 | MA6 | N1-C2-N3 | -5.30 | 120.31 | 128.60 |
| 6 | A | 1405 | 5MC | C5-C6-N1 | -5.29 | 117.90 | 123.34 |
| 28 | a | 2067 | G7M | C2-N3-C4 | 5.28 | 121.71 | 112.30 |
| 28 | a | 2501 | 2MA | N3-C4-N9 | 5.25 | 134.27 | 126.99 |
| 6 | A | 525 | G7M | C2-N3-C4 | 5.16 | 121.49 | 112.30 |
| 28 | a | 1831 | 2MG | C5-C4-N3 | -5.16 | 120.09 | 128.46 |
| 28 | a | 2028 | 6MZ | C9-N6-C6 | -5.13 | 118.46 | 122.87 |
| 28 | a | 1960 | 5MC | C5-C6-N1 | -5.09 | 118.11 | 123.34 |
| 28 | a | 743 | 1MG | C2-N3-C4 | 5.03 | 123.29 | 111.98 |
| 28 | a | 1615 | 6MZ | C5-C4-N3 | -5.02 | 120.20 | 126.75 |
| 6 | A | 1516 | MA6 | N1-C2-N3 | -5.00 | 120.78 | 128.60 |
| 6 | A | 1205 | 2MG | C5-C4-N3 | -5.00 | 120.35 | 128.46 |
| 6 | A | 1514 | 2MG | C5-C4-N3 | -4.98 | 120.38 | 128.46 |
| 28 | a | 2028 | 6MZ | C5-C4-N3 | -4.97 | 120.27 | 126.75 |
| 6 | A | 964 | 2MG | C5-C4-N3 | -4.94 | 120.45 | 128.46 |
| 28 | a | 743 | 1MG | N9-C4-N3 | 4.89 | 135.77 | 125.94 |
| 28 | a | 2443 | 2MG | C5-C4-N3 | -4.86 | 120.58 | 128.46 |
| 28 | a | 2028 | 6MZ | N1-C2-N3 | -4.79 | 121.11 | 128.60 |
| 28 | a | 2603 | PSU | C4-N3-C2 | -4.77 | 119.47 | 126.34 |
| 6 | A | 525 | G7M | C5-C4-N3 | -4.59 | 119.34 | 128.15 |
| 6 | A | 525 | G7M | C5-C6-N1 | 4.47 | 121.12 | 111.79 |
| 28 | a | 1615 | 6MZ | C2-N3-C4 | 4.45 | 122.26 | 111.75 |
| 28 | a | 2550 | OMU | C4-N3-C2 | -4.45 | 120.72 | 126.58 |
| 28 | a | 2249 | OMG | C2-N3-C4 | 4.43 | 120.20 | 112.30 |
| 6 | A | 1496 | UR3 | C4-N3-C2 | -4.40 | 120.42 | 124.56 |
| 6 | A | 1517 | MA6 | C2-N3-C4 | 4.34 | 121.99 | 111.75 |
| 28 | a | 2067 | G7M | C5-C4-N3 | -4.32 | 119.86 | 128.15 |
| 6 | A | 1517 | MA6 | N3-C4-N9 | 4.28 | 134.13 | 127.08 |
| 6 | A | 1516 | MA6 | C2-N1-C6 | 4.25 | 121.80 | 111.75 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 28 | a | 2067 | G7M | C5-C6-N1 | 4.21 | 120.57 | 111.79 |
| 28 | a | 1615 | 6MZ | C6-C5-N7 | 4.18 | 136.92 | 132.39 |
| 28 | a | 2249 | OMG | N9-C4-N3 | 4.14 | 134.25 | 125.94 |
| 28 | a | 2067 | G7M | C6-C5-N7 | 4.14 | 137.25 | 132.25 |
| 28 | a | 745 | 5MU | O4-C4-N3 | -4.11 | 112.24 | 120.12 |
| 6 | A | 1517 | MA6 | C2-N1-C6 | 4.10 | 121.43 | 111.75 |
| 28 | a | 2455 | PSU | C4-N3-C2 | -4.09 | 120.44 | 126.34 |
| 28 | a | 1909 | PSU | C4-N3-C2 | -4.07 | 120.48 | 126.34 |
| 6 | A | 1516 | MA6 | N3-C4-N9 | 4.05 | 133.75 | 127.08 |
| 6 | A | 1516 | MA6 | C2-N3-C4 | 4.02 | 121.24 | 111.75 |
| 28 | a | 953 | PSU | C4-N3-C2 | -4.00 | 120.57 | 126.34 |
| 28 | a | 745 | 5MU | C1'-N1-C6 | -3.85 | 114.71 | 121.12 |
| 28 | a | 1937 | 5MU | O2-C2-N1 | -3.83 | 117.69 | 122.79 |
| 28 | a | 1915 | PSU | C4-N3-C2 | -3.83 | 120.82 | 126.34 |
| 6 | A | 1517 | MA6 | N9-C8-N7 | -3.82 | 108.69 | 113.91 |
| 28 | a | 2028 | 6MZ | C2-N3-C4 | 3.79 | 120.71 | 111.75 |
| 6 | A | 525 | G7M | O6-C6-C5 | -3.78 | 119.53 | 128.06 |
| 28 | a | 1937 | 5MU | O4-C4-N3 | -3.78 | 112.87 | 120.12 |
| 28 | a | 744 | PSU | C4-N3-C2 | -3.77 | 120.90 | 126.34 |
| 28 | a | 2578 | PSU | C4-N3-C2 | -3.76 | 120.92 | 126.34 |
| 28 | a | 2496 | OMC | O2-C2-N3 | -3.73 | 116.26 | 122.33 |
| 28 | a | 2602 | PSU | C4-N3-C2 | -3.72 | 120.98 | 126.34 |
| 28 | a | 2455 | PSU | O2-C2-N1 | -3.66 | 118.76 | 122.79 |
| 6 | A | 514 | PSU | O2-C2-N1 | -3.64 | 118.78 | 122.79 |
| 6 | A | 1516 | MA6 | N9-C8-N7 | -3.63 | 108.94 | 113.91 |
| 39 | l | 81 | 4D4 | NE-CZ-NH2 | 3.62 | 127.06 | 120.70 |
| 6 | A | 525 | G7M | N9-C4-N3 | 3.62 | 133.20 | 125.94 |
| 6 | A | 514 | PSU | C4-N3-C2 | -3.57 | 121.19 | 126.34 |
| 28 | a | 2578 | PSU | O2-C2-N1 | -3.57 | 118.86 | 122.79 |
| 28 | a | 2502 | PSU | C4-N3-C2 | -3.57 | 121.20 | 126.34 |
| 28 | a | 2602 | PSU | O2-C2-N1 | -3.50 | 118.93 | 122.79 |
| 6 | A | 1517 | MA6 | C4-N9-C8 | 3.48 | 109.50 | 105.73 |
| 28 | a | 745 | 5MU | O2-C2-N3 | -3.47 | 115.04 | 121.50 |
| 6 | A | 1517 | MA6 | C5-N7-C8 | 3.46 | 108.42 | 103.51 |
| 6 | A | 1516 | MA6 | C5-N7-C8 | 3.46 | 108.42 | 103.51 |
| 28 | a | 1831 | 2MG | C6-C5-N7 | 3.39 | 136.55 | 130.25 |
| 6 | A | 525 | G7M | C6-C5-N7 | 3.35 | 136.29 | 132.25 |
| 28 | a | 2443 | 2MG | C6-C5-N7 | 3.34 | 136.47 | 130.25 |
| 28 | a | 2067 | G7M | O6-C6-C5 | -3.31 | 120.58 | 128.06 |
| 6 | A | 1516 | MA6 | C4-N9-C8 | 3.31 | 109.31 | 105.73 |
| 28 | a | 1615 | 6MZ | N3-C4-N9 | 3.29 | 132.50 | 127.08 |
| 6 | A | 1205 | 2MG | N9-C4-N3 | 3.27 | 132.50 | 125.94 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 28 | a | 2028 | 6MZ | N3-C4-N9 | 3.27 | 132.46 | 127.08 |
| 6 | A | 1514 | 2MG | C6-C5-N7 | 3.25 | 136.29 | 130.25 |
| 28 | a | 1615 | 6MZ | N9-C8-N7 | -3.25 | 109.47 | 113.91 |
| 28 | a | 2603 | PSU | O2-C2-N1 | -3.25 | 119.21 | 122.79 |
| 28 | a | 2550 | OMU | O2-C2-N1 | -3.24 | 118.48 | 122.79 |
| 28 | a | 2028 | 6MZ | C6-C5-N7 | 3.21 | 135.86 | 132.39 |
| 6 | A | 964 | 2MG | N9-C4-N3 | 3.20 | 132.36 | 125.94 |
| 28 | a | 2443 | 2MG | N9-C4-N3 | 3.19 | 132.34 | 125.94 |
| 28 | a | 1831 | 2MG | N9-C4-N3 | 3.13 | 132.23 | 125.94 |
| 28 | a | 2067 | G7M | N9-C4-N3 | 3.12 | 132.20 | 125.94 |
| 28 | a | 1615 | 6MZ | C5-N7-C8 | 3.09 | 107.90 | 103.51 |
| 28 | a | 2501 | 2MA | N9-C8-N7 | -3.07 | 109.72 | 113.91 |
| 6 | A | 1516 | MA6 | C4-C5-N7 | -3.06 | 106.89 | 110.62 |
| 28 | a | 2028 | 6MZ | C5-N7-C8 | 3.04 | 107.83 | 103.51 |
| 28 | a | 953 | PSU | O2-C2-N1 | -3.01 | 119.48 | 122.79 |
| 28 | a | 1909 | PSU | O2-C2-N1 | -3.01 | 119.48 | 122.79 |
| 28 | a | 2028 | 6MZ | N9-C8-N7 | -3.01 | 109.80 | 113.91 |
| 28 | a | 2028 | 6MZ | C4-C5-N7 | -2.99 | 106.97 | 110.62 |
| 28 | a | 744 | PSU | O2-C2-N1 | -2.99 | 119.50 | 122.79 |
| 6 | A | 1514 | 2MG | N9-C4-N3 | 2.98 | 131.92 | 125.94 |
| 6 | A | 1400 | 4OC | O2-C2-N3 | -2.95 | 117.53 | 122.33 |
| 6 | A | 1517 | MA6 | C4-C5-N7 | -2.95 | 107.02 | 110.62 |
| 6 | A | 1205 | 2MG | C6-C5-N7 | 2.95 | 135.74 | 130.25 |
| 28 | a | 2502 | PSU | O2-C2-N1 | -2.90 | 119.60 | 122.79 |
| 28 | a | 2550 | OMU | C5-C4-N3 | 2.88 | 119.15 | 114.84 |
| 28 | a | 1615 | 6MZ | C4-C5-N7 | -2.88 | 107.11 | 110.62 |
| 6 | A | 525 | G7M | C2-N1-C6 | -2.84 | 119.92 | 125.10 |
| 28 | a | 2501 | 2MA | C5-N7-C8 | 2.82 | 107.52 | 103.51 |
| 6 | A | 964 | 2MG | C6-C5-N7 | 2.82 | 135.49 | 130.25 |
| 6 | A | 964 | 2MG | CM2-N2-C2 | -2.81 | 117.65 | 123.86 |
| 28 | a | 1915 | PSU | O2-C2-N1 | -2.76 | 119.75 | 122.79 |
| 28 | a | 745 | 5MU | O2-C2-N1 | -2.73 | 119.16 | 122.79 |
| 28 | a | 2501 | 2MA | C4-N9-C8 | 2.72 | 108.68 | 105.73 |
| 28 | a | 2249 | OMG | O6-C6-C5 | -2.72 | 119.37 | 126.60 |
| 28 | a | 1831 | 2MG | C4-C5-N7 | -2.72 | 106.42 | 110.72 |
| 6 | A | 1514 | 2MG | C4-C5-N7 | -2.71 | 106.43 | 110.72 |
| 28 | a | 1937 | 5MU | O2-C2-N3 | -2.68 | 116.51 | 121.50 |
| 28 | a | 1937 | 5MU | C6-N1-C2 | 2.65 | 123.98 | 121.30 |
| 28 | a | 2067 | G7M | C2-N1-C6 | -2.63 | 120.31 | 125.10 |
| 17 | L | 89 | D2T | OD1-CG-CB | -2.60 | 117.00 | 122.44 |
| 28 | a | 2502 | PSU | C6-N1-C2 | -2.59 | 120.03 | 122.68 |
| 28 | a | 2249 | OMG | C5-C6-N1 | 2.59 | 119.77 | 113.19 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 28 | a | 2501 | 2MA | C4-C5-N7 | -2.57 | 107.49 | 110.62 |
| 6 | A | 1400 | 4OC | CM4-N4-C4 | -2.55 | 117.48 | 122.45 |
| 28 | a | 743 | 1MG | C5-C6-N1 | 2.52 | 119.78 | 114.91 |
| 6 | A | 964 | 2MG | C2-N1-C6 | -2.50 | 121.60 | 124.48 |
| 28 | a | 1831 | 2MG | C2-N1-C6 | -2.50 | 121.60 | 124.48 |
| 6 | A | 964 | 2MG | O6-C6-C5 | -2.50 | 119.97 | 126.60 |
| 28 | a | 2578 | PSU | O4'-C1'-C2' | 2.48 | 108.64 | 105.14 |
| 28 | a | 2602 | PSU | C6-N1-C2 | -2.47 | 120.16 | 122.68 |
| 28 | a | 2443 | 2MG | C4-C5-N7 | -2.46 | 106.83 | 110.72 |
| 28 | a | 1913 | 3TD | C4-N3-C2 | -2.44 | 121.95 | 124.61 |
| 6 | A | 1205 | 2MG | C4-C5-N7 | -2.44 | 106.86 | 110.72 |
| 28 | a | 1831 | 2MG | CM2-N2-C2 | -2.44 | 118.48 | 123.86 |
| 28 | a | 2249 | OMG | C2-N1-C6 | -2.44 | 120.66 | 125.10 |
| 39 | l | 81 | 4D4 | NH1-CZ-NE | -2.43 | 113.60 | 119.19 |
| 28 | a | 2578 | PSU | C6-N1-C2 | -2.41 | 120.22 | 122.68 |
| 28 | a | 2550 | OMU | O4-C4-C5 | -2.39 | 120.95 | 125.16 |
| 28 | a | 2249 | OMG | C6-C5-N7 | 2.38 | 134.68 | 130.25 |
| 6 | A | 965 | 5MC | C5-C4-N3 | -2.37 | 119.12 | 121.67 |
| 6 | A | 964 | 2MG | C4-C5-N7 | -2.37 | 106.97 | 110.72 |
| 6 | A | 1205 | 2MG | O6-C6-C5 | -2.37 | 120.32 | 126.60 |
| 28 | a | 1831 | 2MG | C5-C6-N1 | 2.34 | 119.14 | 113.19 |
| 28 | a | 2496 | OMC | N1-C2-N3 | 2.34 | 123.06 | 118.81 |
| 28 | a | 2603 | PSU | C5-C6-N1 | -2.33 | 118.61 | 122.11 |
| 6 | A | 1400 | 4OC | C5-C4-N3 | -2.33 | 118.84 | 122.59 |
| 28 | a | 745 | 5MU | C6-N1-C2 | 2.32 | 123.65 | 121.30 |
| 28 | a | 2443 | 2MG | C5-C6-N1 | 2.32 | 119.08 | 113.19 |
| 28 | a | 1615 | 6MZ | C4-N9-C8 | 2.31 | 108.23 | 105.73 |
| 28 | a | 2443 | 2MG | CM2-N2-C2 | -2.28 | 118.83 | 123.86 |
| 28 | a | 2249 | OMG | C8-N7-C5 | 2.26 | 108.34 | 104.24 |
| 6 | A | 514 | PSU | O4'-C1'-C2' | 2.26 | 108.32 | 105.14 |
| 28 | a | 2447 | H2U | C5-C4-N3 | -2.25 | 114.12 | 116.65 |
| 28 | a | 745 | 5MU | C1'-N1-C2 | 2.22 | 121.59 | 117.57 |
| 28 | a | 2028 | 6MZ | C4-N9-C8 | 2.21 | 108.12 | 105.73 |
| 6 | A | 1205 | 2MG | C2-N1-C6 | -2.20 | 121.94 | 124.48 |
| 6 | A | 1205 | 2MG | C5-C6-N1 | 2.20 | 118.78 | 113.19 |
| 6 | A | 514 | PSU | C6-N1-C2 | -2.20 | 120.43 | 122.68 |
| 6 | A | 1514 | 2MG | N1-C2-N3 | -2.19 | 120.56 | 123.95 |
| 6 | A | 964 | 2MG | C5-C6-N1 | 2.19 | 118.76 | 113.19 |
| 28 | a | 743 | 1MG | C6-C5-N7 | 2.18 | 134.28 | 129.35 |
| 28 | a | 743 | 1MG | C4-C5-N7 | -2.17 | 107.28 | 110.72 |
| 6 | A | 1514 | 2MG | C8-N7-C5 | 2.17 | 108.17 | 104.24 |
| 28 | a | 2443 | 2MG | N1-C2-N3 | -2.17 | 120.60 | 123.95 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 28 | a | 2501 | 2MA | N6-C6-N1 | 2.17 | 120.10 | 117.03 |
| 16 | K | 119 | IAS | OXT-C-CA | 2.17 | 120.76 | 113.38 |
| 28 | a | 2249 | OMG | N9-C8-N7 | -2.17 | 109.31 | 113.39 |
| 28 | a | 1831 | 2MG | C8-N7-C5 | 2.16 | 108.16 | 104.24 |
| 6 | A | 1514 | 2MG | C5-C6-N1 | 2.15 | 118.65 | 113.19 |
| 28 | a | 2443 | 2MG | C2-N1-C6 | -2.15 | 122.01 | 124.48 |
| 6 | A | 964 | 2MG | C8-N7-C5 | 2.10 | 108.03 | 104.24 |
| 28 | a | 2455 | PSU | C6-N1-C2 | -2.09 | 120.55 | 122.68 |
| 6 | A | 1205 | 2MG | C8-N7-C5 | 2.09 | 108.02 | 104.24 |
| 6 | A | 1514 | 2MG | CM2-N2-C2 | -2.09 | 119.26 | 123.86 |
| 28 | a | 2501 | 2MA | N3-C2-N1 | -2.08 | 121.90 | 125.72 |
| 28 | a | 1909 | PSU | O4'-C1'-C2' | 2.07 | 108.07 | 105.14 |
| 28 | a | 1615 | 6MZ | C5-C6-N1 | 2.07 | 120.41 | 118.20 |
| 6 | A | 1400 | 4OC | N1-C2-N3 | 2.07 | 122.57 | 118.81 |
| 28 | a | 1831 | 2MG | O6-C6-C5 | -2.04 | 121.18 | 126.60 |
| 28 | a | 2443 | 2MG | C8-N7-C5 | 2.04 | 107.93 | 104.24 |
| 6 | A | 1205 | 2MG | N1-C2-N3 | -2.02 | 120.83 | 123.95 |
| 28 | a | 743 | 1MG | C8-N7-C5 | 2.02 | 107.90 | 104.24 |
| 28 | a | 2502 | PSU | C6-C5-C4 | -2.01 | 116.79 | 118.20 |
| 28 | a | 2249 | OMG | C4-C5-N7 | -2.00 | 107.55 | 110.72 |
| 28 | a | 1960 | 5MC | C5-C4-N4 | -2.00 | 118.48 | 121.48 |

There are no chirality outliers.

All (30) torsion outliers are listed below:

| Mol | Chain | Res | Type | Atoms |
|---|---|---|---|---|
| 17 | L | 89 | D2T | CA-CB-CG-OD1 |
| 17 | L | 89 | D2T | CA-CB-CG-OD2 |
| 31 | d | 150 | MEQ | O-C-CA-CB |
| 16 | K | 119 | IAS | CA-CB-CG-OD1 |
| 28 | a | 2249 | OMG | C1'-C2'-O2'-CM2 |
| 6 | A | 1517 | MA6 | O4'-C4'-C5'-O5' |
| 28 | a | 2028 | 6MZ | O4'-C4'-C5'-O5' |
| 28 | a | 2028 | 6MZ | C3'-C4'-C5'-O5' |
| 6 | A | 1517 | MA6 | C3'-C4'-C5'-O5' |
| 28 | a | 2502 | PSU | O4'-C4'-C5'-O5' |
| 31 | d | 150 | MEQ | NE2-CD-CG-CB |
| 31 | d | 150 | MEQ | OE1-CD-CG-CB |
| 28 | a | 2502 | PSU | C3'-C4'-C5'-O5' |
| 6 | A | 525 | G7M | C3'-C4'-C5'-O5' |
| 6 | A | 1517 | MA6 | C5-C6-N6-C10 |
| 39 | l | 82 | MS6 | CB-CG-SD-CE |

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| Mol | Chain | Res | Type | Atoms |
|---|---|---|---|---|
| 28 | a | 2443 | 2MG | C3'-C4'-C5'-O5' |
| 39 | l | 82 | MS6 | CA-CB-CG-SD |
| 17 | L | 89 | D2T | CG-CB-SB-CB1 |
| 28 | a | 2067 | G7M | C4'-C5'-O5'-P |
| 6 | A | 525 | G7M | O4'-C4'-C5'-O5' |
| 39 | l | 81 | 4D4 | CG-CD-NE-CZ |
| 6 | A | 525 | G7M | C4'-C5'-O5'-P |
| 28 | a | 2067 | G7M | O4'-C4'-C5'-O5' |
| 17 | L | 89 | D2T | SB-CB-CG-OD2 |
| 28 | a | 744 | PSU | O4'-C1'-C5-C6 |
| 28 | a | 2501 | 2MA | C4'-C5'-O5'-P |
| 28 | a | 2501 | 2MA | O4'-C4'-C5'-O5' |
| 28 | a | 2067 | G7M | C3'-C4'-C5'-O5' |
| 39 | l | 81 | 4D4 | O-C-CA-CB |

There are no ring outliers.

8 monomers are involved in 10 short contacts:

| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|---|---|---|---|---|---|
| 28 | a | 2028 | 6MZ | 2 | 0 |
| 28 | a | 2249 | OMG | 1 | 0 |
| 6 | A | 965 | 5MC | 1 | 0 |
| 6 | A | 1400 | 4OC | 1 | 0 |
| 6 | A | 964 | 2MG | 2 | 0 |
| 6 | A | 1516 | MA6 | 1 | 0 |
| 28 | a | 2455 | PSU | 1 | 0 |
| 28 | a | 2496 | OMC | 1 | 0 |

## 5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

## 5.6 Ligand geometry (i)

Of 530 ligands modelled in this entry, 530 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

## 5.7 Other polymers

There are no such residues in this entry.

## 5.8 Polymer linkage issues

The following chains have linkage breaks:

| Mol | Chain | Number of breaks |
|---|---|---|
| 28 | a | 2 |

All chain breaks are listed below:

| Model | Chain | Residue-1 | Atom-1 | Residue-2 | Atom-2 | Distance (Å) |
|---|---|---|---|---|---|---|
| 1 | a | 1913:3TD | O3' | 1914:A | P | 4.63 |
| 1 | a | 1912:C | O3' | 1913:3TD | P | 3.01 |

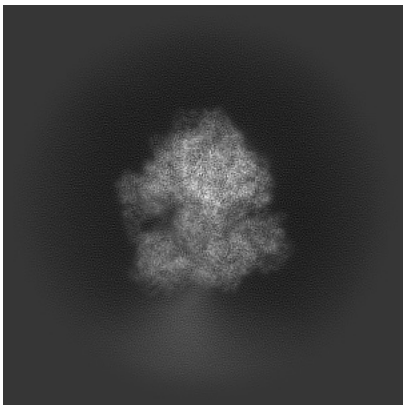
# 6 Map visualisation

This section contains visualisations of the EMDB entry EMD-55797. These allow visual inspection of the internal detail of the map and identification of artifacts.

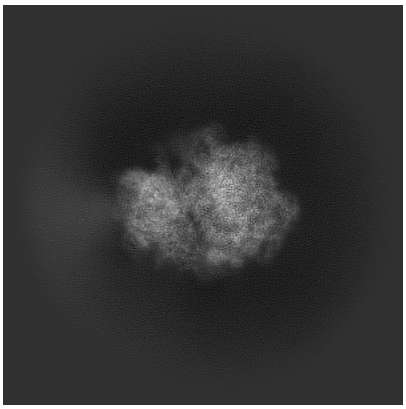
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

## 6.1 Orthogonal projections

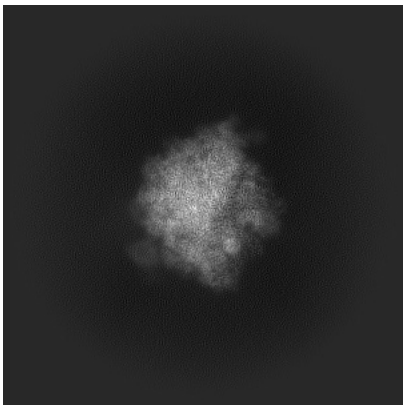
### 6.1.1 Primary map



X

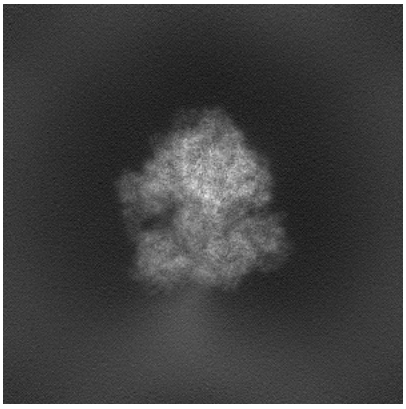


Y

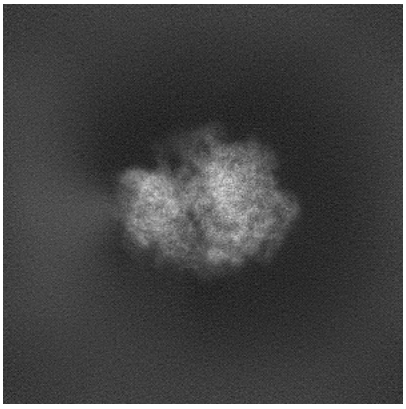


Z

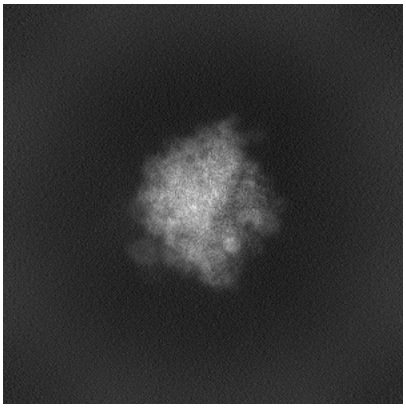
### 6.1.2 Raw map



X



Y

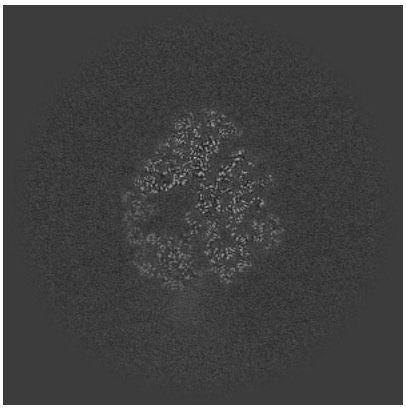


Z

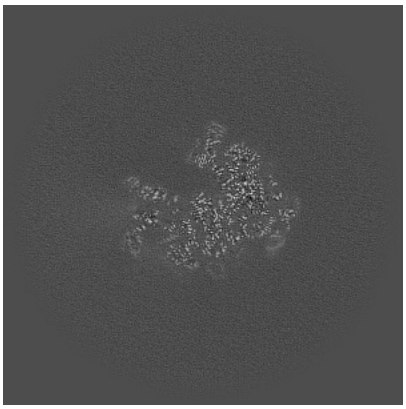
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices (i)

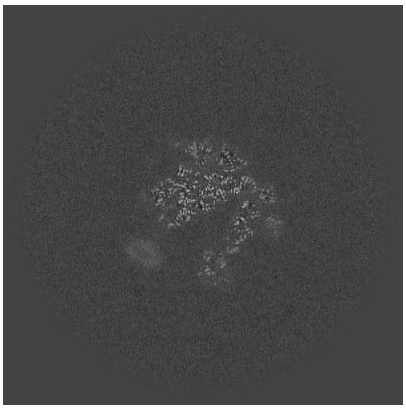
### 6.2.1 Primary map



X Index: 256

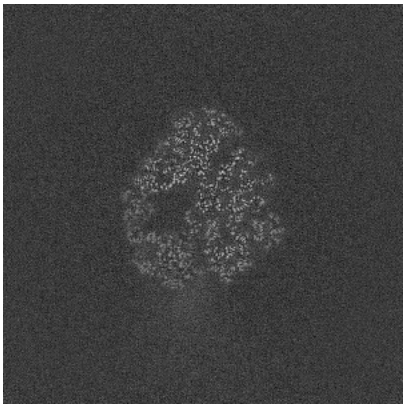


Y Index: 256

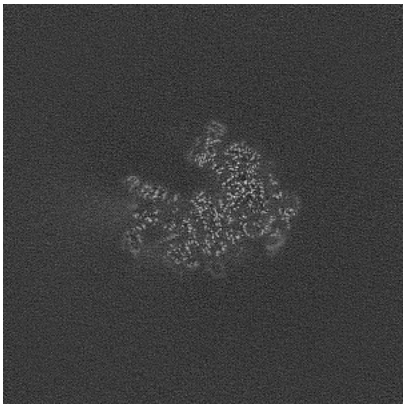


Z Index: 256

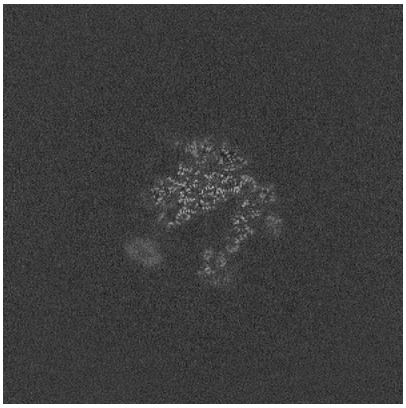
### 6.2.2 Raw map



X Index: 256



Y Index: 256

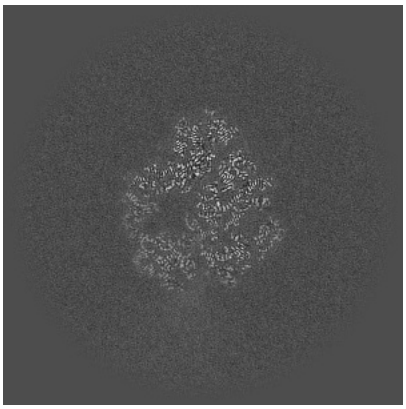


Z Index: 256

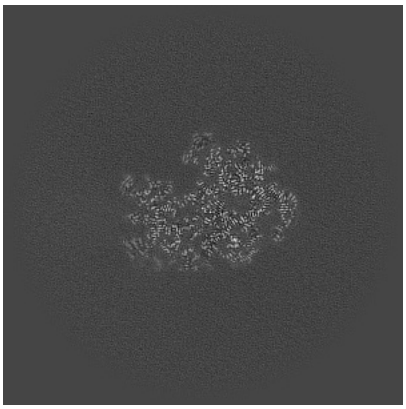
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices (i)

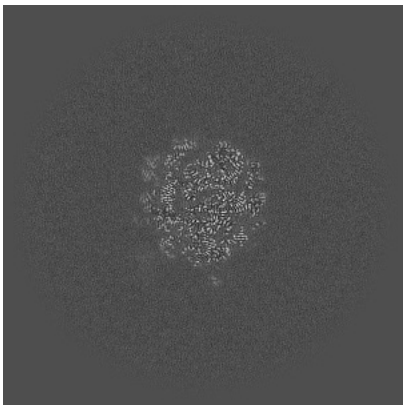
### 6.3.1 Primary map



X Index: 260

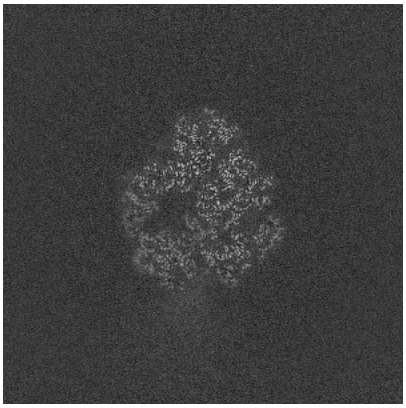


Y Index: 268

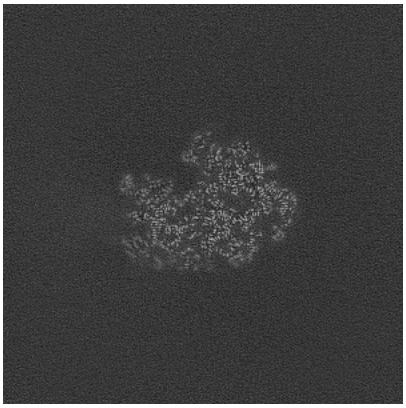


Z Index: 298

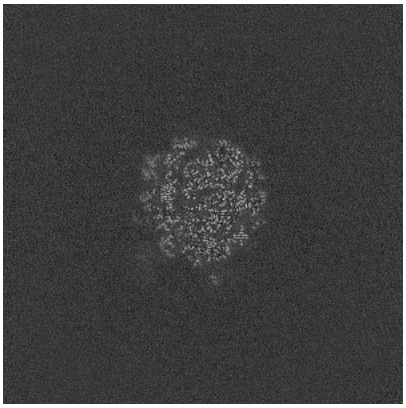
### 6.3.2 Raw map



X Index: 260



Y Index: 267

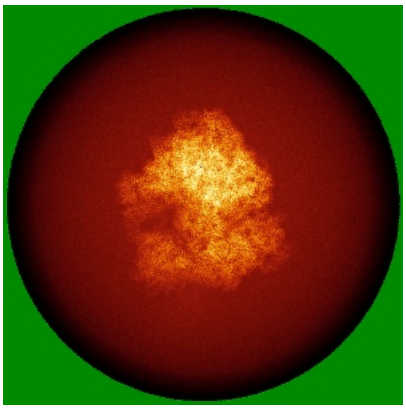


Z Index: 298

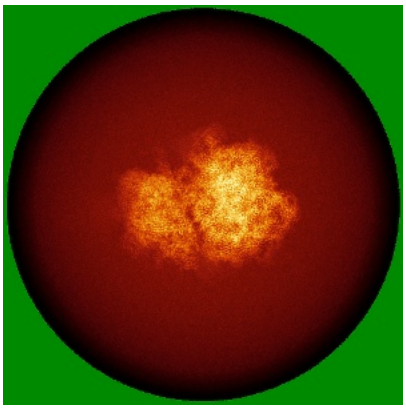
The images above show the largest variance slices of the map in three orthogonal directions.

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

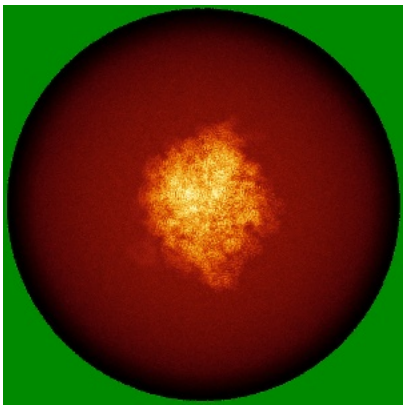
### 6.4.1 Primary map



X

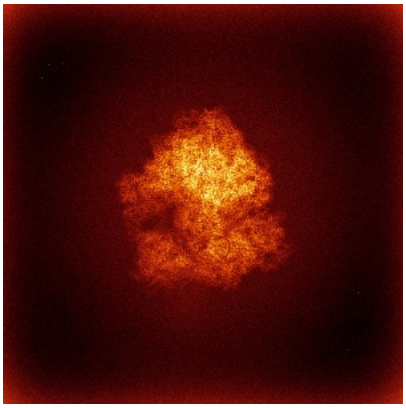


Y

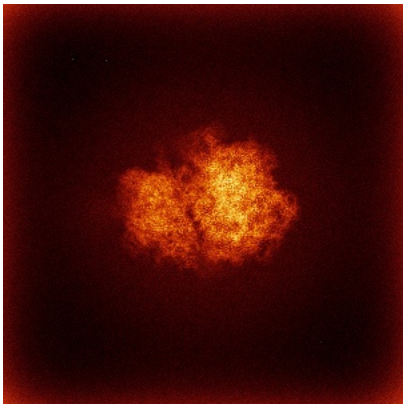


Z

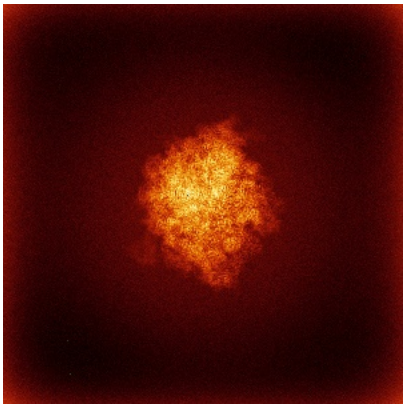
### 6.4.2 Raw map



X



Y

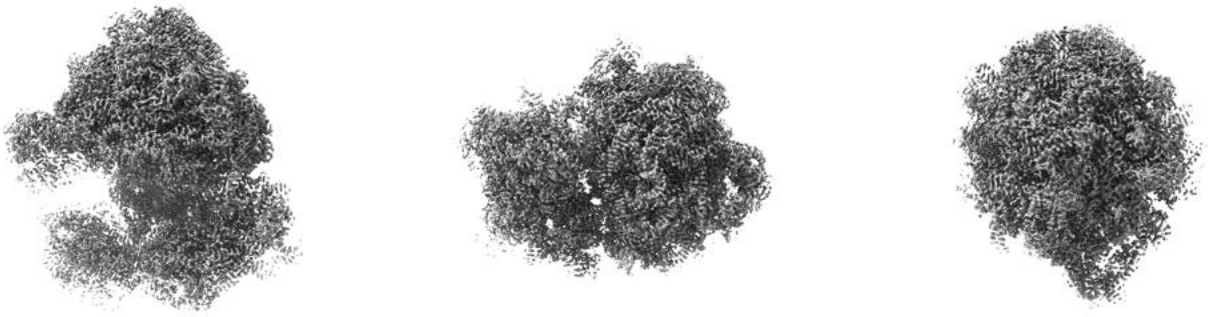


Z

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 0.55. 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.

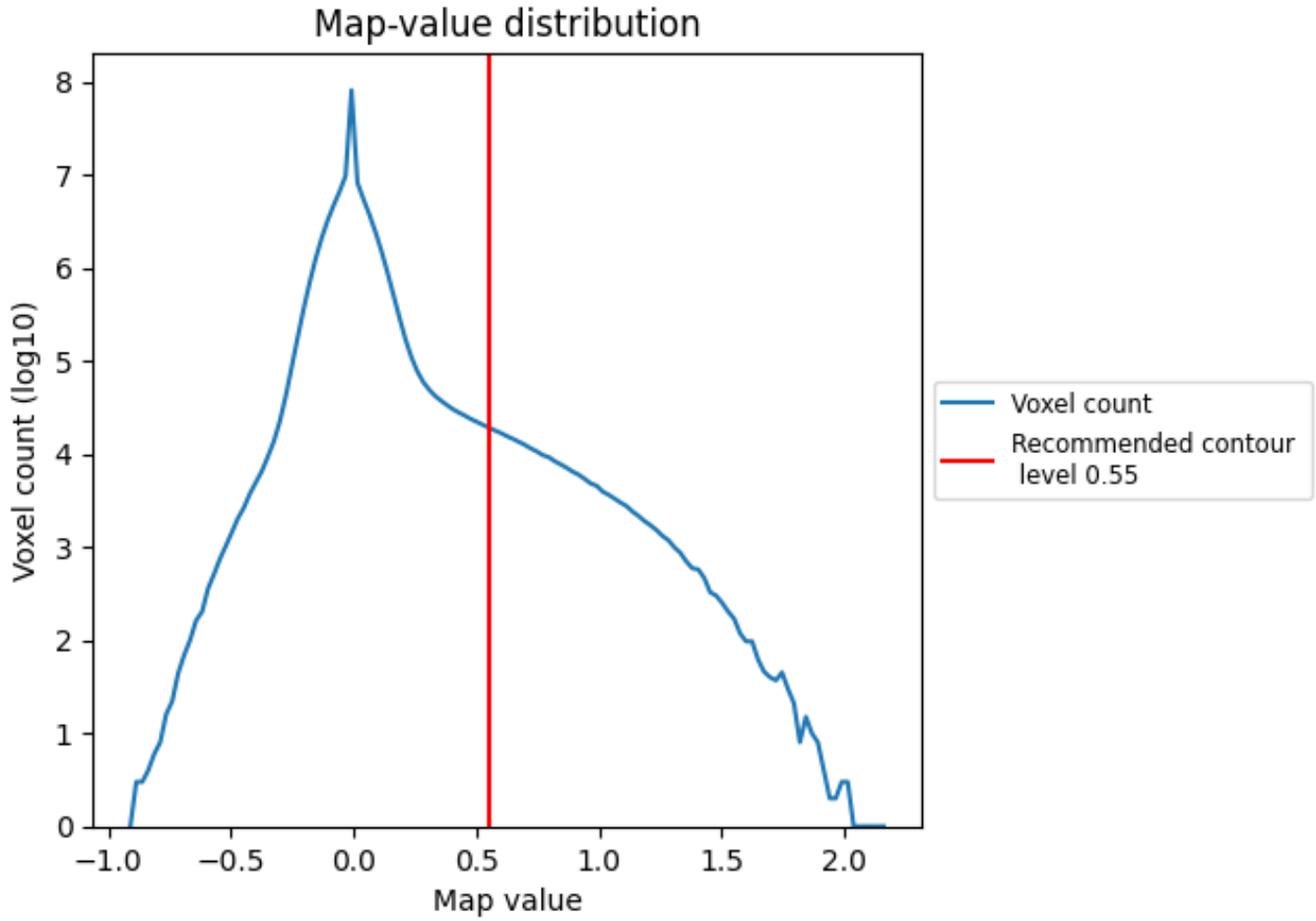
## 6.6 Mask visualisation (i)

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

# 7 Map analysis

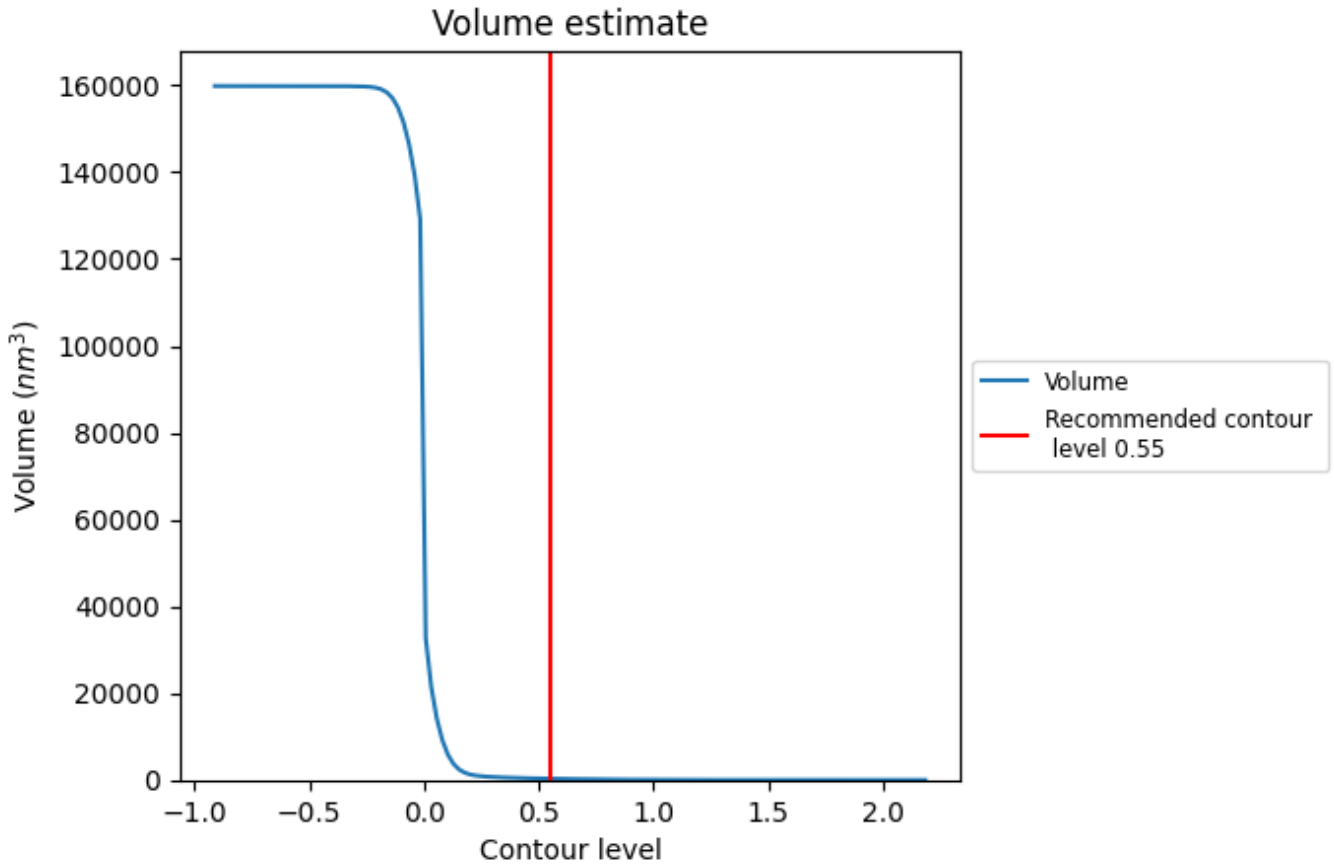
This section contains the results of statistical analysis of the map.

## 7.1 Map-value distribution




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

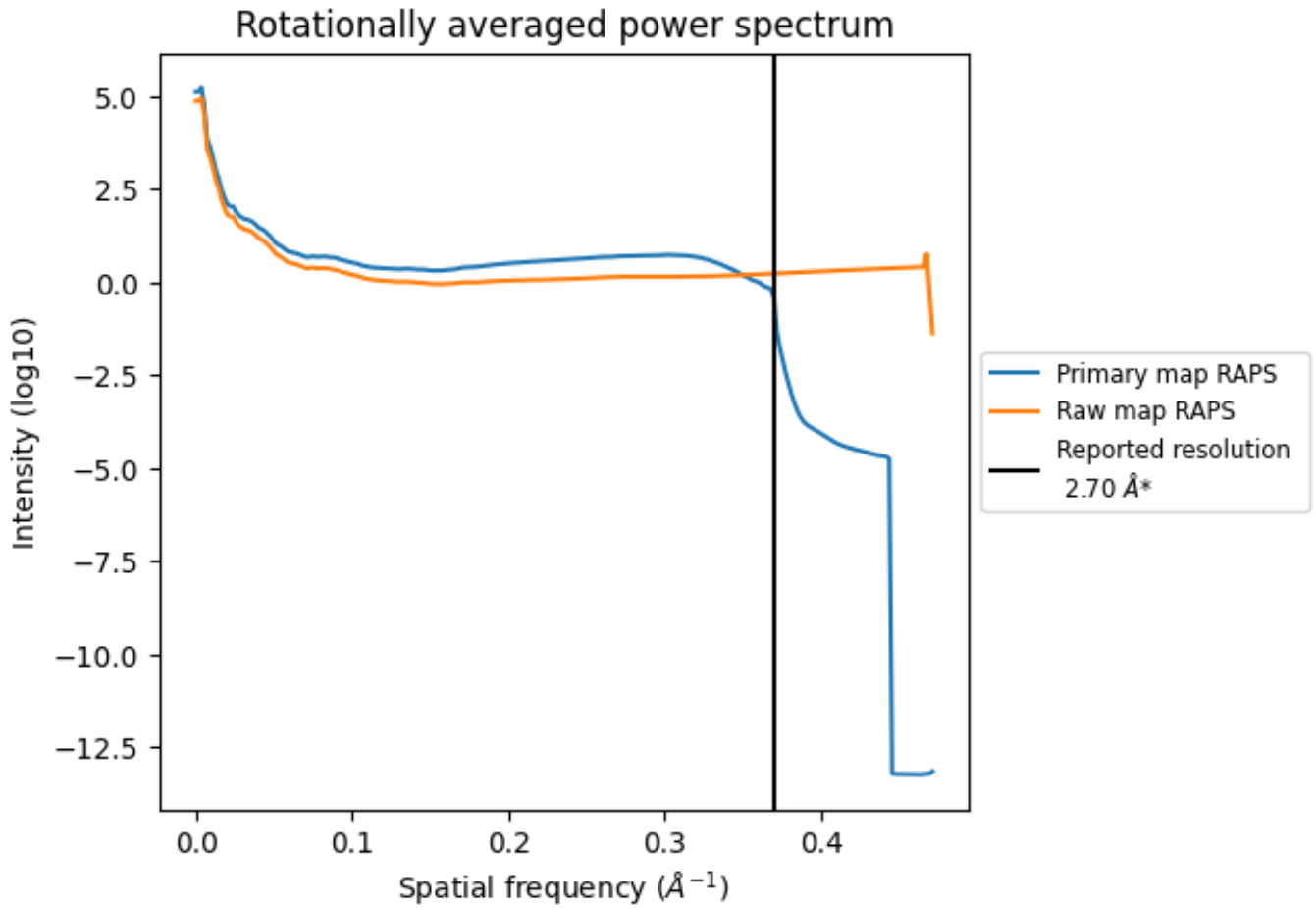
## 7.2 Volume estimate




The volume at the recommended contour level is 283 $nm^3$; this corresponds to an approximate mass of 256 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)

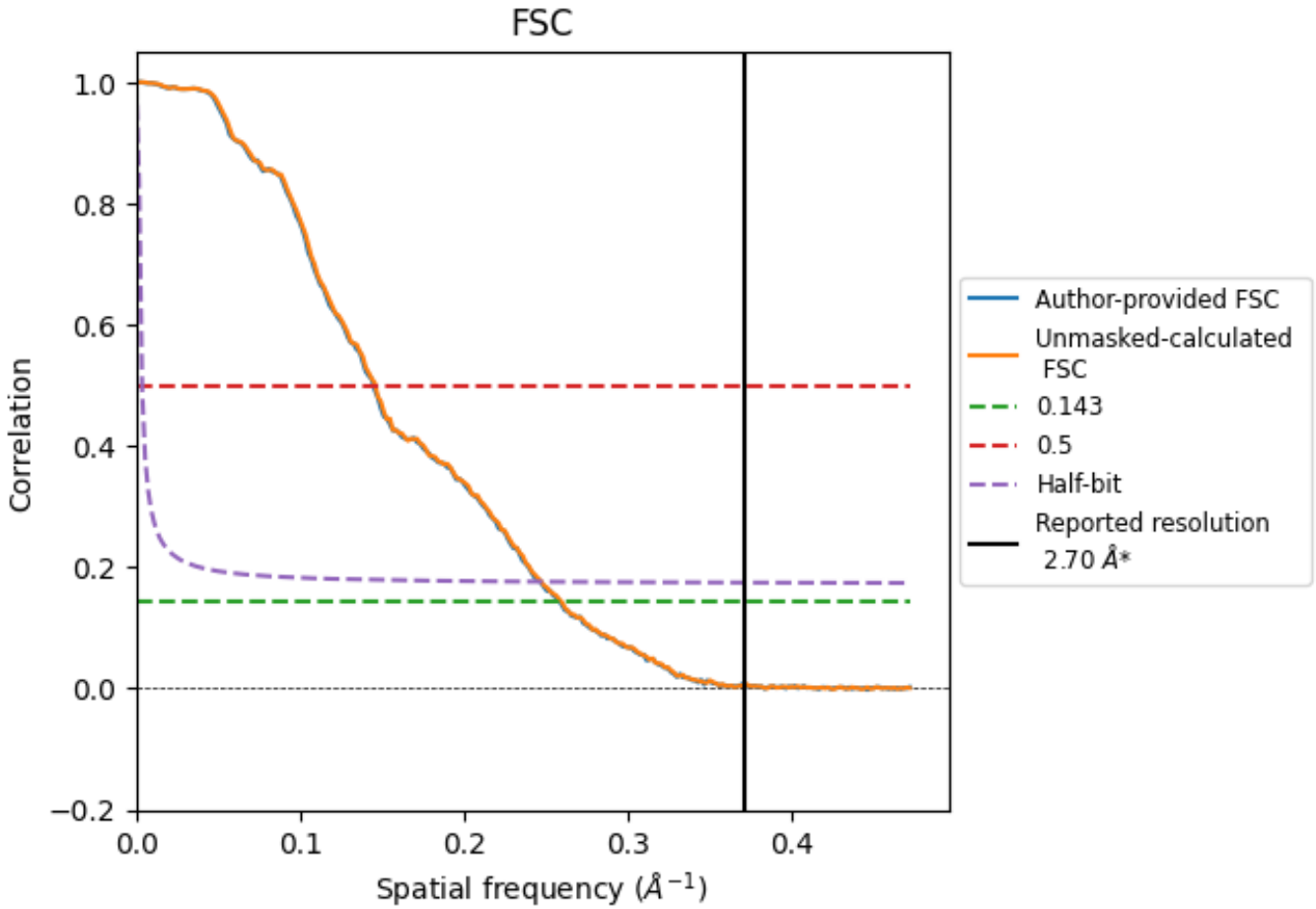



*Reported resolution corresponds to spatial frequency of 0.370 $Å^{-1}$

# 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 0.370 Å$^{-1}$

## 8.2 Resolution estimates (i)

| Resolution estimate (Å) | Estimation criterion (FSC cut-off) | | |
|---|---|---|---|
| | 0.143 | 0.5 | Half-bit |
| Reported by author | 2.70 | - | - |
| Author-provided FSC curve | 3.87 | 6.91 | 4.06 |
| Unmasked-calculated* | 3.86 | 6.85 | 4.05 |

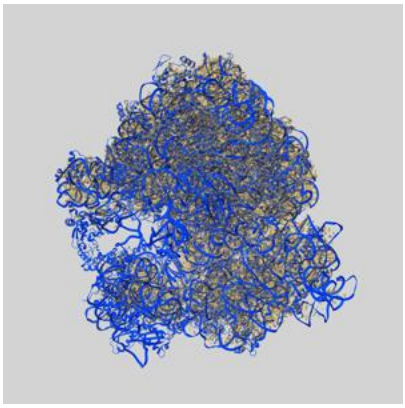
*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from author-provided FSC intersecting FSC 0.143 CUT-OFF 3.87 differs from the reported value 2.7 by more than 10 %

The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.86 differs from the reported value 2.7 by more than 10 %

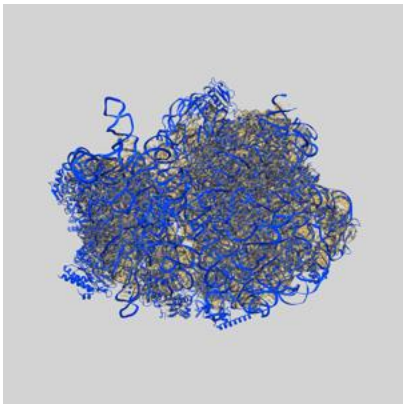
# 9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-55797 and PDB model 9TCR. Per-residue inclusion information can be found in section 3 on page 15.

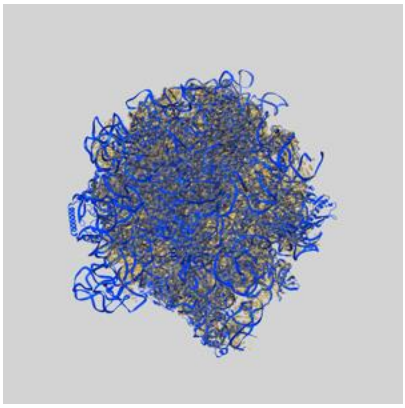
## 9.1 Map-model overlay



X



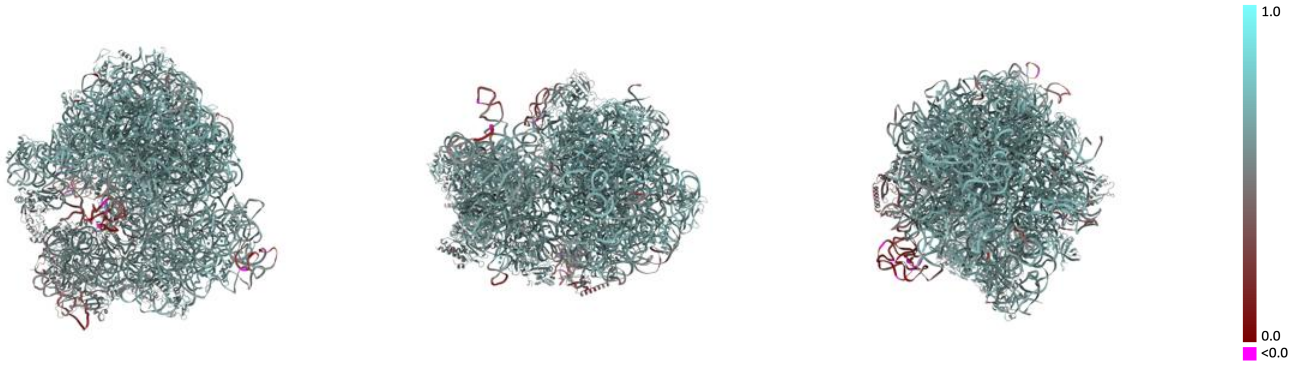
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.55 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

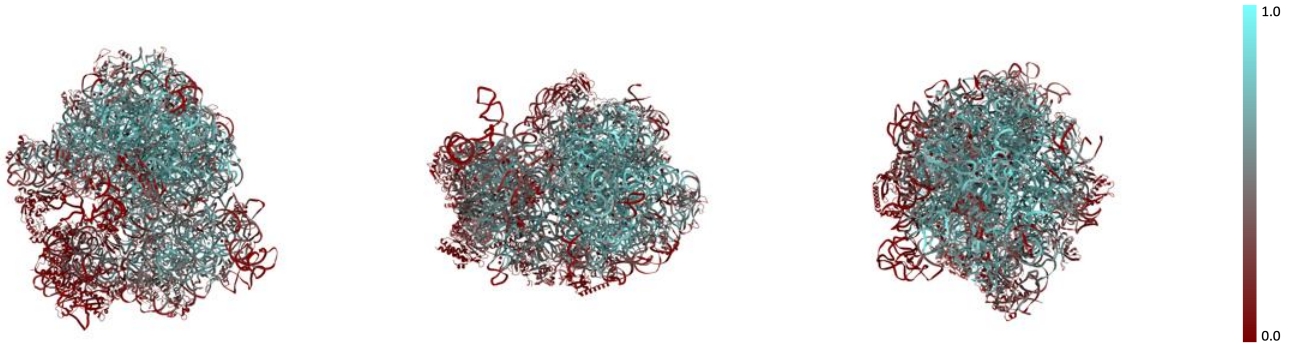
## 9.2 Q-score mapped to coordinate model (i)




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.

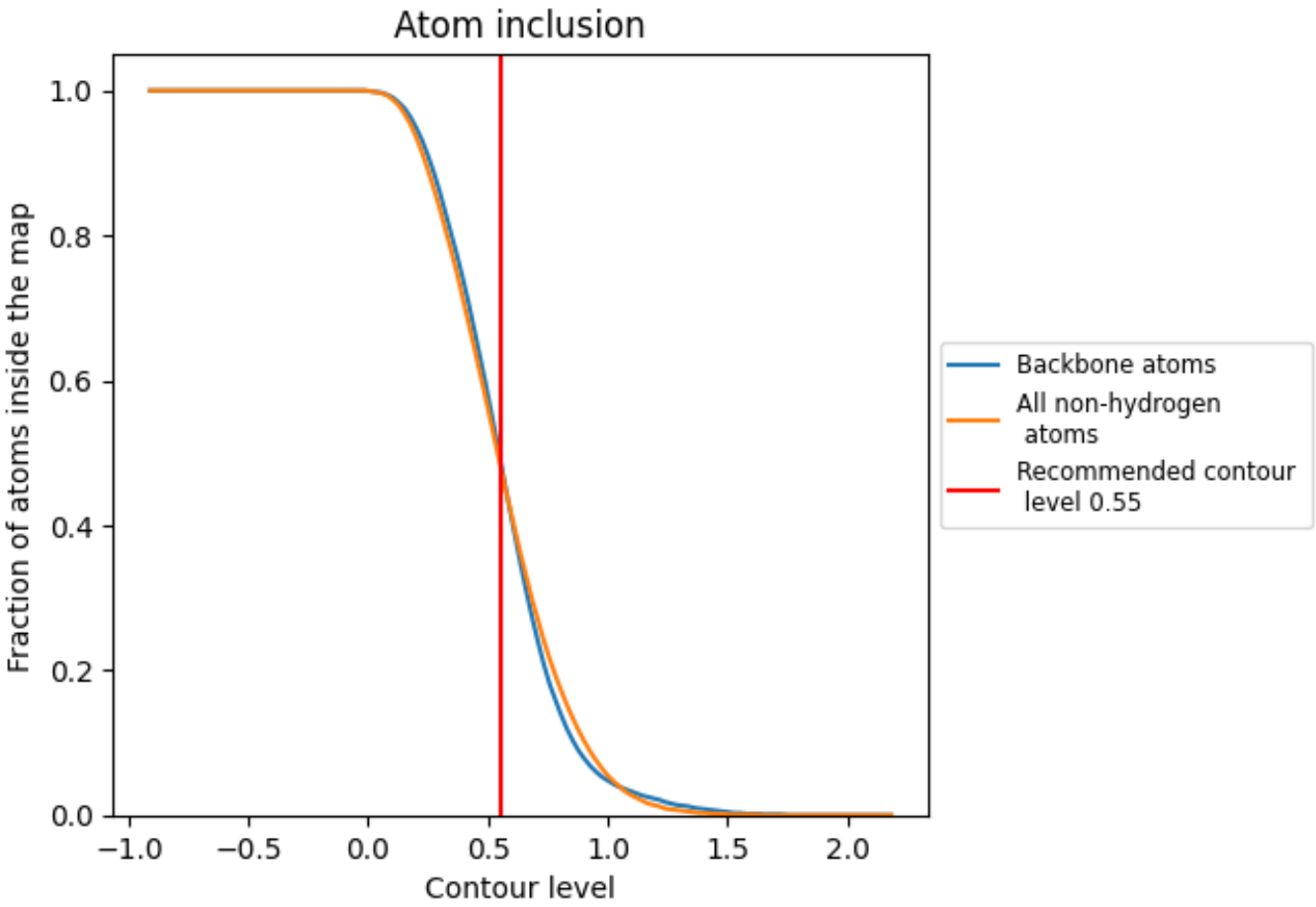
## 9.3 Atom inclusion mapped to coordinate model (i)




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 (0.55).

## 9.4 Atom inclusion (i)




At the recommended contour level, 49% of all backbone atoms, 48% 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 (0.55) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion | Q-score |
|---|---|---|
| All | 0.4840 | 0.5980 |
| 0 | 0.2980 | 0.6200 |
| 1 | 0.6700 | 0.6580 |
| 2 | 0.6520 | 0.6550 |
| 3 | 0.4330 | 0.6380 |
| 4 | 0.0060 | 0.4420 |
| A | 0.4450 | 0.5890 |
| B | 0.0490 | 0.5240 |
| C | 0.1540 | 0.5710 |
| D | 0.1950 | 0.5940 |
| E | 0.3890 | 0.6160 |
| F | 0.1820 | 0.5800 |
| G | 0.0420 | 0.5450 |
| H | 0.3840 | 0.6240 |
| I | 0.0760 | 0.5420 |
| J | 0.0860 | 0.5170 |
| K | 0.2210 | 0.5900 |
| L | 0.3290 | 0.6170 |
| M | 0.0300 | 0.5340 |
| N | 0.1100 | 0.5620 |
| O | 0.3350 | 0.6090 |
| P | 0.3860 | 0.6160 |
| Q | 0.2770 | 0.5970 |
| R | 0.2950 | 0.5630 |
| S | 0.0210 | 0.5300 |
| T | 0.2970 | 0.5990 |
| U | 0.0250 | 0.4730 |
| X | 0.0770 | 0.5610 |
| a | 0.6280 | 0.6060 |
| b | 0.4280 | 0.5980 |
| c | 0.5860 | 0.6500 |
| d | 0.5510 | 0.6400 |
| e | 0.4100 | 0.6210 |
| f | 0.0670 | 0.5390 |
| g | 0.1210 | 0.5600 |




*Continued on next page...*

*Continued from previous page...*

| Chain | Atom inclusion | Q-score |
|---|---|---|
| h | 0.0100 | 0.4370 |
| i | 0.5620 | 0.6410 |
| j | 0.4720 | 0.6390 |
| k | 0.4970 | 0.6390 |
| l | 0.4430 | 0.6360 |
| m | 0.6260 | 0.6490 |
| n | 0.2800 | 0.5990 |
| o | 0.4800 | 0.6350 |
| p | 0.6170 | 0.6450 |
| q | 0.4530 | 0.6260 |
| r | 0.5370 | 0.6340 |
| s | 0.4160 | 0.6220 |
| t | 0.3310 | 0.6070 |
| u | 0.3270 | 0.6120 |
| v | 0.5730 | 0.6470 |
| w | 0.4750 | 0.6350 |
| x | 0.2890 | 0.6010 |
| y | 0.4800 | 0.6330 |
| z | 0.5330 | 0.6330 |